26.7   Elementary procedures of mobility management

The tests are based on 3GPP TS 04.08 / 3GPP TS 24.008 and 3GPP TS 03.03.

In this subclause, when the expected sequence require that "a mobile originated CM connection is attempted", it shall be for a service other than emergency call.

In this subclause, a initial CM message is either a SETUP message, a REGISTER message or a CP-DATA message (in that case the acknowledged mode of operation on SAPI 3 will have be established and this message will be sent on SAPI 3).

26.7.0   Default contents of messages

Default contents SYSTEM INFORMATION messages and default settings

For cell A and B

For GSM use 26.6.14. For DCS use 26.6.15, for PCS 1 900 use 26.6.18, for GSM 450 use 26.6.16, for GSM 480 use 26.6.17, for GSM 750 use 26.6.19, for GSM 850 use 26.6.20, for GSM 710 use 26.6.21 and for T-GSM 810 use 26.6.22.

Cell C

The contents of SYSTEM INFORMATION TYPE 1 to 6 messages for cell C are identical to those of cell A with the following exceptions:

Cell Channel Description	
- Format Identifier	Range 128 for GSM 450, GSM 480, GSM 710, GSM 750, T-GSM 810 and GSM 850. Bit map 0 for GSM. Range 512 for DCS and PCS 1 900.
- Cell Allocation ARFCN	Channel number 267 for GSM 450, Channel number 315 for GSM 480, Channel Number 30 for GSM, Channel Number 700 for DCS, PCS 1 900, Channel Number 467 for GSM 710, GSM 750 and T-GSM 810 and Channel Number 157 for GSM 850.
Cell Identity	
- Cell Identity Value	0003H

Default settings for cell C:

Downlink input level	53 dBmicroVolt emf
Uplink output power	minimum supported by the MS's power class for GSM and DCS, Power Control Level = 10 for PCS 1 900
Propagation profile	static.
BCCH/CCCH carrier number	267 for GSM 450, 315 for GSM 480, 30 for GSM, 700 for DCS and PCS 1 900, 467 for GSM 710, GSM 750 and T-GSM 810 and 157 for GSM 850.

ABORT

Information element	Value/remark
Reject cause	Depending on the test one of either: #6 - Illegal ME #17 - Network Failure.

AUTHENTICATION REQUEST

Information element	Value/remark
Cipher Key Sequence Number	Arbitrary
Authentication parameter RAND	Arbitrarily chosen by the test house

AUTHENTICATION RESPONSE

Information element	Value/remark
Authentication parameter SRES	As applicable

AUTHENTICATION REJECT

Information element	Value/remark
None but message head	

CHANNEL RELEASE

Information element	Value/remark
RR cause	Normal release

CIPHERING MODE COMMAND

Information element	Value/remark
Cipher mode setting	Start ciphering
Cipher Response	IMEI must not be included

CM RE-ESTABLISHMENT REQUEST

Information element	Value/remark
Cipher Key Sequence Number	According to SIM contents
Mobile station classmark 2	See PICS/PIXIT
Mobile Identity	IMSI of MS under test
Location area identification	As in subclause 26.1.1

CM SERVICE ACCEPT

Information element	Value/remark
None but message head	Omitted

CM SERVICE REQUEST

Information element	Value/remark
CM service type	Mobile originating call establishment unless otherwise specified in test.
Ciphering key sequence number	According to SIM contents
Mobile station classmark 2	See PICS/PIXIT
Mobile identity	TMSI of the MS under test

CM SERVICE REJECT

Information element	Value/remark
Reject cause	Depending on test

IDENTITY REQUEST

Information element	Value/remark
Identity type	Depending on test
Spare half octet	0000

IDENTITY RESPONSE

Information element	Value/remark
Mobile identity	Depending on test

IMMEDIATE ASSIGNMENT

Information element	Value/remark
L2 pseudo length	
Page mode	Normal Paging
Spare half octet	0000
Channel description	
- Channel type and TDMA offset	SDCCH/4 or SDCCH/8
- Time slot number	Arbitrary legal value
- Subsequent fields of the Channel description IE depend upon the Type of MS under test, as specified in subclause 26.1.1	
Request reference	
- Random access information	As received from MS
- N51,N32,N26	Corresponding to the frame in which the Channel Request was sent
Timing advance	0
Mobile allocation	Empty (L=0)
Starting time	Omitted
IA rest octets	all bits set to spare

IMSI DETACH INDICATION

Information element	Value/remark
Mobile station classmark 1	See PICS/PIXIT
Mobile identity	TMSI of the MS under test

LOCATION UPDATING ACCEPT

Information element	Value/remark
Location area identification	As in subclause 26.1.1
Mobile identity	Omitted
Follow on proceed	Omitted

LOCATION UPDATING REJECT

Information element	Value/remark
Reject cause	As specified in test

LOCATION UPDATING REQUEST

Information element	Value/remark
Location updating type	Normal location updating
Cipher Key Sequence Number	According to SIM contents
Location area identification	As in subclause 26.1.1
Mobile station classmark	See PICS/PIXIT
Mobile identity	TMSI of the MS

PAGING REQUEST TYPE 1

Information element	Value/remark
L2 pseudo length	
Page Mode	Normal paging
Channels needed	
- mobile 1	"any channel"
- mobile 2	spare
Mobile identity 1	TMSI of MS under test
Mobile identity 2	Omitted
P1 rest octets	All bits set to spare

PAGING RESPONSE

Information element	Value/remark
Ciphering key sequence number	According to SIM contents
Spare half octet	0000
Mobile station classmark 2	See PICS/PIXIT
Mobile identity	TMSI of the MS under test

TMSI REALLOCATION COMMAND

Information element	Value/remark
Location area identification	As in subclause 26.1.1
Mobile identity	TMSI of the MS under test

TMSI REALLOCATION COMPLETE

Information element	Value/remark
None but message head	omitted

26.7.1   TMSI reallocation

The intention of the TMSI Reallocation procedure is to assign a new temporary identity for the MS. If the message is not understood by the MS, the network could not establish a link to the MS. As this is a common MM procedure, it can be initiated at any time.

26.7.1.1   Conformance requirement

1) A Mobile Station shall acknowledge a new TMSI when explicitly allocated during a location updating procedure or an incoming call.

2) The TMSI shall be updated on the SIM when the Mobile Station is correctly deactivated in accordance with the manufacturer's instructions.

3) A Mobile Station shall answer paging with this TMSI and includes it in the Paging Response message.

Reference(s):

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.3.1, 3GPP TS 03.03 clause 2, 3GPP TS 02.17 subclause 6.1.

26.7.1.2   Test purpose

To verify that the MS is able to receive and acknowledge a new TMSI by means of an explicit TMSI reallocation procedure.

To verify that the MS has stored the TMSI in a non-volatile memory.

The implicit reallocation procedure is tested in subclause 26.7.4.1.

26.7.1.3 Method of test

Initial conditions

System Simulator:

Two cells A and B, belonging to different location areas a and b, default parameters.

Mobile Station:

The MS has valid TMSI (= TMSI1), CKSN, Kc. It is "idle updated" on cell B.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI (= TMSI1), CKSN, Kc. It is "idle updated" on cell A.

Test Procedure

The MS is paged in cell B and the ciphering mode is established. An explicit TMSI reallocation procedure is performed. The channel is released. The MS is switched off and then its power supply is interrupted for 10 s. The power supply is resumed and then the MS is switched on and allowed sufficient time to guarantee that the MS is in service (listening to its paging subchannel). The system simulator then checks, by paging, whether the MS has stored the received TMSI.

The MS is made to select cell A. A normal location updating procedure is performed in cell A. An explicit TMSI reallocation procedure is performed and then the location updating procedure is accepted by the SS. The system simulator checks, by paging, whether the MS has stored the allocated TMSI.

Maximum duration of test

2 minutes.

Expected sequence

Step	Direction	Message	Comments
			The following messages are sent and shall be received on cell B.
1	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" = TMSI1.
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CIPHERING MODE COMMAND	The SS starts deciphering.
6	MS -> SS	CIPHERING MODE COMPLETE	The SS starts enciphering.
7	SS -> MS	TMSI REALLOCATION COMMAND	"Mobile identity" = new TMSI (TMSI2) different from TMSI 1.
8	MS -> SS	TMSI REALLOCATION COMPLETE	
9	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	MS		If possible (see PICS), the MS is switched off.
10a	MS		The power supply is interrupted for 10 s.
11	MS		The MS is switched on.
12	SS		The SS waits an amount of time which is enough to guarantee that the MS is in service (listening to its paging subchannel).
13	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" = TMSI2.
14	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
15	SS -> MS	IMMEDIATE ASSIGNMENT	
16	MS -> SS	PAGING RESPONSE	"Mobile identity" =TMSI2.
17	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The following messages are sent and shall be received on cell A
18	SS		The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
19	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
20	SS -> MS	IMMEDIATE ASSIGNMENT	
21	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, "ciphering key sequence number" = CKSN, LAI = b, "mobile identity" = TMSI2.
22	SS -> MS	TMSI REALLOCATION COMMAND	TMSI = TMSI1.
23	MS -> SS	TMSI REALLOCATION COMPLETE	
24	SS -> MS	LOCATION UPDATING ACCEPT	This message does not contain the optional Mobile Identity field.
25	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is "idle updated" on cell A.
26	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the new TMSI (= TMSI1).
27	MS -> SS	CHANNEL REQUEST	"Establishment cause": Answer to paging.
28	SS -> MS	IMMEDIATE ASSIGNMENT	
29	MS -> SS	PAGING RESPONSE	"Mobile identity" IE contains the new TMSI (= TMSI1).
30	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.2 Authentication

The purpose of this procedure is to verify the user identity. A correct response is essential to guarantee the establishment of the connection. If not, the connection will drop.

For GSM Authentication Challenge (i.e. Authentication with a SIM as defined in Annex A4 or GSM AKA using a USIM as defined TS 33.102) the SS shall be able to handle vectors of Kc, RAND, and SRES in a similar way as the MSC/BSS entities. The SS shall incorporate a test algorithm for generating SRES and Kc from RAND and Ki (and CK,

IK for GSM AKA). Additionally, the SS shall use a proper RAND value to be able to distinguish the SRES, Kc values generated by the USIM or SIM applications.

For UMTS Authentication Challenge (i.e. UMTS AKA using an USIM as defined in TS 33.102), the SS shall be able to handle vectors of AUTN, RAND, CK, IK, AUTS and XRES in the way as the MSC/BSS entities.

The Test USIM is defined in Annex 4Aa.

26.7.2.1 Authentication accepted

26.7.2.1.1 Conformance requirement

1) A Mobile Station shall correctly respond to an Authentication Request message by sending an Authentication Response message with the SRES information field set to the same value as the one produced by the authentication algorithm in the network.

2) A Mobile Station shall indicate in a Paging Response message the ciphering key sequence number which was allocated to it through the authentication procedure.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.3.2, 3GPP TS 03.03 clause 2.

26.7.2.1.2 Test purpose

1) To check that a Mobile Station correctly responds to an Authentication Request message by sending an Authentication Response message with the SRES information field set to the same value as the one produced by the authentication algorithm in the network.

2) To check that a Mobile Station indicates in a Paging Response message the ciphering key sequence number which was allocated to it through the authentication procedure.

26.7.2.1.3 Method of test

Initial conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS has valid TMSI, CKSN (CKSN1), Kc. It is "idle updated" on the cell.

Specific PICS statements:

   -

PIXIT statements:

   -

Foreseen final state of the MS

The MS has valid TMSI, CKSN and Kc. It is "idle updated" on the cell.

Test Procedure

The MS is paged. After the MS has sent a PAGING RESPONSE message to the SS, the SS initiates an authentication procedure and checks the value SRES sent by the MS in the AUTHENTICATION RESPONSE message. The channel is released. The MS is paged and the SS checks the value of the ciphering key sequence number sent by the MS in the PAGING RESPONSE message.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	CKSN = CKSN1
5	SS -> MS	AUTHENTICATION REQUEST	The SS initiates authentication with CKSN2 different from CKSN1.
6	MS -> SS	AUTHENTICATION RESPONSE	"Auth. parameter SRES" IE shall be bit exact with the value as produced by the authentication algorithm.
7	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.
8	SS -> MS	PAGING REQUEST TYPE 1	
9	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	PAGING RESPONSE	"Ciphering key sequence number" shall be the same as the value that was sent in the last AUTHENTICATION REQUEST message (= CKSN2).
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.2.2   Authentication rejected

26.7.2.2.1   Conformance requirement

1) After reception of an Authentication Reject message the Mobile Station shall:

   1.1 not perform normal location updating.

   1.2 not perform periodic location updating.

   1.3 not respond to paging with TMSI.

   1.4 reject any request from CM entity for MM connection except for emergency call.

   1.5 not perform IMSI detach if deactivated.

2) After reception of an Authentication Reject message the Mobile Station, if it supports speech, shall accept a request for an emergency call by sending a CHANNEL REQUEST message with the establishment cause set to "emergency call" and include an IMEI as mobile identity in the CM SERVICE REQUEST message.

3) After reception of an Authentication Reject message the Mobile Station shall delete the stored LAI, CKSN and TMSI.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.3.2.5.

26.7.2.2.2   Test purpose

1) To check that ,after reception of an Authentication Reject message, the Mobile Station:

   1.1 does not perform normal location updating.

   1.2 does not perform periodic location updating.

   1.3 does not respond to paging with TMSI.

   1.4 rejects any request from CM entity for MM connection except for emergency call.

1.5 does not perform IMSI detach if deactivated.

2) To check that, after reception of an Authentication Reject message the Mobile Station, if it supports speech, accepts a request for an emergency call by sending a CHANNEL REQUEST message with the establishment cause set to "emergency call" and includes an IMEI as mobile identity in the CM SERVICE REQUEST message.

3) To check that, after reception of an Authentication Reject message and after having been deactivated and reactivated, the MS performs location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN.

26.7.2.2.3 Method of test

Initial conditions

System Simulator:

Two cells: A and B, belonging to different location areas a and b.

IMSI attach/detach is allowed in both cells.

The T3212 time-out value is 1/10 hour in both cells.

Mobile Station:

The MS has valid TMSI, CKSN (CKSN2) and Kc. It is "idle updated" on cell B.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- SIM removable without power down (TSPC_AddInfo_SIMRmv)

- Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

PIXIT statements:

-

Foreseen final state of the MS

The MS has valid TMSI, CKSN (CKSN1) and Kc. It is "idle updated" on cell A.

Test procedure

The SS rejects an authentication. The channel is released. The SS checks that the MS has entered the state MM IDLE substate NO IMSI, i.e. does not perform normal location updating, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if SIM detachment is performed, switch off is performed, or the power is removed, depending on the MS (see PICS/PIXIT).

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
The following messages are sent and shall be received on cell B			
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	"Ciphering key sequence number" shall be the same as the value that was sent in the last AUTHENTICATION REQUEST message (= CKSN2).
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	AUTHENTICATION REJECT	
8	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
9	SS -> MS	PAGING REQUEST TYPE 1	The MS is paged in cell B. "Mobile identity" IE contains TMSI.
10	MS		The MS shall ignore this message. This is verified during 3 s.
11	SS		The SS waits for at least for 15 s.
12	MS		A MO CM connection is attempted.
13	MS		The MS shall not initiate an RR connection establishment on cell A or cell B. This is checked during 3 s.
14	MS		If the MS supports speech (see PICS), an emergency call is attempted.
15	MS -> SS	CHANNEL REQUEST	"Establishment cause": Emergency call.
16	SS -> MS	IMMEDIATE ASSIGNMENT	
17	MS -> SS	CM SERVICE REQUEST	"CM service type": Emergency call establishment. "Mobile identity": type of identity is set to IMEI.
18	SS -> MS	CM SERVICE ACCEPT	
19	MS -> SS	EMERGENCY SETUP	
20	SS -> MS	RELEASE COMPLETE	"Cause" = unassigned number.
21	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
The following messages are sent and shall be received on cell A.			
22	SS		The RF levels are changed to make the MS reselect the cell A.
23	MS		The MS performs cell reselection according to procedure as specified in 3GPP TS 05.08 (this however is not checked until step 29). The MS shall not initiate an RR connection establishment on cell A or on cell B.
24	SS		The SS waits at least 7 minutes for a possible periodic updating.
25	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B.
26	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
27	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.
28	MS		Depending on what has been performed in step 26 the MS is brought back to operation.
29	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
30	SS -> MS	IMMEDIATE ASSIGNMENT	
31	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
32	SS -> MS	AUTHENTICATION REQUEST	"CKSN" = CKSN1.
33	MS -> SS	AUTHENTICATION RESPONSE	
34	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
35	MS -> SS	TMSI REALLOCATION COMPLETE	
36	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.2.3 Authentication accepted with USIM

26.7.2.3.1 Conformance requirement

The mobile station shall be ready to respond upon an AUTHENTICATION REQUEST message at any time whilst a RR connection exists. With exception of the cases described in subclause 4.3.2.5.1, it shall process the challenge information and send back an AUTHENTICATION RESPONSE message to the network.

This IE (AUTN) shall be present if and only if the authentication challenge is a UMTS authentication challenge. The presence or absence of this IE defines- in the case of its absence- a GSM authentication challenge or- in the case of its presence- a UMTS authentication challenge.

For UMTS subscribers, authentication and key agreement will be performed as follows:

- UMTS AKA shall be applied when the user is attached to a GSM BSS, in case the user has R99+ ME capable of UMTS AKA and also the VLR/SGSN is R99+. In this case, the GSM cipher key Kc is derived from the UMTS cipher/integrity keys CK and IK, by the VLR/SGSN on the network side and by the USIM on the user side.

Reference(s)

3GPP TS 24.008 subclause 4.3.2.2, 4.3.2.4, 9.2.2.1, 3GPP TS 33.102 subclause 6.8.1.1

26.7.2.3.2 Test purpose

To check that a Mobile Station with an USIM inserted:

1) correctly responds to an Authentication Request message including an UMTS authentication challenge by sending an Authentication Response message with the RES information field set to the same value as the one produced by the UMTS authentication algorithm in the network (cf TS 31.900 subclause 6.1 – case B or 6.2.2 case B')

2) correctly responds to an Authentication Request message not including an UMTS authentication challenge (i.e. IE AUTN not included) by sending an Authentication Response message with the SRES information field set to the same value as the one produced by the GSM authentication algorithm in the network.

26.7.2.3.3 Method of test

Initial conditions

System Simulator:

1 cell, Rel-99 MSC.

Mobile Station:

Test USIM is plugged into the MS.
The MS has valid TMSI. It is "idle updated" on the cell.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has valid TMSI, CKSN and Kc. It is "idle updated" on the cell.

Test Procedure 1 - UMTS Authentication Challenge

The MS is paged. After the MS has sent a PAGING RESPONSE message to the SS, the SS initiates an authentication procedure (AUTHENTICATION REQUEST with IE AUTN included – i.e. UMTS authentication challenge) and checks the value RES sent by the MS in the AUTHENTICATION RESPONSE message.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	The SS initiates authentication with IE AUTN included for UTMS authentication challenge
6	MS -> SS	AUTHENTICATION RESPONSE	"Auth. Response Parameter" IE shall be bit exact with the value as produced by the authentication algorithm (RES in this case) "Auth. Response Parameter (extension)" IE might be included if the RES value is more than 4 octets long.
7	SS -> MS	CHANNEL RELEASE	

Specific message contents:

AUTHENTICATION REQUEST in step 5:

Same as default content except : AUTHENTICATION REQUEST

Information element	Value/remark
IE AUTN	Calculated as defined for Test USIM

Test Procedure 2 - GSM Authentication Challenge

The MS is paged. After the MS has sent a PAGING RESPONSE message to the SS, the SS initiates an authentication procedure (AUTHENTICATION REQUEST without IE AUTN included – i.e. GSM authentication challenge) and checks the value SRES sent by the MS in the AUTHENTICATION RESPONSE message.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	The SS initiates authentication with IE AUTN not included
6	MS -> SS	AUTHENTICATION RESPONSE	"Auth. Response Parameter" IE shall be bit exact with the value as produced by the authentication algorithm (SRES in this case)
7	SS -> MS	CHANNEL RELEASE	

Specific message contents:

None.

26.7.2.4 Authentication not accepted by MS with USIM (MAC Failure)

26.7.2.4.1 Conformance requirement

In a UMTS authentication challenge, the authentication procedure is extended to allow the MS to check the authenticity of the core network. Thus allowing, for instance, detection of false base station.

Following a UMTS authentication challenge, the MS may reject the core network, on the grounds of an incorrect AUTN parameter (see 3GPP TS 33.102 [5a]). This parameter contains two possible causes for authentication failure:

a) MAC code failure:

If the MS considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid, it shall send an AUTHENTICATION FAILURE message to the network, with the reject cause 'MAC failure'. The MS shall then follow the procedure described in subclause 4.3.2.6 (c).

[…]

If the MS returns an AUTHENTICATION_FAILURE message to the network, the MS shall delete any previously stored RAND and RES and shall stop timer T3218, if running.

[…]

(c) Authentication failure (reject cause "MAC failure" or "GSM authentication unacceptable"):

The MS shall send an AUTHENTICATION FAILURE message, with reject cause "MAC failure" or "GSM authentication unacceptable" according to subclause 4.3.2.5.1, to the network and start timer T3214. Furthermore, the MS shall stop any of the retransmission timers that are running (e.g. T3210, T3220 or T3230). Upon the first receipt of an AUTHENTICATION FAILURE message from the MS with reject cause "MAC failure" or "GSM authentication unacceptable", the network may initiate the identification procedure described in subclause 4.3.3. This is to allow the network to obtain the IMSI from the MS. The network may then check that the TMSI originally used in the authentication challenge corresponded to the correct IMSI. Upon receipt of the IDENTITY REQUEST message from the network, the MS shall send the IDENTITY RESPONSE message.

NOTE: Upon receipt of an AUTHENTICATION FAILURE message from the MS with reject cause "MAC failure" or "GSM authentication unacceptable", the network may also terminate the authentication procedure (see subclause 4.3.2.5).

If the TMSI/IMSI mapping in the network was incorrect, the network should respond by sending a new AUTHENTICATION REQUEST message to the MS. Upon receiving the new AUTHENTICATION REQUEST message from the network, the MS shall stop the timer T3214, if running, and then process the challenge information as normal.

If the network is validated successfully (an AUTHENTICATION REQUEST that contains a valid SQN and MAC is received), the MS shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the MS received the first failed AUTHENTICATION REQUEST message.

Reference(s)

3GPP TS 24.008 subclause 4.3.2.5.1, 4.3.2.6(c)

26.7.2.4.2 Test purpose

To check that a Mobile Station with an USIM inserted:

1) correctly responds to an AUTHENTICATION REQUEST message, with a MAC code failure in the AUTN parameter, by sending an AUTHENTICATION FAILURE message with the reject cause 'MAC failure'.

2) identifies itself upon reception of an IDENTITY REQUEST message, by sending an IDENTITY RESPONSE message including the IMSI to the network.

26.7.2.4.3 Method of test

Initial conditions

System Simulator:

1 cell, Rel-99 MSC.

Mobile Station:

Test USIM is plugged into the MS.
The MS has valid TMSI. It is "idle updated" on the cell.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has valid TMSI, CKSN and Kc. It is "idle updated" on the cell.

Test Procedure

The MS is paged. After the MS has sent a PAGING RESPONSE message to the SS, the SS initiates an authentication procedure (AUTHENTICATION REQUEST with IE AUTN included – i.e. UMTS authentication challenge with a MAC value different from the one expected). The MS then reject the Authentication by sending AUTHENTICATION FAILURE (MAC Failure). Upon receipt of the AUTHENTICATION FAILURE message the SS initiates identification procedure. The MS responds to the SS by sending IDENTITY RESPONSE message. The SS sends AUTHENTICATION REQUEST message with correct AUTN parameter and the procedure is completed by the MS.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	With AUTN parameter (see specific message content)
6	MS -> SS	AUTHENTICATION FAILURE	With reject cause "MAC failure"
7	SS -> MS	IDENTITY REQUEST	With identity type IMSI
8	MS -> SS	IDENTITY RESPONSE	With IMSI in Mobile Identity IE
9	SS -> MS	AUTHENTICATION REQUEST	With the AUTN parameter and RAND different from step 5 (see specific message content)
10	MS -> SS	AUTHENTICATION RESPONSE	"Auth. Response Parameter" IE shall be bit exact with the value as produced by the authentication algorithm (RES in this case) "Auth. Response Parameter (extension)" IE might be included if the RES value is more than 4 octets long.
11	SS -> MS	CHANNEL RELEASE	

Specific message contents:

AUTHENTICATION REQUEST in step 5:

Same as default content except:

Information element	Value/remark
IE AUTN	AUTN parameter having a MAC value different from what is calculated according to Test USIM definition.

AUTHENTICATION REQUEST in step 9:

Same as default content except:

Information element	Value/remark
IE AUTN	Calculated as defined for Test USIM

26.7.2.5 Authentication not accepted by MS with USIM (Synch Failure)

26.7.2.5.1 Conformance requirement

In a UMTS authentication challenge, the authentication procedure is extended to allow the MS to check the authenticity of the core network. Thus allowing, for instance, detection of false base station.

Following a UMTS authentication challenge, the MS may reject the core network, on the grounds of an incorrect AUTN parameter (see 3GPP TS 33.102 [5a]). This parameter contains two possible causes for authentication failure:

[…]

b) SQN failure:

If the MS considers the SQN (supplied by the core network in the AUTN parameter) to be out of range, it shall send a AUTHENTICATION FAILURE message to the network, with the reject cause 'Synch failure' and a re-synchronization token AUTS provided by the USIM (see 3GPP TS 33.102 [5a]). The MS shall then follow the procedure described in subclause 4.3.2.6 (d).

[…]

If the MS returns an AUTHENTICATION_FAILURE message to the network, the MS shall delete any previously stored RAND and RES and shall stop timer T3218, if running.

[…]

(d) Authentication failure (reject cause "synch failure"):

The MS shall send an AUTHENTICATION FAILURE message, with reject cause "synch failure", to the network and start the timer T3216. Furthermore, the MS shall stop any of the retransmission timers that are running (e.g. T3210, T3220 or T3230). Upon the first receipt of an AUTHENTICATION FAILURE message from the MS with the reject cause "synch failure", the network shall use the returned AUTS parameter from the authentication failure parameter IE in the AUTHENTICATION FAILURE message, to re-synchronise. The re-synchronisation procedure requires the VLR/MSC to delete all unused authentication vectors for that IMSI and obtain new vectors from the HLR. When re-synchronisation is complete, the network shall initiate the authentication procedure. Upon receipt of the AUTHENTICATION REQUEST message, the MS shall stop the timer T3216, if running.

NOTE: Upon receipt of two consecutive AUTHENTICATION FAILURE messages from the MS with reject cause "synch failure", the network may terminate the authentication procedure by sending an AUTHENTICATION REJECT message.

If the network is validated successfully (a new AUTHENTICATION REQUEST is received which contains a valid SQN and MAC) while T3216 is running, the MS shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the MS received the first failed AUTHENTICATION REQUEST message.

Reference(s)

3GPP TS 24.008 subclause 4.3.2.5.1, 4.3.2.6(d)

26.7.2.5.2 Test purpose

To check that a Mobile Station with an USIM inserted:

1) correctly responds to an AUTHENTICATION REQUEST message, with an SQN failure in the AUTN parameter, by sending an AUTHENTICATION FAILURE message with the reject cause 'Synch failure'.

2) sends the AUTHENTICATION RESPONSE message to the network if a second AUTHENTICATION REQUEST is received which contains a valid SQN (with T3216 expiry).

26.7.2.5.3 Method of test

Initial conditions

System Simulator:

1 cell, Rel-99 MSC .

Mobile Station:

Test USIM is plugged into the MS.
The MS has valid TMSI. It is "idle updated" on the cell.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has valid TMSI, CKSN and Kc. It is "idle updated" on the cell.

Test Procedure

The MS is paged. After the MS has sent a PAGING RESPONSE message to the SS, the SS initiates an authentication procedure by sending a AUTHENTICATION REQUEST with IE AUTN included – i.e. UMTS authentication challenge - having an invalid SQN code (i.e. uses the predefined $AMF_{RESYNCH}$ value to trigger the SQN re-synchronisation procedure, see TS 34.108 clause 8.1.2.2). The MS then reject the Authentication by sending AUTHENTICATION FAILURE (Synch Failure). Upon receipt of the AUTHENTICATION FAILURE message the SS sends a second AUTHENTICATION REQUEST message with a valid SQN code and the procedure is completed by the MS.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	IE AUTN included (see specific message content)
6	MS -> SS	AUTHENTICATION FAILURE	Including the AUTS parameter and with the reject cause set to 'Synch failure'
7	SS -> MS	AUTHENTICATION REQUEST	IE AUTN included (see specific message content)
8	MS -> SS	AUTHENTICATION RESPONSE	"Auth. Response Parameter" IE shall be bit exact with the value as produced by the authentication algorithm (RES in this case) "Auth. Response Parameter (extension)" IE might be included if the RES value is more than 4 octets long.
9	SS -> MS	CHANNEL RELEASE	

Specific message contents:

AUTHENTICATION REQUEST in step 5:

Same as default content except:

Information element	Value/remark
IE AUTN	with the AMF information field set to $AMF_{RESYNCH}$ value to trigger SQN re-synchronisation procedure in Test USIM.

AUTHENTICATION REQUEST in step 7:

Same as default content except:

Information element	Value/remark
IE AUTN	Calculated as defined for Test USIM

26.7.3   Identification

The purpose of this procedure is to check that the MS gives its identity as requested by the network. If this procedure does not work, it will not be possible for the network to rely on the identity claimed by the MS.

26.7.3.1   General Identification

26.7.3.1.1   Conformance requirement

1) When requested by the network the Mobile Station shall send its IMSI.

2) When requested by the network the Mobile Station shall send the TMSI which it was previously allocated.

3) When requested by the network the Mobile Station shall send its IMEI as stored in the Mobile Equipment.

4) When requested by the network the Mobile Station shall send its IMEISV as stored in the Mobile Equipment.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.3.3.

26.7.3.1.2   Test purpose

1) To verify that the MS sends identity information as requested by the system in the following cases: IMSI and TMSI are requested in non-ciphered mode, IMEI is requested in ciphered mode.

2) To verify that the MS sends its IMEI, when requested to do so, in non-ciphered mode.

3) To verify that the MS sends its IMEISV, when requested to do so, in non-ciphered mode.

26.7.3.1.3   Method of test

26.7.3.1.3.1   Identification / test 1

Initial conditions

System Simulator:

1 cell, default values.

Mobile Station:

The MS has a valid TMSI. It is "idle updated" on the cell.

Specific PICS statements:

-

PIXIT statements:

-    IMEI of the MS

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated" on the cell.

Test Procedure

The SS requests identity information from the MS:

-    IMSI in non ciphering mode,

-    allocated TMSI in non ciphering mode,

-    IMEI in ciphering mode.

Maximum duration of test

30 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	IDENTITY REQUEST	"Identity type" IE is IMSI.
6	MS -> SS	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMSI of the MS.
7	SS -> MS	IDENTITY REQUEST	"Identity type" IE is TMSI.
8	MS -> SS	IDENTITY RESPONSE	"Mobile identity" IE specifies the allocated TMSI of the MS.
9	SS -> MS	CIPHERING MODE COMMAND	
10	MS -> SS	CIPHERING MODE COMPLETE	
11	SS -> MS	IDENTITY REQUEST	"Identity type" IE is IMEI.
12	MS -> SS	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEI stored in the Mobile Equipment.
13	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.3.1.3.2 Identification / test 2

Initial conditions

System Simulator:

1 cell, default values.

Mobile Station:

The MS has a valid TMSI. It is in "idle updated".

Specific PICS statements:

-

PIXIT statements:

- IMEI of the MS

- IMEISV of the MS

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test Procedure

The SS requests identity information from the MS:

- IMEI in non ciphering mode;

- IMEISV in non ciphering mode.

Maximum duration of test

30 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establishment Cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	IDENTITY REQUEST	"Identity type" IE is IMEI.
6	MS -> SS	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEI of the MS.
7	SS -> MS	IDENTITY REQUEST	"Identity type" IE is IMEIS.
8	MS -> SS	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEISV of the MS.
9	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.3.2 Handling of IMSI shorter than the maximum length

26.7.3.2.1 Conformance requirement

The MS shall be capable of handling an IMSI that is not of the maximum length.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 10.5.1.4.

26.7.3.2.2 Test purpose

To check that the MS behaves correctly when activated with an IMSI of length less than the maximum length.

In this condition, the MS shall:

- perform location updating;

- answer to paging with IMSI;

- give the correct IMSI when asked by an IDENTITY REQUEST;

- attempt CM connection establishment when requested to;

- attempt call re-establishment when needed;

- attempt IMSI detach when needed;

- erase its TMSI when the IMSI is sent by the network in a LOCATION UPDATING ACCEPT or a TMSI REALLOCATION COMMAND message.

26.7.3.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default values.

IMSI attach/detach bit set to "1".

Mobile Station:

The MS has no valid TMSI.

It is "idle updated".

The IMSI has the value 0010111234.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of MS

The MS has no valid TMSI. It is in "idle, updated".

Test Procedure

The MS is paged with its IMSI. The MS shall answer to paging and include the correct IMSI in the PAGING RESPONSE message. During call establishment, the SS asks for the IMSI of the MS. The MS shall answer by an IDENTITY RESPONSE message including the correct IMSI. During the active phase of the call, the SS stops sending valid SACCH frames. The MS performs call re-establishment. The MS shall include the correct IMSI in the CM RE-ESTABLISHMENT message. a TMSI REALLOCATION COMMAND including a TMSI is sent to the MS. The MS acknowledges this message. The call is release.

The MS is paged with its TMSI. The MS shall answer to paging and includes its TMSI in the PAGING RESPONSE message. During call establishment, the SS sends a TMSI REALLOCATION COMMAND including the IMSI to the MS. The MS shall acknowledge this message. The MS shall erase its TMSI. The call is released.

The MS is switched off or has its power source removed. The MS performs IMSI detach. The MS shall include the correct IMSI in the IMSI DETACH INDICATION message.

The MS is switched on or powered on. The MS performs IMSI attach. The MS shall include the correct IMSI in the LOCATION UPDATING REQUEST message. A TMSI is allocated to the MS.

The LAC of the cell is changed. The MS performs location updating. The SS includes the IMSI in the LOCATION UPDATING ACCEPT message.

A mobile originated CM connection is attempted. The MS shall include the correct IMSI in the CM SERVICE REQUEST message.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	"mobile identity 1" contains IMSI of MS.
2	MS -> SS	CHANNEL REQUEST	Establishment cause: Answer to paging.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	"mobile identity" contains the IMSI of the MS.
5	SS -> MS	IDENTITY REQUEST	"identity type" IE is IMSI.
6	MS -> SS	IDENTITY RESPONSE	"mobile identity" IE contains the IMSI of the MS.
7			The call is established using the sequence of the generic terminating call set-up procedure.
8	SS		The SS stops sending valid SACCH frames.
9	MS -> SS	CHANNEL REQUEST	
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	CM REESTABLISHMENT REQUEST	"mobile identity" IE contains IMSI of the MS.
12	SS -> MS	TMSI REALLOCATION COMMAND	"mobile identity" contains a TMSI.
13	MS -> SS	TMSI REALLOCATION COMPLETE	
14	SS -> MS	CHANNEL RELEASE	After sending this message, the SS waits for the disconnection of the main signalling link.
15	SS -> MS	PAGING REQUEST TYPE 1	"mobile identity 1" contains TMSI of MS.
16	MS -> SS	CHANNEL REQUEST	Establishment cause: Answer to paging.
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	PAGING RESPONSE	"mobile identity" contains the TMSI of the MS.
19	SS -> MS	AUTHENTICATION REQUEST	
20	MS -> SS	AUTHENTICATION RESPONSE	
21	SS -> MS	TMSI REALLOCATION COMMAND	"mobile identity" contains a IMSI of MS.
22	MS -> SS	TMSI REALLOCATION COMPLETE	
23	SS -> MS	CHANNEL RELEASE	
24	MS		If possible (see PICS) the MS is switched off, otherwise the MS has its power source removed.
25	MS -> SS	CHANNEL REQUEST	If the MS was switched off it performs IMSI detach.
26	SS -> MS	IMMEDIATE ASSIGNMENT	
27	MS -> SS	IMSI DETACH INDICATION	"mobile identity" contains IMSI of MS.
28	SS -> MS	CHANNEL RELEASE	
29	MS		The MS is switched on or has power restored.
30	MS -> SS	CHANNEL REQUEST	
31	SS -> MS	IMMEDIATE ASSIGNMENT	
32	MS -> SS	LOCATION UPDATING REQUEST	"mobile identity" contains IMSI of MS.
33	SS -> MS	LOCATION UPDATING ACCEPT	"mobile identity" contains a TMSI.
34	MS -> SS	TMSI REALLOCATION COMPLETE	
35	SS -> MS	CHANNEL RELEASE	
36	SS		The SS changes the LAC of the cell.
37	MS -> SS	CHANNEL REQUEST	Shall be sent within 35s of the LAC being changed.
38	SS -> MS	IMMEDIATE ASSIGNMENT	
39	MS -> SS	LOCATION UPDATING REQUEST	"mobile identity" contains TMSI of the MS.
40	SS -> MS	LOCATION UPDATING ACCEPT	"mobile identity" contains IMSI of the MS.
41	SS -> MS	CHANNEL RELEASE	
42	MS		a mobile originated CM connection is attempted.
43	MS -> SS	CHANNEL REQUEST	
44	SS -> MS	IMMEDIATE ASSIGNMENT	
45	MS -> SS	CM SERVICE REQUEST	"mobile identity" contains IMSI of the MS.
46	SS -> MS	CHANNEL RELEASE	

Specific message contents

None.

26.7.4 Location updating

This procedure is used to register the MS in the network. If it is not performed correctly, no call can be established.

26.7.4.1 Location updating / accepted

26.7.4.1.1 Conformance requirement

1.

    1.1 If the network accepts a location updating from the Mobile Station and reallocates a TMSI in the Location Updating Accept message the Mobile Station shall acknowledge the reception of the new TMSI.

    1.2 The Mobile Station shall answer to paging with this TMSI and include it in a Paging Response message.

2   If the network accepts a location updating from the Mobile Station and the Location Updating Accept message contains neither TMSI nor IMSI, the Mobile Station shall answer to paging when addressed with the last allocated TMSI and include it in the Paging Response message.

3.

    3.1 If the network accepts a location updating from the Mobile Station by use of a Location Updating Accept message containing the IMSI of the Mobile Station, the Mobile Station shall not answer paging with the last allocated TMSI.

    3.2 The Mobile Station shall still answer paging with IMSI.

4. A mobile station that supports:

    only the GSM 450 band (cf. 3GPP TS 05.05); or

    only the GSM 480 band (cf. 3GPP TS 05.05); or

    only the GSM 710 band (cf. 3GPP TS 05.05); or

    only the GSM 750 band (cf. 3GPP TS 05.05); or

    only the T-GSM 810 band (cf. 3GPP TS 05.05); or

    only the GSM 850 band (cf. 3GPP TS 05.05); or

    only the primary GSM band P-GSM 900 (cf. 3GPP TS 05.05); or

    only the DCS 1800 band (cf. 3GPP TS 05.05).

may ignore SYSTEM INFORMATION TYPE 2ter messages ; if it does so it shall assume that the SYSTEM INFORMATION TYPE 2 carries the complete BA, for selection of the cell , where it performs the location updating procedure.

This SYSTEM INFORMATION TYPE 2ter message may be sent by the network with either a L2 pseudo length of 18 or some other value.

See 3GPP TS 04.08 / 3GPP TS 44.018, subclauses 9.1.34 and 3.2.2.1.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.6.

26.7.4.1.2 Test purpose

1) To test the behaviour of the MS if the network accepts the location updating of the MS.

For the network response three different cases are identified:

    1.1)   TMSI is allocated;

    1.2)   Location updating accept contains neither TMSI nor IMSI;

1.3)   Location updating accept contains IMSI.

2) To verify that the MS , that supports only the GSM 450 band or only the GSM 480 band or only the GSM 710 or only the GSM 750 or only the T-GSM 810 band or only the GSM 850 band or only the primary GSM900 band or only the DCS1800 band is not disturbed by SYSTEM INFORMATION 2ter messages , with different values of L2pseudolength.

26.7.4.1.3   Method of test

26.7.4.1.3.1   Location Updating/accepted/test1

Initial conditions:

System Simulator:

Two cells, A and B, belonging to different location areas with location area identification a and b of the same PLMN.

IMSI attach/detach is allowed in both cells.

The T3212 time-out value is 1/10 hour in both cells.

Mobile Station:

The MS has a valid TMSI (=TMSI1) and CKSN (=CKSN1). It is "idle updated" on cell A.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has no valid TMSI. It has valid CKSN and Kc. It is "idle, updated" on cell B.

Test Procedure

The MS is made to select cell B. A normal location updating with TMSI reallocation is performed in cell B. The channel is released. The SS checks, by paging, that the MS has stored the newly allocated TMSI. The channel is released. The MS is made to select cell A. A normal location updating is performed in cell A. The LOCATION UPDATING ACCEPT message contains neither IMSI nor TMSI. The SS checks, by paging, that the MS has kept the old TMSI. The channel is released. The MS is made to select cell B. A normal location updating is performed in cell B. The LOCATION UPDATING ACCEPT message contains an IMSI. The SS checks, by paging, that the MS has deleted its TMSI and responds to paging with IMSI.

Maximum duration of test

4 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The RF level of cell A is lowered until the MS selects cell B.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the PICS and "mobile identity" = TMSI1.
5	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI (=TMSI2), LAI = b.
6	MS -> SS	TMSI REALLOCATION COMPLETE	
7	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.
8	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the new TMSI (= TMSI2).
9	MS -> SS	CHANNEL REQUEST	
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	PAGING RESPONSE	"Mobile identity" IE contains the new TMSI (= TMSI2).
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
13	SS		The RF level of cell B is lowered until the MS selects cell A.
14	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating
15	SS -> MS	IMMEDIATE ASSIGNMENT	
16	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = b, "mobile station classmark 1" as given by the PICS and "mobile identity" = TMSI2.
17	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" IE not included.
18	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.
19	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the TMSI (= TMSI2).
20	MS -> SS	CHANNEL REQUEST	
21	SS -> MS	IMMEDIATE ASSIGNMENT	
22	MS -> SS	PAGING RESPONSE	"Mobile identity" IE contains the TMSI (=TMSI2).
23	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
24	SS		The RF level of cell A is lowered until the MS selects cell B.
25	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
26	SS -> MS	IMMEDIATE ASSIGNMENT	
27	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the PICS and "mobile identity" = TMSI2.
28	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" IE contains IMSI.
29	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.
30	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the old TMSI (= TMSI2).
31	MS		The MS shall ignore this message. This is checked during 5 s.
32	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the IMSI.
33	MS -> SS	CHANNEL REQUEST	
34	SS -> MS	IMMEDIATE ASSIGNMENT	
35	MS -> SS	PAGING RESPONSE	"Mobile identity" IE contains the IMSI.
36	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.4.1.3.2 Location Updating/accepted/test2

Initial conditions:

System Simulator:

Two cells, A and B, belonging to different location areas with location area identification a and b of the same PLMN.

System information2ter is broadcasted on the two cells (Cell A with L2pseudolength=18, Cell B with L2pseudolength=0).

IMSI attach/detach is allowed in both cells.

The T3212 time-out value is 1/10 hour in both cells.

Mobile Station:

The MS has a valid TMSI (=TMSI1) and CKSN (=CKSN1). It is "idle updated" on cell A.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has no valid TMSI. It has valid CKSN and Kc. It is "idle, updated" on cell B.

Test Procedure

The MS is made to select cell B. A normal location updating with TMSI reallocation is performed in cell B. The channel is released. The SS checks, by paging, that the MS has stored the newly allocated TMSI. The channel is released. The MS is made to select cell A. A normal location updating is performed in cell A. The LOCATION UPDATING ACCEPT message contains neither IMSI nor TMSI. The SS checks, by paging, that the MS has kept the old TMSI. The channel is released. The MS is made to select cell B. A normal location updating is performed in cell B. The LOCATION UPDATING ACCEPT message contains an IMSI. The SS checks, by paging, that the MS has deleted its TMSI and responds to paging with IMSI.

Maximum duration of test

4 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The RF level of cell A is lowered until the MS selects cell B.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the PICS and "mobile identity" = TMSI1.
5	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI (=TMSI2), LAI = b.
6	MS -> SS	TMSI REALLOCATION COMPLETE	
7	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.
8	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the new TMSI (= TMSI2).
9	MS -> SS	CHANNEL REQUEST	
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	PAGING RESPONSE	"Mobile identity" IE contains the new TMSI (= TMSI2).
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
13	SS		The RF level of cell B is lowered until the MS selects cell A.
14	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating
15	SS -> MS	IMMEDIATE ASSIGNMENT	
16	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = b, "mobile station classmark 1" as given by the PICS and "mobile identity" = TMSI2.
17	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" IE not included.
18	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.
19	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the TMSI (= TMSI2).
20	MS -> SS	CHANNEL REQUEST	
21	SS -> MS	IMMEDIATE ASSIGNMENT	
22	MS -> SS	PAGING RESPONSE	"Mobile identity" IE contains the TMSI (=TMSI2).
23	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
24	SS		The RF level of cell A is lowered until the MS selects cell B.
25	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
26	SS -> MS	IMMEDIATE ASSIGNMENT	
27	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the PICS and "mobile identity" = TMSI2.
28	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" IE contains IMSI.
29	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.
30	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the old TMSI (= TMSI2).
31	MS		The MS shall ignore this message. This is checked during 5 s.
32	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains the IMSI.
33	MS -> SS	CHANNEL REQUEST	
34	SS -> MS	IMMEDIATE ASSIGNMENT	
35	MS -> SS	PAGING RESPONSE	"Mobile identity" IE contains the IMSI.
36	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

SYSTEM INFORMATION TYPE 2ter Cell A :

Information Element	Value/remark
L2 Pseudolength	18
Neighbour Cells Description 2	0
Multiband reporting	
For Cell A	
- Format notation	Range 512
- BA_IND	0
- BCCH Allocation ARFCN	ARFCN 520, 870 (for GSM 400 and GSM 900 tests), ARFCN 43,85 (For GSM 1800 tests) ARFCN 520, 800 (for GSM 710, GSM 750, T-GSM 810 and GSM 850 tests)
SI 2ter rest octets	Not used (All bits set to spare)

SYSTEM INFORMATION TYPE 2ter Cell B :

Information Element	Value/remark
L2 Pseudolength	0
Neighbour Cells Description 2	0
Multiband reporting	
For Cell B	
- Format notation	Range 512
- BA_IND	0
- BCCH Allocation ARFCN	ARFCN 590, 810 (for GSM 400 and GSM 900 tests), ARFCN 44,86 (for GSM 1800 tests), ARFCN 590, 780 (for GSM 710, GSM 750, T-GSM 810 and GSM 850 tests)
SI 2ter rest octets	Not used (All bits set to spare)

SYSTEM INFORMATION TYPE 3 Cell A and cell B:

Same as default content in 26.7.0 except :

Information Element	Value/remark
SI3 rest octets SI 2ter Indicator	All bits are set to spare except, System Information 2ter is available

26.7.4.2   Location updating / rejected

26.7.4.2.1   Location updating / rejected / IMSI invalid

26.7.4.2.1.1   Conformance requirement

1) If the network rejects a location updating from the Mobile Station with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the Mobile Station shall:

1.1 not perform normal location updating;

1.2 not perform periodic location updating;

1.3 not respond to paging with IMSI;

1.4 not respond to paging with TMSI;

1.5 reject any request from CM entity for MM connection other than for emergency call;

1.6 not perform IMSI detach if it is switched off or has its power source removed.

2) If the network rejects a location updating from the Mobile Station with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the Mobile Station, if it supports speech, shall accept a request for an emergency call by sending a Channel Request message with the establishment cause set to "emergency call" and include an IMEI as mobile identity in the CM SERVICE REQUEST message.

3) If the network rejects a location updating from the Mobile Station with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the Mobile Station shall delete the stored LAI, CKSN and TMSI.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.7.

26.7.4.2.1.2   Test purpose

To test the behaviour of the MS if the network rejects the location updating of the MS with the cause "IMSI unknown in HLR", "illegal MS" or "Illegal ME".

26.7.4.2.1.3   Method of test

Initial conditions

    System Simulator:

        Two cells: A and B, belonging to different location areas of the same PLMN.

        IMSI attach/detach is allowed in both cells.

        The T3212 time-out value is 1/10 hour in both cells.

    Mobile Station:

        The MS has valid TMSI, CKSN and Kc. It is "idle updated" on cell A.

Specific PICS statements:

-    On/Off switch (TSPC_Feat_OnOff)

-    SIM removable without power down (TSPC_AddInfo_SIMRmv)

-    Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

PIXIT statements:

-

Foreseen final state of the MS

The MS has valid TMSI, CKSN and Kc. It is "idle updated" on cell A.

Test Procedure

The SS rejects a normal location updating with the cause value "IMSI unknown in HLR". The channel is released. The SS checks that the MS has entered the state MM IDLE and the substate NO IMSI, i.e. does not perform normal location updating when a new cell of the same or another PLMN is entered, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if it is switched off or has its power source removed.

The test is repeated with cause value "Illegal MS" and with cause value "Illegal ME".

Maximum duration of test

35 minutes.

Expected sequence

The sequence is executed for execution counter k = 1, 2, 3.

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell B. The RF level of cell A is lowered until the MS selects cell B.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	
5	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "IMSI unknown in HLR" for k = 1, "Illegal MS" for k = 2, "Illegal ME" for k = 3.
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		The following messages are sent and shall be received on cell A. The RF levels are then changed again to make the MS reselect the cell A.
8	MS		The MS performs cell reselection according to procedure as specified in 3GPP TS 05.08 (this however is not checked until step 18). The MS shall not initiate an RR connection establishment on cell A or on cell B.
9	SS		The SS waits at least 7 minutes for a possible periodic updating.
10	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B.
11	SS -> MS	PAGING REQUEST TYPE 1	The MS is paged in cell A. "Mobile identity" IE contains IMSI.
12	MS		The MS shall ignore this message. This is verified during 3 s.
13	SS -> MS	PAGING REQUEST TYPE 1	The MS is paged in cell A. "Mobile identity" IE contains TMSI.
14	MS		The MS shall ignore this message. This is verified during 3 s.
15	MS		A MO CM connection is attempted.
16	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.
17	MS		If the MS supports speech (see PICS), it is made to perform an emergency call.
18	MS -> SS	CHANNEL REQUEST	"Establishment cause": Emergency call. This message is sent in cell A.
19	SS -> MS	IMMEDIATE ASSIGNMENT	
20	MS -> SS	CM SERVICE REQUEST	"CM service type": Emergency call establishment. "Mobile identity": type of identity is set to IMEI.
21	SS -> MS	CM SERVICE ACCEPT	
22	MS -> SS	EMERGENCY SETUP	
23	SS -> MS	RELEASE COMPLETE	"Cause" = unassigned number.
24	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
25	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
26	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.

Step	Direction	Message	Comments
27	MS		Depending on what has been performed in step 25 the MS is brought back to operation.
28	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
29	SS -> MS	IMMEDIATE ASSIGNMENT	
30	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "mobile station classmark 1" as given by the PICS, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
31	SS -> MS	AUTHENTICATION REQUEST	"CKSN" = CKSN1.
32	MS -> SS	AUTHENTICATION RESPONSE	
33	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
32	MS -> SS	TMSI REALLOCATION COMPLETE	
33	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.4.2.2 Location updating / rejected / PLMN not allowed

26.7.4.2.2.1 Conformance requirement

1) If the network reject a location updating from the Mobile Station with the cause "PLMN not allowed" the Mobile Station shall:

   1.1 not perform periodic updating;

   1.2 not perform IMSI detach when switched off;

   1.3 not perform IMSI attach when switched on in the same location area;

   1.4 not perform normal location updating when in the same PLMN and when that PLMN is not selected manually;

   1.5 reject any request from CM entity for MM connection other than for emergency call.

2) If the network rejects a location updating from the Mobile Station with the cause "PLMN not allowed" the Mobile Station shall:

   2.1 perform normal location updating when a new PLMN is entered;

   2.2 accept a request for an emergency call, if it supports speech, by sending a Channel Request message with the establishment cause set to "emergency call".

3) If the network rejects a location updating from the Mobile Station with the cause "PLMN not allowed" and if after that the PLMN from which this rejection was received, is manually selected, the Mobile Station shall perform a normal location updating procedure.4) For emergency call establishment and re-establishment the mobile station shall select the mobile identity type with the following priority:

   4.1 TMSI: The TMSI shall be used if it is available and if the location update status is UPDATED, and the stored LAI is equal to the one received on the BCCH from the current serving cell.

   4.2 IMSI: The IMSI shall be used in cases where no TMSI is available or TMSI is available but either the update status is different from UPDATED, or the stored LAI is different from the one received on the BCCH from the current serving cell.

   4.3 IMEI: The IMEI shall be used in cases where no SIM/USIM is available or the SIM/USIM is considered as not valid by the mobile station or no IMSI or TMSI is available.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.4.4.7, 10.5.1.4.

26.7.4.2.2.2   Test purpose

To test the behaviour of the MS if the network rejects the location updating of the MS with the cause "PLMN not allowed".

26.7.4.2.2.3   Method of test

26.7.4.2.2.3.1   Location updating / rejected / PLMN not allowed / test 1

Initial conditions

  System Simulator:

    One cell: C, belonging to PLMN1.

    Two cells: A and B, belonging to different location areas a and b and belonging to PLMN2. PLMN2 is different from HPLMN and from PLMN1.

    IMSI attach/detach is allowed in cells A and B but not in cell C.

    The T3212 time-out value is 1/10 hour in cells A and B.

  Mobile Station:

    The MS has a valid TMSI. It is "idle updated" on cell C.

    The MS is in manual mode for PLMN selection.

Specific PICS statements:

  - On/Off switch (TSPC_Feat_OnOff)

  - SIM removable without power down (TSPC_AddInfo_SIMRmv)

  - Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

  - automatically enter automatic selection of PLMN mode (TSPC_AddInfo_AutoAutoMode)

PIXIT statements:

  -

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated" on cell C. The MS is in automatic mode for PLMN selection.

Test Procedure

The SS rejects a normal location updating with the cause value "PLMN not allowed". The channel is released. The SS checks that the MS does not perform periodic updating, does not perform IMSI detach, does not perform IMSI attach if activated in the same location area, rejects any request for CM connection establishment other than emergency call, accepts a request for an emergency call and performs normal location updating only when a new PLMN is entered.

Maximum duration of test

12 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The following messages are sent and shall be received on cell B. The MS is switched off (or power is removed).
2	SS		The SS activates cells A and B and deactivates cell C. Cell B has a level higher by at least 5 dB than cell A.
3	MS		The MS is switched on. (or power is reapplied) If necessary the MS is put in manual selection mode. The MS shall offer the new PLMN as available to the user. The PLMN is manually selected.
4	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	LOCATION UPDATING REQUEST	
7	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" = PLMN not allowed.
8	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
9	SS		The SS waits for a possible periodic updating for 7 minutes.
10	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B.
11	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
12	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.
13	MS		Depending on what has been performed in step 11 the MS is brought back to operation. The MS is not made to select PLMN 2.
14	MS		The MS shall not initiate an RR connection establishment. This is checked during 3 s.
15	SS		The following message are sent and shall be received on cell A. The RF level of cell B is lowered to make the MS reselect cell A.
16	MS		No access to the network shall be registered by the SS within one minute.
17	MS		If the MS supports speech (see PICS) it is made to perform an emergency.
18	MS -> SS	CHANNEL REQUEST	"Establishment cause": Emergency call.
19	SS -> MS	IMMEDIATE ASSIGNMENT	
20	MS -> SS	CM SERVICE REQUEST	"CM service type" = Emergency call establishment. "Mobile identity" = IMSI.
21	SS -> MS	CM SERVICE ACCEPT	
22	MS -> SS	EMERGENCY SETUP	
23	SS -> MS	RELEASE COMPLETE	Cause IE: "unassigned number".
24	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
25	MS		A MO CM connection is attempted.
26	MS		The MS shall not initiate an RR connection establishment. This is checked during 3 s.

Step	Direction	Message	Comments
			The following messages are sent and shall be received on cell C.
27	MS		The MS is switched off.
28	SS		The SS activates cell C and deactivates cells A and B.
29	MS		The MS is switched on. If necessary the MS is placed into the automatic mode.
30	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
31	SS -> MS	IMMEDIATE ASSIGNMENT	
32	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.
33	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" = TMSI.
34	MS -> SS	TMSI REALLOCATION COMPLETE	
35	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.4.2.2.3.2 Location updating / rejected / PLMN not allowed / test 2

Initial conditions

System Simulator:

One cell C, belonging to PLMN1.

Two cells A and B, belonging to different location areas a and b and belonging to PLMN2. PLMN2 is different from HPLMN.

IMSI attach/detach is allowed in cells A and B but not in cell C.

The T3212 time-out value is 1/10 hour in cells A and B.

Mobile Station:

The MS has a valid TMSI. It is "idle updated" on cell C.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- SIM removable without power down (TSPC_AddInfo_SIMRmv)

- automatically enter automatic selection of PLMN mode (TSPC_AddInfo_AutoAutoMode)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle, updated" on cell C.

The MS is in automatic mode for PLMN selection.

Test Procedure

The SS rejects a normal location updating with the cause value "PLMN not allowed". The channel is released. Then the PLMN from which this rejection was received is manually selected and the SS checks that a normal location updating is performed.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
			The following messages are sent and shall be received on cell B.
1	MS		The MS is switched off (or power is removed).
2	SS		The SS activates cells A and B and deactivates cell C. Cell B has a level higher by at least 5 dB than cell A.
3	MS		The MS is switched on (or power is reapplied).
3a	MS		If the MS is in manual mode, it shall offer the new PLMN as available to the user. In this case the PLMN is manually selected.
4	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	LOCATION UPDATING REQUEST	
7	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" = PLMN not allowed.
8	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
9	MS		The MS is made to search for PLMNs and the PLMN indicated by the SS is manually selected.
10	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
11	SS -> MS	IMMEDIATE ASSIGNMENT	
12	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.
13	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The following messages are sent and shall be received on cell C.
14	MS		The MS is switched off.
15	SS		The SS activates cell C and deactivates cells A and B.
16	MS		The MS is switched on. If necessary, the MS is put into the automatic mode.
17	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
18	SS -> MS	IMMEDIATE ASSIGNMENT	
19	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.
20	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" = TMSI.
21	MS -> SS	TMSI REALLOCATION COMPLETE	
22	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.4.2.3   Location updating / rejected / location area not allowed

26.7.4.2.3.1   Conformance requirement

1) If the network rejects a location updating from the Mobile Station with the cause "Location Area not allowed" the Mobile Station shall:

   1.1 not perform periodic updating;

   1.2 not respond to paging with TMSI;

   1.3 reject any request from CM entity for MM connection other than for emergency call;

1.4 not perform IMSI detach.

2) If the network rejects a location updating from the Mobile Station with the cause "Location Area not allowed" the Mobile Station shall:

2.1 perform normal location updating when a new location area is entered;

2.2 accept a request for an emergency call, if it supports speech, by sending a Channel Request message with the establishment cause set to "emergency call";

2.3 delete the list of forbidden LAs after switch off (power off).

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.7.

26.7.4.2.3.2   Test purpose

To test the behaviour of the MS if the network rejects the location updating of the MS with the cause "Location Area not allowed".

To test that the MS deletes the list of forbidden LAs after switch off (power off).

26.7.4.2.3.3   Method of test

Initial conditions

    System Simulator:

        Two cells: A and B, belonging to different location areas a and b.

        IMSI attach/detach is allowed in both cells.

        The T3212 time-out value is 1/10 hour in both cells.

    Mobile Station:

        The MS has a valid TMSI. It is "idle updated" on cell A.

Specific PICS statements:

-    On/Off switch (TSPC_Feat_OnOff)

-    Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

PIXIT statements:

-    Method to clear the list of forbidden location areas periodically

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated" on cell A.

Test Procedure

The SS rejects a normal location updating with the cause value "Location Area not allowed". The channel is released. The SS checks that the MS does not perform periodic updating, does not respond to paging with TMSI, rejects any requests from CM entities for MM-connections except emergency calls, does not perform IMSI detach, performs normal location updating when a new location area is entered and deletes the list of forbidden LAs when switched off.

Different types of MS may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Maximum duration of test

12 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell B. The RF level of cell A is lowered so that cell B is selected, while keeping the C1 and C2 of cell A greater than 10.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	
5	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" = "Location Area not allowed".
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The
7	SS		SS waits for a possible location updating for 7 minutes.
8	MS		The MS shall not initiate an RR-connection establishment either on cell A or cell B.
9	SS -> MS	PAGING REQUEST TYPE 1	The MS is paged in cell B. "Mobile identity" = TMSI.
10	MS		The MS shall ignore this message. This is checked during 3 s.
11	MS		A MO CM connection is attempted.
12	MS		The MS shall not initiate an RR connection establishment on cell A or cell B. This is checked during 3 s.
13	MS		If the MS supports speech (see PICS), it is made to perform an emergency call.
14	MS -> SS	CHANNEL REQUEST	"Establishment cause": Emergency call.
15	SS -> MS	IMMEDIATE ASSIGNMENT	
16	MS -> SS	CM SERVICE REQUEST	"CM service type": Emergency call establishment.
17	SS -> MS	CM SERVICE ACCEPT	
18	MS -> SS	EMERGENCY SETUP	
19	SS -> MS	RELEASE COMPLETE	Cause: "unassigned number".
20	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
21	MS		If possible (see PICS) switch off is performed. Otherwise the power is removed.
22	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B (check for IMSI detach) This is checked during 3 s.
23	MS		Depending on what has been performed in step 21 the MS is brought back to operation.
24	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
25	SS -> MS	IMMEDIATE ASSIGNMENT	
26	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI, "mobile identity" = IMSI (This checks the deletion of the forbidden lists)
27	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" = "Location Area not allowed".
28	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The following messages are sent and shall be received on cell A.
29	SS		The RF level of cell B is lowered until the MS selects cell A.
30	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
31	SS -> MS	IMMEDIATE ASSIGNMENT	
32	MS -> SS	LOCATION UPDATING REQUEST	
33	SS -> MS	AUTHENTICATION REQUEST	
34	MS -> SS	AUTHENTICATION RESPONSE	
35	SS -> MS	LOCATION UPDATING ACCEPT	Mobile identity = TMSI.
36	MS -> SS	TMSI REALLOCATION COMPLETE	
37	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.4.2.4 Location updating / rejected / roaming not allowed in this location area

26.7.4.2.4.1 Conformance requirement

1) If the network rejects a location updating from the Mobile Station with the cause "Roaming not allowed in this area" the Mobile Station shall:

   1.1 not perform periodic updating;

   1.2 not respond to paging with TMSI;

   1.3 reject any request from CM entity for MM connection other than for emergency call;

   1.4 not perform IMSI detach.

2) If the network rejects a location updating from the Mobile Station with the cause "Roaming not allowed in this area" the Mobile Station shall:

   2.1 perform normal location updating when a new location area is entered;

   2.2 accept a request for an emergency call, if it supports speech, by sending a Channel Request message with the establishment cause set to "emergency call";

   2.3 periodically search for its HPLMN.

3) The mobile station shall reset the list of "Forbidden location areas for roaming" when it is switched off or has its power source removed or when the SIM is removed.

4) The MS shall be capable of storing at least 6 entries in the list of "Forbidden location areas for roaming".

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.7.

26.7.4.2.4.2 Test purposes

Test purpose 1

To test that on receipt of a rejection using the Roaming cause code, the MS ceases trying to update on that cell, that this situation continues for at least one periodic location interval period, and that the corresponding list is re-set by switching off the MS or removing its power source.

Test purpose 2

To test that if no cell is available, the MS does not answer to paging with TMSI, rejects a request from CM entity other than for emergency calls.

Test purpose 3

To test that at least 6 entries can be held in the list of "forbidden location areas for roaming" (the requirement in 3GPP TS 04.08 / 3GPP TS 24.008 is to store at least 10 entries. This is not fully tested by the third procedure).

Test purpose 4

To test that if a cell of the Home PLMN is available then the MS returns to it in preference to any other available cell.

Test purpose 5

To test that if the SIM is removed the list of "forbidden location areas for roaming" is cleared.

26.7.4.2.4.3 Method of test

Initial conditions

The initial conditions shall be met before each of the different procedures.

System Simulator:

For procedures 1, 2, 3 and 5: Two cells A and B, belonging to different location areas of the same PLMN with LAI a and b. The MCC of that PLMN is the same as that of the HPLMN. The MNC of that PLMN is different from that of the HPLMN.

For procedure 4: three cells A, B, C of the same PLMN which is not the HPLMN with 3 different location area codes. Cells should differ in signal strength by 10 dB with cell A being the strongest and cell C the weakest. There should be a 20 dB range between A and C. A should be set to a level of - 40 dBm.

IMSI attach/detach is allowed in every cell.

The T3212 time-out value is 1/10 hour in every cell.

Mobile Station:

Procedures 1, 2, 3 and 5: The MS has valid TMSI, CKSN and Kc. It is "idle updated" on cell B.

Procedure 4: The MS has valid TMSI, CKSN and Kc. It is "idle updated" on cell A.

The list of "forbidden location areas for roaming" shall be empty (this may be achieved by either removing the SIM or switching the MS OFF then ON or removing the MS power source depending on PICS).

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- automatically enter automatic selection of PLMN mode (TSPC_AddInfo_AutoAutoMode)

- Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

PIXIT statements:

- Method to clear the list of location areas for roaming periodically

Foreseen final state of the MS

Procedures 1 and 5: The MS has no valid TMSI and no CKSN. It is "idle updated" on cell A.

Procedure 2 and 3: The MS has no valid TMSI and no CKSN. It is in the "limited service" state on cell A.

Procedure 4: The MS has no valid TMSI and no CKSN. It is "idle updated" on cell C.

Test Procedures

Procedure 1:

The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". The channel is released. The SS checks that the MS does not perform periodic location updating procedure. The MS is turned off and then on. The SS checks that the MS performs location updating on the cell on which its location update request had been rejected (this checks that the LA is not the forbidden list after switch on). This procedure is performed another time but the deletion of the list is checked while removing the SIM (instead of turning off the MS).

Procedure 2:

The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". The channel is released. The SS checks that the MS does not answer to a paging message with TMSI, rejects a request from CM entity but supports an emergency call.

Procedure 3:

The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". This is done for 6 different location areas. Then the SS checks that the MS does not attempt to begin a location updating procedure on the non-allowed location areas.

Procedure 4:

The SS accepts a periodic location updating on a cell not belonging to the HPLMN. Then when the MS attempts to perform a periodic location updating to this cell, the SS rejects this location updating with the cause value "Roaming not allowed in this area". Two cells are then available, one belonging to the HPLMN but with the weakest level. It is checked that the MS returns to its HPLMN.

Procedure 5: If SIM removal is possible while MS is powered:

The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". The channel is released. The SS checks that the MS does not perform periodic location updating procedure. The SIM is removed and inserted in the MS. The SS checks that the MS performs location updating on the cell on which its location update request had been rejected (this checks that the LA is not the forbidden list after switch on).

Different types of MS may use different methods to periodically clear the list of forbidden areas (e.g. every day at 12am) for roaming. If the list is cleared while the test is being run, it may be necessary to re-run the test.

Maximum duration of test

Procedures 1 and 5: 12 minutes each.

Procedure 2: 6 minutes.

Procedure 3: 17 minutes.

Procedure 4: 16 minutes.

Expected sequence

The following procedure is used during the test:

Change_LAI (x):

- The purpose of this procedure is to change the value of Location Area Identifier of cell x.

- The Location Area Identifier of cell x shall be changed. The code shall be chosen arbitrarily but shall be different from any previously used in this procedure. The code shall have the same MCC as the Home PLMN and shall not have the same MNC as the Home PLMN.

Procedure 1

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. The RF level of cell B is lowered until cell B is no more suitable and the MS selects cell A.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	
5	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		The SS waits at least 7 minutes for a possible location updating.
8	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B.
9	MS		If possible (see PICS) the MS is switched off. Otherwise if possible the power is removed.
10	MS		Depending on what has been performed in step 9 the MS is brought back to operation and placed in a automatic mode.
11	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	LOCATION UPDATING REQUEST	Location Updating Type = normal.
14	SS -> MS	LOCATION UPDATING ACCEPT	IE Mobile Identity not present.
15	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Procedure 2

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. The RF level of cell B is lowered until the MS selects cell A. The level of cell B shall be such that cell B is suitable for cell selection.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message is sent on cell A.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	
5	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	MS -> SS	CHANNEL REQUEST	The following messages are sent and shall be received on cell B. "Establishment cause": Location updating.
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	LOCATION UPDATING REQUEST	
10	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
11	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	SS		The SS waits for a possible location updating procedure on both cells A and B for 2 minutes.
13	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B within 2 minutes after the end of step 11.
14	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" = TMSI. This message is sent on cell A and on cell B.
15	MS		The MS shall not initiate an RR connection on cell A or on cell B. This is checked during 3 s.
16	MS		A MO CM connection is attempted.
17	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.
18	MS		The following messages are sent and shall be received on cell A Steps 20 to 27 are performed if the MS supports speech. An emergency call is attempted.
19	MS -> SS	CHANNEL REQUEST	"Establishment cause":
20	SS -> MS	IMMEDIATE ASSIGNMENT	
21	MS -> SS	CM SERVICE REQUEST	"CM service type": Emergency call establishment.
22	SS -> MS	CM SERVICE ACCEPT	
23	MS -> SS	EMERGENCY SETUP	
24	SS -> MS	RELEASE COMPLETE	"Cause" = unassigned number.
25	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Procedure 3

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A The RF level of cell B is lowered until the MS selects cell A. The level of cell B shall be such that cell B is suitable for cell selection.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	
5	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
9	MS -> SS	CHANNEL REQUEST	The following messages are sent and shall be received on cell B. "Establishment cause": Location updating.
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	LOCATION UPDATING REQUEST	
12	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
13	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
14	SS		Change_LAI (A) within 5 s after step 12.
17	MS -> SS	CHANNEL REQUEST	The following messages are sent and shall be received on cell A. "Establishment cause": Location updating.
18	SS -> MS	IMMEDIATE ASSIGNMENT	
19	MS -> SS	LOCATION UPDATING REQUEST	
20	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
21	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
22	SS		Change_LAI (B) within 5 s after step 20.
25	MS -> SS	CHANNEL REQUEST	The following messages are sent and shall be received on cell B. "Establishment cause": Location updating.
26	SS -> MS	IMMEDIATE ASSIGNMENT	
27	MS -> SS	LOCATION UPDATING REQUEST	
28	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
29	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
30	SS		Change_LAI (A) within 5 s after step 28.
33	MS -> SS	CHANNEL REQUEST	The following messages are sent and shall be received on cell A. "Establishment cause": Location updating.
34	SS -> MS	IMMEDIATE ASSIGNMENT	
35	MS -> SS	LOCATION UPDATING REQUEST	
36	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
37	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
38	SS		Change_LAI (B) within 5 s after step 36.

Step	Direction	Message	Comments
			The following messages are sent and shall be received on cell B.
41	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
42	SS -> MS	IMMEDIATE ASSIGNMENT	
43	MS -> SS	LOCATION UPDATING REQUEST	
44	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
45	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
46	SS		The SS waits for a possible location updating procedure on both cells A and B for 7 minutes.
47	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B within 7 minutes after the end of step 45.

Procedure 4

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. The SS waits for a periodic location updating procedure on cell A for 7 minutes after the initial conditions have been established.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	Location Updating Type = periodic.
5	SS -> MS	LOCATION UPDATING ACCEPT	IE Mobile Identity not present.
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		The location area identity of cell C shall be changed to that of a location area in the Home PLMN.
8	SS		The SS waits for a periodic location updating procedure on cell A for 7 minutes.
9	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message is sent on cell A within 7 minutes after the end of step 6.
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
12	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
13	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
			The following messages are sent and shall be received on cell C.
16	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	LOCATION UPDATING REQUEST	
19	SS -> MS	LOCATION UPDATING ACCEPT	IE Mobile Identity not present.
20	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Procedure 5

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. The RF level of cell B is lowered until cell B is no longer suitable and the MS selects cell A.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	
5	SS -> MS	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		The SS waits at least 7 minutes for a possible location updating.
8	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B.
9	MS		The SIM is removed.
10	MS		The SIM is inserted into the ME.
11	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	LOCATION UPDATING REQUEST	Location Updating Type = normal.
14	SS -> MS	LOCATION UPDATING ACCEPT	IE Mobile Identity not present.
15	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents:

None.

26.7.4.3   Location updating / abnormal cases

26.7.4.3.1   Location updating / abnormal cases / random access fails

26.7.4.3.1.1   Conformance requirement

If during the RR connection establishment phase of a normal location updating procedure, channel requests are not answered by the network, the Mobile Station shall:

1. send (Max-Retrans+1) Channel Request messages;

2. not try to establish a connection during a period of T3213;

3. then perform a normal location updating procedure as it is still necessary;

4. not repeat the complete procedure if the original cause of the location updating procedure has disappeared.

Reference(s):

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.9 and 3GPP TS 05.08 subclause 6.6.2.

26.7.4.3.1.2   Test purpose

To verify that when during the RR connection establishment phase of a location updating procedure, channel requests are not answered by the network, after expiry of T3213 (= 4s in Phase 2) and when the cell reselection procedure is finished the complete procedure is repeated if still necessary.

26.7.4.3.1.3   Method of test

Initial conditions

System Simulator:

Two cells: A and B of the same PLMN, belonging to different location areas with LAI a and b.

The RF power level of cell B is higher than the one of cell A.

IMSI attach/detach is not allowed in both cells.

The T3212 time-out value is set to infinite in both cells.

Mobile Station:

The MS has a valid TMSI, CKSN and Kc. It is "Idle updated" on cell B.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS is "Idle updated" on cell A.

Test Procedure

The SS causes a random access failure in the MS during a normal location updating procedure. After the expiry of T3213 and when the cell reselection procedure is finished the MS will try to restart the normal location updating procedure.

The test is repeated but the original cause of the location updating procedure has disappeared. The SS then checks that the MS will not restart the location updating procedure.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	MS		The following messages are sent and shall be received on cell A. The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2..
2	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating. This message is sent by the MS (Max_Retrans + 1) times.
3	SS		The SS waits for 4 seconds.
4	MS		The MS shall not send any layer 3 message during this time.
5	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating. The time difference between this message and the last CHANNEL REQUEST sent in step 2 shall be in the range 4 s - 9 s.
6	SS -> MS	IMMEDIATE ASSIGNMENT	
7	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 and mobile identity = TMSI.
8	SS -> MS	LOCATION UPDATING ACCEPT	Optional IE Mobile Identity not included
9	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	SS		The RF level of cell B is set to the same value as for cell A.
11	SS		The RF level of cell A is lowered until the MS selects cell B. The RF level of cell A is kept sufficiently high to ensure that cell A is still suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
12	MS -> SS	CHANNEL REQUEST	The following messages are sent and shall be received on cell B. Establishment cause: Location updating. This message is sent by the MS (Max_Retrans + 1) times.
13	SS		Immediately after the end of step 12 the RF level of cell A is set to the same value as for cell B.
14	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 15 s.

Specific message contents:

None.

26.7.4.3.2 Location updating / abnormal cases / attempt counter less or equal to 4, LAI different

26.7.4.3.2.1 Conformance requirement

1) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a normal location updating procedure, if the attempt counter is smaller than 4 and after expiry of T3211, the Mobile Station shall resend its Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal location updating".

2) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a normal location updating procedure the Mobile Station shall:

2.1 not answer to paging with the previously allocated TMSI;

2.2 not perform the IMSI detach procedure, when switched off.

3) When a failure such as case e) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a normal location updating procedure and when an emergency call establishment is requested by the user the Mobile Station, if it supports speech, shall send a CM Service Request message with CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI and after acceptance by the network it shall send an Emergency Setup message.

4) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a normal location updating procedure the Mobile Station shall use a request from CM entity other than emergency call as a trigger for a normal location updating procedure and shall send a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

5) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a normal location updating procedure the Mobile Station shall answer to paging with IMSI and shall send a Paging Response message with CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI.

6) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a normal location updating procedure the Mobile Station shall perform a normal location updating procedure as soon as it enters a new cell.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.4.4.2 and 4.4.4.9 and in 3GPP TS 05.08 subclause 6.6.2.

26.7.4.3.2.2 Test purpose

To verify that the MS performs normal location updating procedures when its attempt counter is smaller than 4.

To check that the MS does not perform the IMSI detach procedure when "idle not updated".

To verify that when "idle not updated" the MS can perform an emergency call.

To verify that when "idle not updated" the MS uses requests from CM layer other than emergency call as triggering of a normal location updating procedure.

To verify that the MS performs a normal location updating procedure if it enters a new cell while being "idle not updated".

26.7.4.3.2.3 Method of test

Initial conditions

System Simulator:

Two cells: A and B of the same PLMN, belonging to different location areas with LAI a and b.

ATT flag shall be set to IMSI attach/detach allowed.

Mobile Station:

The MS is "idle updated" on cell A. A valid CKSN value is stored in the SIM and is noted "initial CKSN". A TMSI is allocated.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- SIM removable without power down (TSPC_AddInfo_SIMRmv)

- Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "Idle updated" on cell A with a valid CKSN and a TMSI.

Test Procedure

The MS is made to perform a normal location updating procedure. Four types of failure cases are triggered:

- sending of a Location Updating Reject with cause #17;

- RR-connection failure (case d);

- sending of a CHANNEL RELEASE message before the normal end of the procedure (case f);

- T3210 time-out (case e).

As there is no stored LAI or the stored LAI is different from the broadcast LAI, and the attempt counter in the MS shall be lower than 4, the MS enters the state MM IDLE and substate ATTEMPTING TO UPDATE and waits for T3211 seconds before trying again a location updating procedure.

Then the behaviour of the MS in the MM IDLE ATTEMPTING TO UPDATE SERVICE state is checked, that is:

- not answer to paging with TMSI;

- not perform an IMSI detach procedure;

- support request for emergency call;

- use requests from CM layer other than emergency call as triggering of a normal location updating procedure;

- perform normal location updating procedure when a new cell is entered.

Maximum duration of test

9 minutes.

Expected sequence

Step	Direction	Message	Comments
The following messages are sent and shall be received on cell B.			
1	MS		The RF level of cell A is lowered until the MS selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
2	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
5	SS -> MS	LOCATION UPDATING REJECT	IE Reject cause is set to a value #17.
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
8	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
11	SS		The SS deactivates the SACCH on the dedicated channel. The SS waits until there are no more SACCH frames in the uplink direction. This release connection is done within 8 SACCH frames.
12	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B within T3211 + RadioLinkTimeout after the SS deactivates the SACCH.
13	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
14	SS -> MS	IMMEDIATE ASSIGNMENT	
15	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
16	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
17	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
18	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
19	SS -> MS	IMMEDIATE ASSIGNMENT	
20	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
21	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
22	MS -> SS	AUTHENTICATION RESPONSE	
23	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
24	MS -> SS	TMSI REALLOCATION COMPLETE	
25	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "idle updated" in cell B.

Step	Direction	Message	Comments
The following messages are sent and shall be received on cell A.			
26	MS		The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
27	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
28	SS -> MS	IMMEDIATE ASSIGNMENT	
29	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
30	SS		performs step 5 with reject cause #100 and step 6.
31	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = old TMSI of the MS. This message is sent continuously to the MS during 8 seconds.
32	SS		The SS checks that there is no answer from the MS during 12 s.
33	SS		If during steps 31 and 32 the MS attempts to perform a location updating procedure the SS will perform step 30 and then continue the procedure.
34	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) mobile switch off is performed. Otherwise the power is removed.
35	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 30 s.
36	MS		Depending on what has been performed in step 34 the MS is brought back to operation.
37	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
38	SS -> MS	IMMEDIATE ASSIGNMENT	
39	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
40	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
41	MS -> SS	AUTHENTICATION RESPONSE	
42	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
43	MS -> SS	TMSI REALLOCATION COMPLETE	
44	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "idle updated" in cell A.
45	MS		The RF level of cell A is lowered until the MS selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
46	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
47	SS -> MS	IMMEDIATE ASSIGNMENT	
48	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
49	SS -> MS	AUTHENTICATION REQUEST	
50	MS->SS	AUTHENTICATION RESPONSE	steps 49 and 50 are performed N times. N shall be chosen in such a way that T3210 expires. Depending on when T3210 expires in the MS, it is possible that on the Nth occurrence of step 50 the MS may send a L2 DISC rather than the AUTHENTICATION RESPONSE message.
51	SS		The SS checks that there is no more activity from the MS on the channel after the DISC/UA exchange has been completed.
52	MS		If the MS supports speech it is made to perform an emergency call.
53	MS -> SS	CHANNEL REQUEST	Establishment cause: Emergency call.
54	SS -> MS	IMMEDIATE ASSIGNMENT	
55	MS -> SS	CM SERVICE REQUEST	CM service type = Emergency call establishment; CKSN = no key available; Mobile Identity = IMSI.
56	SS -> MS	CM SERVICE ACCEPT	
57	MS -> SS	EMERGENCY SETUP	
58	SS -> MS	RELEASE COMPLETE	Cause = unassigned number.

Step	Direction	Message	Comments
59	SS -> MS	CHANNEL RELEASE	
60	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating The SS will wait at most 15 s for this message.
61	SS -> MS	IMMEDIATE ASSIGNMENT	
62	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
63	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
64	MS -> SS	AUTHENTICATION RESPONSE	
65	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
66	MS -> SS	TMSI REALLOCATION COMPLETE	
67	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "idle updated" in cell B.
68	MS		The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
69	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
70	SS -> MS	IMMEDIATE ASSIGNMENT	
71	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
72	SS		performs step 11.
73	MS		A MO CM connection is attempted before T3211 expiry.
74	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
75	SS -> MS	IMMEDIATE ASSIGNMENT	
76	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
77	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
78	MS -> SS	TMSI REALLOCATION COMPLETE	
79	SS -> MS	CHANNEL RELEASE	Steps 80 to 83 are optional as the MS may have memorized the request for CM connection attempt Wait 10 s to decide whether to go directly to step 84.
80	MS -> SS	CHANNEL REQUEST	Establishment cause: Not checked.
81	SS -> MS	IMMEDIATE ASSIGNMENT	
82	MS -> SS	CM SERVICE REQUEST	CKSN = no key available, Mobile identity = TMSI.
83	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "idle updated" in cell A.
84	MS		The RF level of cell A is lowered until the MS selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
85	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
86	SS -> MS	IMMEDIATE ASSIGNMENT	
87	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available LAI = a, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
88	SS		performs step 16.
89	MS		The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
90	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating. The time interval between Cell B being set sufficiently low to ensure that Cell B is not suitable and this message shall be less than 20s.
91	SS -> MS	IMMEDIATE ASSIGNMENT	

Step	Direction	Message	Comments
92	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available , LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
93	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
94	MS -> SS	AUTHENTICATION RESPONSE	
95	SS -> MS	LOCATION UPDATING ACCEPT	Mobile identity = TMSI.
96	MS -> SS	TMSI REALLOCATION COMPLETE	
97	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "Idle, updated" in cell A.

Specific message contents

None.

26.7.4.3.3   Location updating / abnormal cases / attempt counter equal to 4

26.7.4.3.3.1   Conformance requirement

1) When four failures such as cases d) to g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during a normal location updating procedure the Mobile Station shall:

1.1 perform location updating after T3212 expiry by sending a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal updating".

1.2 if the T3212 initiated location updating was unsuccessful, then after T3211 expiry the Mobile Station shall send a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

1.3 MS may optionally enter the MM IDLE sub-state PLMN SEARCH and perform Normal Location Update Procedure.

2) When four failures such as cases d), f), g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during a normal location updating procedure the Mobile Station, if it supports speech, shall be able to perform an emergency call i.e. the Mobile Station is able to send a CM Service Request message with the CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key is available" and Mobile Identity IE set to its IMSI and then send an Emergency Setup message.

3) When four failures such as cases d), f), g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during a normal location updating procedure:

3.1 the Mobile Station shall use a request from CM entity for MM connection for a service other than emergency call as a trigger for a normal location updating procedure and shall send a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

3.2 after a location updating triggered by a request from the CM layer which was .unsuccessful, after T3211 expiry the Mobile Station shall send a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

4) When four failures such as cases d), f), g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during a normal location updating procedure:

4.1 the Mobile Station shall perform a normal location updating procedure if it enters a new cell.

4.2 if this location updating is unsuccessful, after T3211 expiry the Mobile Station shall send a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.9, 4.2.1.2 and 3GPP TS 05.08 subclause 6.6.2.

26.7.4.3.3.2 Test purpose

To verify that the MS performs normal location updating procedures after T3212 expiry, when its attempt counter has reached value 4 and that the MS reset its attempt counter after a timer T3212 expiry.

To verify that the MS still follows the MM IDLE ATTEMPTING TO UPDATE state requirements or optionally follows the MM IDLE sub-state PLMN SEARCH state requirements after its attempt counter has reached value 4.

A Rel-10 or later MS may optionally enter the MM IDLE sub-state PLMN SEARCH (according to subclause 4.2.1.2) in order to perform a PLMN selection. To verify that the attempt counter is reset in the cases where it has to be done.

26.7.4.3.3.3 Method of test

Initial conditions

System Simulator:

Two cells: A and B, belonging to different location areas a and b.

IMSI attach/detach is allowed in both cells.

T3212 is set to 6 minutes.

Mobile Station:

The MS is "Idle updated" on cell B with a valid CKSN and a TMSI.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- SIM removable without power down (TSPC_AddInfo_SIMRmv)

- Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

- at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "Idle updated" on cell A with a valid CKSN and a TMSI.

Test Procedure

The MS is made to perform a normal location updating. The SS triggers a failure in this procedure. After T3211 expiry the MS will try again the location updating procedure. The SS triggers again a failure. This is done again 2 times. At this point the attempt counter shall be equal to 4. It is then checked that T3212 has been started and that at its expiry the MS will try a normal location updating procedure. or Optionally MS can perform location update procedure before the T3212 expiry It is verified that the MS has reset its attempt counter after timer T3212 expiry.

Then it is checked that, when the attempt counter has reached the value of 4, the MS is in the MM IDLE state and ATTEMPTING TO UPDATE substate, that is:

- not perform an IMSI detach procedure;

- support request for emergency call; this verification is done only for MS supporting Speech for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

- use requests from CM layer other than emergency call (for MS supporting at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc)) as triggering of a normal location updating procedure;

- perform normal location updating procedure when a new cell is entered.

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The following messages are sent and shall be received on cell A. The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
2	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
5	SS -> MS	LOCATION UPDATING REJECT	IE Reject cause is set to #17.
6	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
7	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B within T3211.
8	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
11	SS		The SS deactivates the SACCH on the dedicated channel and waits until there are no more SACCH frames in the uplink. This is done within 8 SACCH frames.
12	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B with T3211 + RadioLinkTimeout after the SS deactivates the SACCH.
13	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
14	SS -> MS	IMMEDIATE ASSIGNMENT	
15	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
16	SS -> MS	AUTHENTICATION REQUEST	
17	MS -> SS	AUTHENTICATION RESPONSE	these steps (16 and 17) are performed N times. N shall be chosen in such a way that T3210 expires. Depending on when T3210 expires in the MS, it is possible that on the Nth occurrence of step 50 the MS may send a L2 DISC rather than the AUTHENTICATION RESPONSE message.
18	MS		The MS shall cease transmission (after the DISC/UA exchange has been completed) and then shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the expiry of T3210.
19	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
20	SS -> MS	IMMEDIATE ASSIGNMENT	
21	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
22	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
23	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3212 (tolerance -15s; 45s) at least after the channel release. Or optionally the MS may perform a RR connection establishment before T3212 expiry if MS enters MM IDLE sub-state PLMN SEARCH.
24	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
25	SS -> MS	IMMEDIATE ASSIGNMENT	

Step	Direction	Message	Comments
26	MS -> SS	LOCATION UPDATING REQUEST	location updating type: "normal location update" CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
27	SS -> MS	LOCATION UPDATING REJECT	IE Reject cause = #17 "network failure".
28	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
29	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
30	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
31	SS -> MS	IMMEDIATE ASSIGNMENT	
32	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
33	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
34	MS -> SS	AUTHENTICATION RESPONSE	
35	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
36	MS -> SS	TMSI REALLOCATION COMPLETE	
37	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "idle, updated" in cell A.
38	MS		The RF level of cell A is lowered until the MS selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
39	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
40	SS -> MS	IMMEDIATE ASSIGNMENT	
41	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
42	SS -> MS	LOCATION UPDATING REJECT	IE Reject cause is set to #42.
43	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
44	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
45	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
46	SS -> MS	IMMEDIATE ASSIGNMENT	
47	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
48	SS		The SS deactivates the SACCH on the dedicated channel and waits until there is no more SACCH frames in the uplink. This is done within 8 SACCH frames.
48a	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B within T3211 + RadioLinkTimeOut after the SS deactivates the SACCH.
49	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
50	SS -> MS	IMMEDIATE ASSIGNMENT	
51	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
52	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
53	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
54	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
55	SS -> MS	IMMEDIATE ASSIGNMENT	

Step	Direction	Message	Comments
56	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
57	SS		performs step 42 with cause #38 and step 43.
58	MS		If the MS supports speech, it is made to perform an emergency call.
59	MS -> SS	CHANNEL REQUEST	Establishment cause: Emergency call.
60	SS -> MS	IMMEDIATE ASSIGNMENT	
61	MS -> SS	CM SERVICE REQUEST	CM service type = Emergency call establishment; CKSN = no key available; Mobile Identity = IMSI.
62	SS -> MS	CM SERVICE ACCEPT	
63	MS -> SS	EMERGENCY SETUP	
64	SS -> MS	RELEASE COMPLETE	Cause = unassigned number.
65	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
66	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
67	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.
68	MS		Depending on what has been performed in step 66 the MS is brought back to operation.
69	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
70	SS -> MS	IMMEDIATE ASSIGNMENT	
71	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
72	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
73	MS -> SS	AUTHENTICATION RESPONSE	
74	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
75	MS -> SS	TMSI REALLOCATION COMPLETE	
76	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "idle, updated" in cell B.
77	MS		The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
78	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
79	SS -> MS	IMMEDIATE ASSIGNMENT	
80	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
81	SS -> MS	LOCATION UPDATING REJECT	IE Reject cause is set to #38.
82	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
83	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
84	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
85	SS -> MS	IMMEDIATE ASSIGNMENT	
86	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
87	SS		The SS deactivates the SACCH on the dedicated channel and waits until there is no more SACCH frames in the uplink. This is done within 8 SACCH frames.
88	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B within T3211 + RadioLinkTimeout seconds after the SS deactivates the SACCH.
89	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
90	SS -> MS	IMMEDIATE ASSIGNMENT	

Step	Direction	Message	Comments
91	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
92	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
93	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
94	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
95	SS -> MS	IMMEDIATE ASSIGNMENT	
96	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
97	SS		performs step 48.
98	MS		For an MS that supports at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a MO CM connection is attempted. An MS that does not support at least one MO circuit switched basic service performs steps 66-68.
99	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
100	SS -> MS	IMMEDIATE ASSIGNMENT	
101	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
102	SS		performs step 52.
103	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
104	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
105	SS -> MS	IMMEDIATE ASSIGNMENT	
106	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
107	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
108	MS -> SS	AUTHENTICATION RESPONSE	
109	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
110	MS -> SS	TMSI REALLOCATION COMPLETE	
111	SS -> MS	CHANNEL RELEASE	MS is now "idle, updated" in cell A The MS may or may not have memorized the request for CM connection. The steps 112 to 116 are therefore optional for the MS. The SS waits 10 s whether to decide to go directly to step 117.
112	MS -> SS	CHANNEL REQUEST	
113	SS -> MS	IMMEDIATE ASSIGNMENT	
114	MS -> SS	CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI.
115	SS -> MS	CM SERVICE REJECT	cause #17 (network failure).
116	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
117	MS		The RF level of cell A is lowered until the MS selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
118	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
119	SS -> MS	IMMEDIATE ASSIGNMENT	
120	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
121	SS -> MS	LOCATION UPDATING REJECT	IE Reject cause is set to #38.
122	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link

Step	Direction	Message	Comments
123	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
124	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
125	SS -> MS	IMMEDIATE ASSIGNMENT	
126	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
127	SS		The SS stops any RF transmission on the dedicated channel and waits until there is no more SACCH in the uplink.
128	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B within T3211 + RadioLinkTimeOut seconds after the SS stops RF transmission.
129	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
130	SS -> MS	IMMEDIATE ASSIGNMENT	
131	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
132	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
133	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B during T3211 seconds at least after the channel release.
134	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
135	SS -> MS	IMMEDIATE ASSIGNMENT	
136	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
137	SS		performs steps 42 and 43.
138	MS		The RF level of cell B is lowered until the MS selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2.
139	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
140	SS -> MS	IMMEDIATE ASSIGNMENT	
141	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available , LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
142	SS		performs the step 48.
143	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B until T3211 + RadioLinkTimeout after the SS deactivates the SACCH.
144	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
145	SS -> MS	IMMEDIATE ASSIGNMENT	
146	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
147	SS -> MS	AUTHENTICATION REQUEST	CKSN = initial CKSN.
148	MS -> SS	AUTHENTICATION RESPONSE	
149	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
150	MS -> SS	TMSI REALLOCATION COMPLETE	
151	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. MS is now "idle, updated" in cell A.

Specific message contents

None.

26.7.4.3.4 Location updating / abnormal cases / attempt counter less or equal to 4, stored LAI equal to broadcast LAI

26.7.4.3.4.1 Conformance requirement

1) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a periodic location updating procedure (the broadcast LAI is equal to the stored LAI):

   1.1 the Mobile Station shall be able to establish an MM connection i.e. send a Channel Request and then a CM Service Request message, CKSN and LAI set to those which have been allocated to the Mobile Station, Mobile Identity IE set to the TMSI which has been allocated to the Mobile Station;

   1.2 then the Mobile Station shall not attempt a location updating procedure.

2) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during an IMSI attach procedure (the broadcast LAI is equal to the stored LAI):

   2.1 the Mobile Station shall be able to establish an MM connection i.e. send a Channel Request and then a CM Service Request message, CKSN and LAI set to those which have been allocated to the Mobile Station, Mobile Identity IE set to the TMSI which has been allocated to the Mobile Station;

   2.2 then the Mobile Station shall not attempt a location updating procedure.

3) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during a periodic location updating procedure and the attempt counter is smaller than 4 the Mobile Station shall send, after T3211 expiry, a Location Updating Request message with the Mobile Identity IE set to the TMSI which has been allocated to the Mobile Station, CKSN IE and LAI set to those which have been allocated to the Mobile Station and the Location Updating type set to "periodic updating".

   When the Mobile Station's attempt counter reaches the value 4 (four failures such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during a periodic location updating procedure) after T3212 expiry it shall send a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal" or MS may optionally enter the MM IDLE sub-state PLMN SEARCH (according to subclause 4.2.1.2) and perform Normal Location Update Procedure.

4) When the Mobile Station's attempt counter reaches the value 4 (four failures such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during a periodic location updating procedure) it shall use a request for a CM connection other than emergency call as a trigger for a location updating procedure.

5) When a failure such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 has occurred during an IMSI attach procedure and the attempt counter is smaller than 4 the Mobile Station shall send, after T3211 expiry, a Location Updating Request message with the Mobile Identity IE set to the TMSI which has been allocated to the Mobile Station, CKSN IE and LAI set to those which have been allocated to the Mobile Station and the Location Updating type set to "IMSI attach".

   When the Mobile Station's attempt counter reaches the value 4 (four failures such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during an IMSI attach procedure) after T3212 expiry it shall send a Location Updating Request message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal".

6) When the Mobile Station's attempt counter reaches the value 4 (four failures such as cases d), f) and g) of subclause 4.4.4.9 of 3GPP TS 04.08 / 3GPP TS 24.008 have occurred during an IMSI attach procedure) it shall use a request for a CM connection other than emergency call as a trigger for a location updating procedure.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.9., 4.2.1.2.

26.7.4.3.4.2 Test purpose

To verify that in the case when the attempt counter is smaller than 4 and the broadcast LAI is equal to the stored LAI, the MS is in the MM IDLE state and NORMAL SERVICE substate. To verify that timer T3211 is stopped after a MM connection establishment.

To verify that the MS uses the T3211 timer. and that it enters the MM IDLE state and NORMAL SERVICE substate when its attempt counter reaches value 4 even in the case where the stored LAI is equal to the broadcast LAI.

26.7.4.3.4.3 Method of test

Initial conditions

System Simulator:

One cell: B, belonging to location area b.

IMSI attach/detach is allowed.

T3212 is set to 6 minutes.

Mobile Station:

The MS is "Idle updated" on cell B with a valid CKSN and a TMSI.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- SIM removable without power down (TSPC_AddInfo_SIMRmv)

- at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated" on cell B with a valid CKSN and a TMSI.

Test Procedure

A failure during the periodic location updating is triggered: as the broadcast LAI is equal to the stored LAI, the MS is still in the MM IDLE state and NORMAL SERVICE substate and timer T3211 is started. For MS supporting at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a CM connection other than for emergency call is attempted and it is checked that this is possible and that T3211 is stopped. Same test is performed with a failure during an IMSI attach procedure.

Then failures are triggered during the periodic location updating to let the attempt counter to reach the value of 4. The MS shall enter the MM IDLE LIMITED SERVICE state and delete any TMSI, stored LAI, ciphering key sequence number and ciphering key. When the attempt counter reaches the value of 4, timer T3212 shall be started. At timer T3212 expiry a location updating procedure is started or MS can optionally perform location update procedure before the T3212 expiry. For MS supporting at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a request for CM connection other for than emergency call shall trigger a location updating procedure.

Same tests are performed when the failures are triggered during an IMSI attach procedure.

Maximum duration of test

40 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The SS shall wait at most T3212 + 45 s.
2	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
5	SS		performs step 5, of 26.7.4.3.2 with cause #17 and step 6 of 26.7.4.3.2.
6	MS		For an MS that supports at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a MO CM connection is attempted. An MS that does not support at least one MO circuit switched basic service skips the steps 7 to 13.
7	MS -> SS	CHANNEL REQUEST	
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	CM SERVICE REQUEST	CKSN = initial CKSN, Mobile Identity = TMSI.
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	An initial CM message	
12	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
13	SS		The MS shall not initiate an RR connection establishment. This is checked during 2*T3211.
14	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
15	MS -> SS	CHANNEL REQUEST	Steps 15 to 18 are optional.
16	SS -> MS	IMMEDIATE ASSIGNMENT	
17	MS -> SS	IMSI DETACH INDICATION	
18	SS -> MS	CHANNEL RELEASE	
19	MS		Depending on what has been performed in step 14 the MS is brought back to operation.
20	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
21	SS -> MS	IMMEDIATE ASSIGNMENT	
22	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
23	SS		performs step 11 of 26.7.4.3.2.
24	MS		For an MS that supports at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a MO CM connection is attempted. An MS that does not support at least one MO circuit switched basic service skips the steps 25 to 32.
25	MS -> SS	CHANNEL REQUEST	
26	SS -> MS	IMMEDIATE ASSIGNMENT	
27	MS -> SS	CM SERVICE REQUEST	CKSN = initial CKSN, Mobile Identity = TMSI.
28	SS -> MS	CIPHERING MODE COMMAND	
29	MS -> SS	CIPHERING MODE COMPLETE	
30	MS -> SS	An initial CM message	
31	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
32	SS		The MS shall not initiate an RR connection establishment. This is checked during 2*T3211 MS is "idle, updated" in cell B.
32/1	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
32/2	MS -> SS	CHANNEL REQUEST	Steps 32/2 to 32/5 are optional.
32/3	SS -> MS	IMMEDIATE ASSIGNMENT	
32/4	MS -> SS	IMSI DETACH INDICATION	
32/5	SS -> MS	CHANNEL RELEASE	
32/6	MS		Depending on what has been performed in step 32/1, the MS is brought back to operation.
32/7	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.

Step	Direction	Message	Comments
32/8	SS -> MS	IMMEDIATE ASSIGNMENT	
32/9	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
32/10	SS -> MS	LOCATION UPDATING ACCEPT	without mobile identity
32/11	SS -> MS	CHANNEL RELEASE	
33	SS		The SS shall wait at most T3212 + 15 s.
34	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
35	SS -> MS	IMMEDIATE ASSIGNMENT	
36	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
37	SS		performs step 16 of 26.7.4.3.2.
38	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
39	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
40	SS -> MS	IMMEDIATE ASSIGNMENT	
41	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
42	SS		performs step 5 of 26.7.4.3.2 with cause #17 and step 6 of 26.7.4.3.2.
43	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
44	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
45	SS -> MS	IMMEDIATE ASSIGNMENT	
46	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
47	SS		performs step 11 of 26.7.4.3.2.
48	MS		The MS shall not initiate an RR connection establishment within T3211 + RadioLinkTimeout after the SS deactivates the SACCH.
49	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
50	SS -> MS	IMMEDIATE ASSIGNMENT	
51	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
52	SS		performs step 16 of 26.7.4.3.2.
53	MS		The MS shall not initiate an RR connection establishment during T3212 - 15 s at least after the channel release. Or optionally MS may perform RR connection establishment before T3212 expiry if MS enters MM IDLE sub-state PLMN SEARCH.
54	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
55	SS -> MS	IMMEDIATE ASSIGNMENT	
56	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic or normal (see Note 1), CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
57	SS -> MS	AUTHENTICATION REQUEST	
58	MS -> SS	AUTHENTICATION RESPONSE	
59a	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = TMSI.
59b	MS -> SS	TMSI REALLOCATION COMPLETE	
60	SS -> MS	CHANNEL RELEASE	The SS waits for the disconnection of the main signalling link.
61	MS		The MS shall no initiate an RR connection establishment earlier than T3212 - 15 s after the transmission of the CHANNEL RELEASE in step 60.
62	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
63	SS -> MS	IMMEDIATE ASSIGNMENT	
64	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.

Step	Direction	Message	Comments
65	SS		performs step 5 of 26.7.4.3.2 with cause #17 and step 6 of 26.7.4.3.2.
66	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
67	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
68	SS -> MS	IMMEDIATE ASSIGNMENT	
69	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
70	SS		performs step 11 of 26.7.4.3.2.
71	MS		The MS shall not initiate an RR connection establishment within T3211 + RadioLinkTimeout after the SS deactivates the SACCH.
72	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
73	SS -> MS	IMMEDIATE ASSIGNMENT	
74	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
75	SS		performs step 16 of 26.7.4.3.2.
76	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
77	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
78	SS -> MS	IMMEDIATE ASSIGNMENT	
79	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
80	SS		performs step 5 of 26.7.4.3.2 with cause #17 and step 6 of 26.7.4.3.2.
81	MS		For an MS that supports at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a MO CM connection is attempted and the step 81/1-81/6 are skipped.
81/1	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed. Steps 81/2 to 81/5 are optional.
81/2	MS -> SS	CHANNEL REQUEST	
81/3	SS -> MS	IMMEDIATE ASSIGNMENT	
81/4	MS -> SS	IMSI DETACH INDICATION	
81/5	SS -> MS	CHANNEL RELEASE	
81/6	MS		Depending on what has been performed in step 81/1 the MS is brought back to operation.
82	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
83	SS -> MS	IMMEDIATE ASSIGNMENT	
84	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
85	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile identity = TMSI.
86	MS -> SS	TMSI REALLOCATION COMPLETE	
87	SS -> MS	CHANNEL RELEASE	
			Steps 88 to 92 are optional Wait 10 s to decide whether to go directly to step 93.
88	MS -> SS	CHANNEL REQUEST	
89	SS -> MS	IMMEDIATE ASSIGNMENT	
90	MS -> SS	CM SERVICE REQUEST	CKSN = no key available, Mobile identity = TMSI
91	SS -> MS	CM SERVICE REJECT	cause #17 (network failure).
92	SS -> MS	CHANNEL RELEASE	
93	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
			Steps 94 to 97 are optional.
94	MS -> SS	CHANNEL REQUEST	
95	SS -> MS	IMMEDIATE ASSIGNMENT	
96	MS -> SS	IMSI DETACH INDICATION	

Step	Direction	Message	Comments
97	SS -> MS	CHANNEL RELEASE	
98	MS		Depending on what has been performed in step 97 the MS is brought back to operation.
99	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
100	SS -> MS	IMMEDIATE ASSIGNMENT	
101	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
102	SS		performs step 11 of 26.7.4.3.2.
103	MS		The MS shall not initiate an RR connection establishment within T3211 + RadioLinkTimeout after the SS deactivates the SACCH.
104	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
105	SS -> MS	IMMEDIATE ASSIGNMENT	
106	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
107	SS -> MS	CHANNEL RELEASE	After the sending of the message the SS waits for the disconnection of the main signalling link.
108	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
109	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
110	SS -> MS	IMMEDIATE ASSIGNMENT	
111	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
112a	SS -> MS	LOCATION UPDATING REJECT	IE Reject cause is set to a value #17.
112b	MS -> SS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
113	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
114	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
115	SS -> MS	IMMEDIATE ASSIGNMENT	
116	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
117	SS		performs step 11 of 26.7.4.3.2.
118	MS		The MS shall not initiate an RR connection establishment during T3212 - 15 s at least after the channel release. Or optionally MS may perform RR connection establishment before T3212 expiry if MS enters MM IDLE sub-state PLMN SEARCH.
119	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
120	SS -> MS	IMMEDIATE ASSIGNMENT	
121	MS -> SS	LOCATION UPDATING REQUEST	location updating type = periodic or normal or IMSI attach (see Note 2), CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
122	SS -> MS	AUTHENTICATION REQUEST	
123	MS -> SS	AUTHENTICATION RESPONSE	
124	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = TMSI.
125	MS -> SS	TMSI REALLOCATION COMPLETE	
126	SS -> MS	CHANNEL RELEASE	
127	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
128	MS -> SS	CHANNEL REQUEST	Steps 128 to 131 are optional.
129	SS -> MS	IMMEDIATE ASSIGNMENT	
130	MS -> SS	IMSI DETACH INDICATION	
131	SS -> MS	CHANNEL RELEASE	
132	MS		Depending on what has been performed in step 130 the MS is brought back to operation.
133	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
134	SS -> MS	IMMEDIATE ASSIGNMENT	

Step	Direction	Message	Comments
135	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
136	SS		performs step 16 of 26.7.4.3.2.
137	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
138	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
139	SS -> MS	IMMEDIATE ASSIGNMENT	
140	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
141	SS		performs step 5 of 26.7.4.3.2 with cause #17 and step 6 of 26.7.4.3.2.
142	MS		The MS shall not initiate an RR connection establishment during T3211 at least after the channel release.
143	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
144	SS -> MS	IMMEDIATE ASSIGNMENT	
145	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
146	SS		performs step 11 of 26.7.4.3.2.
147	MS		The MS shall not initiate an RR connection establishment within T3211 + RadioLinkTimeout after the SS deactivates the SACCH.
148	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
149	SS -> MS	IMMEDIATE ASSIGNMENT	
150	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the PICS and mobile identity = TMSI.
151	SS		performs step 16 of 26.7.4.3.2.
152	MS		For an MS that supports at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a MO CM connection is attempted and the step 152/1-152/6 are skipped.
152/1	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed. Steps 152/2 to 152/5 are optional.
152/2	MS -> SS	CHANNEL REQUEST	
152/3	SS -> MS	IMMEDIATE ASSIGNMENT	
152/4	MS -> SS	IMSI DETACH INDICATION	
152/5	SS -> MS	CHANNEL RELEASE	
152/6	MS		Depending on what has been performed in step 152/1 the MS is brought back to operation.
153	MS -> SS	CHANNEL REQUEST	Establishment cause: Location updating.
154	SS -> MS	IMMEDIATE ASSIGNMENT	
155	MS -> SS	LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the PICS and mobile identity = IMSI.
156	SS -> MS	AUTHENTICATION REQUEST	
157	MS -> SS	AUTHENTICATION RESPONSE	
158	SS -> MS	LOCATION UPDATING ACCEPT	IE mobile Identity = TMSI.
159	MS -> SS	TMSI REALLOCATION COMPLETE	
160	SS -> MS	CHANNEL RELEASE	
161	MS		Steps 161 to 166 are optional. An MO CM connection is attempted.
162	MS -> SS	CHANNEL REQUEST	
163	SS -> MS	IMMEDIATE ASSIGNMENT	
164	MS -> SS	CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI.
165	SS -> MS	CM SERVICE REJECT	cause #17 (network failure).
166	SS -> MS	CHANNEL RELEASE	

NOTE 1: the MS can include both types of Location updating. As T3212 expires it can be a periodic location updating procedure and as there is no stored LAI it can be a normal one.

NOTE 2: same problem as in note 1. Three types of location updating procedures should be allowed.

Specific message contents

None.

26.7.4.3.5   Location updating / abnormal cases / Network reject with Extended Wait Timer

26.7.4.3.5.1   Conformance requirement

An MS configured for NAS signalling low priority indicates this by including the Device properties IE in the appropriate NAS message and setting the low priority indicator to "MS is configured to NAS signalling low priority" except for the following cases in which the MS shall set the low priority indicator to "MS is not configured for NAS signalling low priority":

- the MS is performing an attach for emergency bearer services;

- the MS has a PDN connection for emergency bearer services established and is performing mobility management procedures, or is establishing a PDN connection for emergency bearer services;

- the MS is accessing the network with access class 11 – 15; or

- the MS is responding to paging.

The network may at any time include an implicit reject indication for the PS domain or the CS domain within an IMMEDIATE ASSIGNMENT message using the *IA Rest Octets* IE (see sub-clause 10.5.2.16) or within an IMMEDIATE ASSIGNMENT REJECT or an IMMEDIATE ASSIGNMENT EXTENDED message using the *Feature Indicator* IE (see sub-clause 10.5.2.76) or within a PAGING REQUEST TYPE 1 message using the *P1 Rest Octets* IE (see sub-clause 10.5.2.23) or within a PAGING REQUEST TYPE 2 message using the *P2 Rest Octets* IE (see sub-clause 10.5.2.24) or within a PAGING REQUEST TYPE 3 message using the *P3 Rest Octets* IE (see sub-clause 10.5.2.25).

The RR entity of a mobile station configured for "low access priority" (see 3GPP TS 23.060), when attempting to establish a CS connection other than in case of an emergency call or when the mobile station is a member of an authorized special access class or sending a paging response shall, while ignoring MS identities included within PAGING REQUEST messages, start listening to the downlink CCCH until successfully decoding one of the RR messages listed in sub-clause 3.3.1.1.1a. If the RR message indicates an implicit reject for the CS domain (see sub-clause 3.3.1.1.1a) the mobile station shall abort the immediate assignment procedure and initiate the Implicit Reject procedure (see sub-clause 3.3.1.1.3.2a).

If the mobile station initiates this procedure due to implicit reject indication received for the CS domain (respectively PS domain) it starts timer T3234 (respectively timer T3236) and returns to idle mode. The mobile station is not allowed to make a mobile originated access attempt for the CS domain (respectively PS domain) in the same cell until T3234 (respectively T3236) expires or is stopped. If the mobile station receives a PAGING REQUEST message while T3234/T3236 is running it shall stop T3234/T3236 and respond to the PAGING REQUEST message.

Reference(s):

TS 24.008 clause 1.8. 3GPP TS 44.018 subclauses 3.3.1.1.1a, 3.3.1.1.2 and 3.3.1.1.3.2a.

26.7.4.3.5.2   Test purpose

1) To verify that the LAP indicator can be set in the MS.

2) To verify that the Delay Tolerant indicator is sent by the MS.

3) To verify that the MS uses the back-off timer if the network reject a request with the implicit reject procedure.

26.7.4.3.5.3   Method of test

Initial conditions

System Simulator:

Two cells: A and B of the same PLMN, belonging to different location areas with LAI a and b.

Mobile Station:

The MS has a valid TMSI. It is "Idle updated" on cell A.

The MS is configured for "low access priority"

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS is "Idle updated" on cell A.

Test Procedure

The SS enables cell B and disables cell A triggering the MS to start the location updating procedure. The MS sends the CHANNEL REQUEST message and the SS responds with the IMMEDIATE ASSIGNMENT message with the Implicit Reject CS bit is set to "1".

The MS abort the location updating procedure and starts timer T3234 with a random value drawn from the following set: {10.0, 10.1, 10.2, …200.0}. The SS checks that the MS does not make any mobile originated access attempt while timer T3234 is active.

When the timer expires the MS the MS sends the CHANNEL REQUEST message to indicate location updating. The SS sends an IMMEDIATE ASSIGNMENT message with the implicit reject flag set to "0". The MS sends the LOCATION UPDATING REQUEST message with the IE "Device properties" set to "MS is configured for NAS signalling low priority".

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	SS		Make cell B available and cell A non available.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating
3	SS -> MS	IMMEDIATE ASSIGNMENT	The Implicit Reject CS bit is set to "1".
4	SS		Make sure that the MS does not make any mobile originated access attempt while timer T3234 (random value drawn from the following set: {10.0, 10.1, 10.2, …200.0} seconds) is active.
5	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating
6	SS -> MS	IMMEDIATE ASSIGNMENT	The Implicit Reject CS bit is set to "0".
7	MS -> SS	LOCATION UPDATING REQUEST	The SS verifies that the IE "Device properties" is set to "MS is configured for NAS signalling low priority"
8	SS -> MS	LOCATION UPDATING ACCEPT	
9	MS -> SS	TMSI REALLOCATION COMPLETE	
10	MS -> SS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link

Specific message contents:

None.

26.7.4.4 Location updating / release / expiry of T3240

26.7.4.4.1 Conformance requirement

The mobile station receiving a LOCATION UPDATING REJECT message shall start T3240: it shall abort the RR connection at the expiry of timer T3240.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.4.4.8 and 11.2.

26.7.4.4.2 Test purpose

To verify that the MS aborts the RR-connection at the expiry of timer T3240.

26.7.4.4.3 Method of test

Initial conditions

  System Simulator:

    Two cells: A and B, belonging to different location areas a and b.

  Mobile Station:

    The MS has a valid TMSI. It is "idle updated" on cell A.

Specific PICS statements:

  -

PIXIT statements:

  -

Foreseen final state of the MS

The MS is "idle updated" on cell B.

Test Procedure

A normal location updating procedure is performed. The RR-connection is not released by the SS within the timer T3240. It is checked that the MS aborts the RR-connection.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	SS		The RF level of cell A is lowered until the MS selects cell B.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS		The SS waits T3240 expiry.
7	MS		The MS shall abort the RR connection (disconnection of layer 2).

Specific message contents

None.

26.7.4.5 Location updating / periodic

26.7.4.5.1 Location updating / periodic spread

26.7.4.5.1.1 Conformance requirement

1) The Mobile Stations shall perform spreading of the time before performing a periodic location updating when the location updating timer value is reduced.

2) The Mobile Station shall reset timer T3212 when the Mobile Station is deactivated, and shall start with a value between zero and the broadcasted value when reactivated in the same cell, IMSI attach being forbidden.

3) When activated the Mobile Station shall start timer T3212 with a value randomly drawn in the allowed range.

NOTE: This conformance requirement is not covered by a test purpose. It is intended to be covered by a manufacturer declaration.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.2.

26.7.4.5.1.2 Test purpose

1) To check that when the location updating timer is reduced, the timer running in the MS is started with a value depending on the current timer value and the new broadcasted T3212 value.

2) To verify that when the MS is reactivated in the same cell (as the one in which it was deactivated), IMSI attach being forbidden, the MS starts the timer T3212 with a value between zero and the broadcasted value.

NOTE: It is not tested that the value is random.

26.7.4.5.1.3 Method of test

Initial conditions

System Simulator:

One cell, T3212 is set to 30 minutes.

IMSI attach is allowed in the cell.

Mobile Station:

The MS is deactivated. The stored MCC, MNC and LAC correspond to the broadcasted values. The stored update status is "updated".

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test procedure

The MS is activated. It performs IMSI attach. 3 minutes after the end of the IMSI attach procedure, the value of T3212 is set to 6 minutes. The MS shall perform periodic location updating 6 minutes after the end of the IMSI attach procedure.

Then, the IMSI attach/detach is forbidden. T3212 is still set to 6 minutes.

The MS is deactivated. The MS is reactivated. It is checked that the MS performs a periodic location updating during the 6 minutes following activation.

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is activated.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"location updating type": IMSI attach.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		3 minutes after step 6 the value of T3212 is set to 6 minutes.
8	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall be sent by the MS between 5minutes 45s and 6minutes 15s after step 6.
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	"location updating type": periodic updating.
11	SS -> MS	LOCATION UPDATING ACCEPT	
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
13	SS		IMSI attach/detach is not allowed.
14	MS		The MS is deactivated.
15	MS		The MS is activated.
16	SS		The SS waits until the periodic location updating.
17	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall arrive during the 7 minutes following the MS activation.
18	SS -> MS	IMMEDIATE ASSIGNMENT	
19	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
20	SS -> MS	LOCATION UPDATING ACCEPT	
21	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.2 Location updating / periodic normal / test 1

26.7.4.5.2.1 Conformance requirement

1 The Mobile Station shall stop and reset the timer T3212 of the periodic location updating procedure when the first MM message is received or ciphering mode setting is completed in the case of MM connection establishment.

2 The Mobile Station shall stop and reset the timer T3212 of the periodic location updating procedure when the Mobile Station has responded to paging and thereafter has received the first correct L3 message that is not an RR message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.2.

26.7.4.5.2.2 Test purpose

To verify that the MS stops and resets the timer T3212 of the periodic location updating procedure when:

- the first MM-message is received in the case of MM-connection establishment, ciphering mode being not set;

- the MS has responded to paging and the first correct L3 message that is not an RR message is received.

NOTE: T3212 is stopped when the MM-idle state is left and restarted when the MM sublayer returns to that state, substate NORMAL SERVICE or ATTEMPTING TO UPDATE. As a consequence, the exact time when T3212 is reset between those two events cannot be tested.

26.7.4.5.2.3   Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

IMSI attach/detach is allowed.

The T3212 time-out value is 2/10 hour.

Mobile Station:

The MS has a valid TMSI. It is "idle updated".

Specific PICS statements:

- at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test procedure

For MS supporting at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) an MS originated MM connection is established and cleared. The channel is released. It is checked that the MS performs a periodic location updating 12 minutes after the release of the channel.

The MS is paged, it sends a CHANNEL REQUEST message and the SS responds with an IMMEDIATE ASSIGNMENT message, a call is established and then cleared. It is checked that the MS performs a periodic location updating 12 minutes after the release of the link.

Maximum duration of test

30 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		For an MS that supports at least one MO circuit switched basic service (TSPC_AddInfo_MOsvc) a MO CM connection is attempted. An MS that does not support at least one MO circuit switched basic service skips the steps 2 to 13.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE REJECT	cause #17 (network failure).
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		The SS waits until the periodic location updating.
8	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall arrive between 11 minutes 45 s and 12 minutes 15 s after the last release of the RR connection by the SS.
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
11	SS -> MS	LOCATION UPDATING ACCEPT	
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
13	SS		The SS waits 1 minute.
14	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" = IMSI.
15	MS -> SS	CHANNEL REQUEST	"Establishment cause": Answer to paging.
16	SS -> MS	IMMEDIATE ASSIGNMENT	
17	MS -> SS	PAGING RESPONSE	
18	SS -> MS	AUTHENTICATION REQUEST	
19	MS -> SS	AUTHENTICATION RESPONSE	
20	SS - MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
21	SS		The SS waits until the periodic location updating.
22	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall arrive between 11 minutes 45 s and 12 minutes 15 s after the last release of the RR connection by the SS.
23	SS -> MS	IMMEDIATE ASSIGNMENT	
24	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
25	SS -> MS	LOCATION UPDATING ACCEPT	
26	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.3 Location updating / periodic normal / test 2

26.7.4.5.3.1 Conformance requirement

When a LOCATION UPDATING ACCEPT or a LOCATION UPDATING REJECT message is received, the timer T3212 is stopped and reset and the Mobile Station shall perform a periodic location updating after T3212 expiry.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.2.

26.7.4.5.3.2 Test purpose

To verify that the MS stops and resets the timer T3212 of the periodic location updating procedure when a LOCATION UPDATING ACCEPT message is received.

NOTE: T3212 is stopped when the MM-idle state is left and restarted when the MM sublayer returns to that state, substate NORMAL SERVICE or ATTEMPTING TO UPDATE. As a consequence, the exact time when T3212 is reset between those two events cannot be tested.

26.7.4.5.3.3 Method of test

Initial conditions

System Simulator:

2 cells, IMSI attach/detach is allowed in both cells.

T3212 is set to 6 minutes.

Mobile Station:

The MS has a valid TMSI. It is "idle updated" on cell A.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- SIM removable without power down (TSPC_AddInfo_SIMRmv)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated" on cell B.

Test procedure

A normal location updating is performed. The channel is released. One minute later, the MS is deactivated, then reactivated in the same cell. It is checked that the MS performs an IMSI attach and a periodic location updating 6 minutes after the IMSI attach.

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell B. The RF level of cell A is lowered until the MS selects cell B.
2	MS -> SS	CHANNEL REQUEST	"establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS ->MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		The SS waits until the periodic location updating.
8	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall arrive between 5 minutes 45s and 6 minutes 15 s after the last release of the RR connection by the SS.
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
11	SS -> MS	LOCATION UPDATING ACCEPT	
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
13	MS		If possible (see PICS) SIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed. steps 14 to 17 may be performed or not depending on the action made in step 13.
14	MS -> SS	CHANNEL REQUEST	
15	SS -> MS	IMMEDIATE ASSIGNMENT	
16	MS -> SS	IMSI DETACH INDICATION	
17	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
18	MS		Depending on what has been performed in step 13 the MS is brought back to operation.
19	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
20	SS -> MS	IMMEDIATE ASSIGNMENT	
21	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = IMSI attach.
22	SS -> MS	LOCATION UPDATING ACCEPT	
23	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
24	SS		The SS waits until the periodic location updating.
25	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall arrive between 5 minutes 45 s and 6 minutes 15s after the last release of the RR connection by the SS.
26	SS -> MS	IMMEDIATE ASSIGNMENT	
27	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
28	SS -> MS	LOCATION UPDATING ACCEPT	
29	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.4 Location updating / periodic HPLMN search

26.7.4.5.4.1 Location updating / periodic HPLMN search / MS waits time T

26.7.4.5.4.1.1 Conformance requirement

When in automatic mode and roaming in the home country, the MS shall make an attempt to access the HPLMN, if the MS is on the VPLMN at time T after since the last attempt.

NOTE: This test is not intended to test every value in the range 6 minutes to 8 hours or the default of 30 minutes, but is intended to check that the mobile is capable of using the value stored on the SIM.

References

3GPP TS 02.11 subclause 3.2.2.5.2.

3GPP TS 03.22 subclause 4.4.3.3.

26.7.4.5.4.1.2 Test purpose

To verify that when a cell of the HPLMN becomes available, following the successful location request on the VPLMN of the home country and after the first search the mobile has failed to find its HPLMN, that the MS shall perform a location update request on the HPLMN after time T. Were T is the HPLMN Search Period stored in the SIM.

26.7.4.5.4.1.3 Method of test

Initial conditions

System Simulator:

Two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.

Mobile Station:

The MS is switched off. The HPLMN Search Period on the SIM shall be set to 6 minutes. The location area information on the SIM is "deleted".

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated" on Cell A.

Test Procedure

Only Cell B shall be broadcasting. The MS shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. Cell A shall be made available after 8 minutes, thus ensuring the MS fails to find the HPLMN during its first attempt. It is verified that the MS performs a location update request on Cell A, within 6 minutes after broadcasting of Cell A.

Maximum duration of test

17 minutes.

Expected sequence

Step	Direction	Message	Contents
1	MS		The following messages shall be sent and received on Cell B. The MS is switched on by either using the Power Switch or by applying power.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link. The SS waits a period of 8 minutes, this allowing the MS to make its first periodic search.
7			Cell A is made available.
8	SS		Within 8 minutes after step 7 the following messages shall be sent and received on Cell A.
9	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": normal.
12	SS -> MS	LOCATION UPDATING ACCEPT	
13	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.4.2   Location updating / periodic HPLMN search / MS in manual mode

26.7.4.5.4.2.1   Conformance requirement

The periodic attempts shall only be performed if in automatic mode when the MS is roaming in its home country.

References

3GPP TS 02.11 subclause 3.2.2.5.2.

3GPP TS 03.22 subclause 4.4.3.3.

26.7.4.5.4.2.2   Test purpose

To verify that no HPLMN Search is performed when the MS is not in automatic mode.

26.7.4.5.4.2.3   Method of test

Initial conditions

System Simulator:

Two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.

Mobile Station:

The MS is switched off. The HPLMN Search Period on the SIM shall be set to 6 minutes. The location area information on the SIM is "deleted".

Specific PICS statements:

-    On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated" on Cell B.

Test Procedure

Only Cell B shall be broadcasting. The MS shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. The MS is forced into manual selection mode. Cell A is made available. It is verified that the MS does not attempt to perform a location update on Cell A.

Maximum duration of test

7 minutes.

Expected sequence

Step	Direction	Message	Contents
1	MS		The following messages shall be sent and received on Cell B. The MS is switched on by either using the Power Switch or by applying power.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
8	MS		The MS is forced into manual selection mode. If the MS triggers a new Location Update Procedure on cell B (within 30s), steps 9 to 15 apply, otherwise steps 14 and 15 only
9(option al)	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating, received on Cell B.
10 (conditi onal)	SS -> MS	IMMEDIATE ASSIGNMENT	
11 conditio nal)	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
12 conditio nal)	SS -> MS	LOCATION UPDATING ACCEPT	
13 conditio nal)	SS -> MS	CHANNEL RELEASE	
14	SS		Cell A is made available.
15	SS		The SS waits a period of 7 minutes. During this time no messages shall be received on Cell A.

Specific message contents

None.

26.7.4.5.4.3 Location updating / periodic HPLMN search / MS waits at least two minutes and at most T minutes

26.7.4.5.4.3.1 Conformance requirement

After switch on, the MS waits at least 2 minutes and at most T minutes before the first HPLMN Search is attempted.

References

3GPP TS 02.11 subclause 3.2.2.5.2.

3GPP TS 03.22 subclause 4.4.3.3.

26.7.4.5.4.3.2 Test purpose

To verify that the MS waits at least 2 minutes and at most T minutes before attempting its first HPLMN Search.

26.7.4.5.4.3.3 Method of test

Initial Conditions

System Simulator:

Two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.

Mobile Station:

The MS is switched off. The HPLMN Search Period on the SIM shall be set to 6 minutes. The location area information on the SIM is "deleted".

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated" on Cell A.

Test Procedure

Only Cell B shall be broadcasting. The MS shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. Cell A is made available. It is verified that the MS attempts to perform a location update on Cell A, after at least 2 minutes and at most T minutes have passed following power on.

Maximum duration of test

8 minutes.

Expected sequence

Step	Direction	Message	Contents
			The following messages shall be sent and received on Cell B.
1	MS		The MS is switched on by either using the Power Switch or by applying power.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
8	SS		Cell A is made available.
9	SS		The SS waits a period of 2 minutes after MS is switched on. During this time no messages shall be received on Cell A. The following messages shall be sent and received on cell A. Within T minutes after step 5 the following messages shall be sent and received on cell A.
10	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall be sent between 2 and 7 minutes after step 1
11	SS -> MS	IMMEDIATE ASSIGNMENT	
12	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": normal.
13	SS -> MS	LOCATION UPDATING ACCEPT	
14	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.4.4 Location updating/periodic search of the higher priority PLMN, when a MS is receiving foreign country's VPLMN/MS is in automatic mode.

26.7.4.5.4.4.1 Conformance requirement

A MS in Automatic Mode shall make periodic attempts to look for a higher priority PLMN of the same country as the currently received PLMN.

References.

3GPP TS 22.011, subclause 3.2.2.5

26.7.4.5.4.4.2 Test purpose

To verify that the MS selects the highest priority network if the HPLMN/higher priority PLMN Search is performed, when a MS is receiving foreign country's VPLMN and MS is in automatic mode.

26.7.4.5.4.4.3 Method of test

Initial conditions

System Simulator:

Three cells A, B and C, belonging to different location areas with location identification a, b and c. Cell A shall be a cell of the HPLMN, Cell B shall be a cell of the VPLMN with a different Mobile Country Codes that of Cell A and Cell C shall be a cell of a higher priority VPLMN but of the same Mobile Country Code as Cell B. Initially Cell A and Cell C shall not be broadcasting. IMSI attach/detach is not allowed on any cell. The downlink input level setting for cells B and C shall be the same as cell A.

Mobile Station:

The MS is switched off. The HPLMN Search Period on the SIM shall be set to 6 minutes. The location area information on the SIM is "deleted".

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated" on Cell C.

Test Procedure

Only Cell B shall be broadcasting. The MS shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. The MS is in automatic selection mode. Cell A and Cell C are made available. It is verified that the MS does not attempt to perform a location update on Cell A. It is verified that the MS does perform a location update on Cell C.

Maximum duration of test

7 minutes.

Expected sequence

Step	Direction	Message	Contents
			The following messages shall be sent and received on Cell B.
1	MS		The MS is switched on by either using the Power Switch or by applying power.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
7	SS		Cell A is made available.
8	SS		Cell C is made available.
9	SS		The SS waits a period of 7 minutes. During this time no messages shall be received on Cell A but the following messages are received on Cell C.
10	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
11	SS -> MS	IMMEDIATE ASSIGNMENT	
12	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
13	SS -> MS	LOCATION UPDATING ACCEPT	
14	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.4.5   Location updating/periodic PLMN search in foreign country's border areas/MS is in automatic mode.

26.7.4.5.4.5.1   Conformance requirement

A MS in Automatic Mode shall make periodic attempts to look for a higher priority PLMN of the same country as the currently received PLMN. The MS shall not select a lower priority PLMN of the same country as the currently received PLMN.

References

1. 3GPP TS 22.011, subclause 3.2.2.5

26.7.4.5.4.5.2 Test purpose

To verify that the MS remains on the highest priority network when the HPLMN/higher priority PLMN Search is performed, if the MS is receiving a foreign country's VPLMN and is in automatic mode.

26.7.4.5.4.5.3 Method of test

Initial conditions

System Simulator:

Three cells A, B and C, belonging to different location areas with location identification a, b and c. Cell A shall be a cell of the HPLMN, Cell B shall be a cell of the VPLMN with a different Mobile Country Codes that of Cell A and Cell C shall be a cell of a lower priority VPLMN but of the same Mobile Country Code as Cell B. Initially Cell A and Cell C shall not be broadcasting. IMSI attach/detach is not allowed on any cell. The downlink input level setting for cells B and C shall be the same as cell A.

Mobile Station:

The MS is switched off. The HPLMN Search Period on the SIM shall be set to 6 minutes. The location area information on the SIM is "deleted". The PLMN Selector on the SIM shall contain entries for both PLMNs of Cell B and Cell C, where PLMN B is of a higher priority then PLMN C.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated" on Cell B.

Test Procedure

Only Cell B shall be broadcasting. The MS shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. The MS is in automatic selection mode. Cell A and Cell C are made available. It is verified that the MS does not attempt to perform a location update on Cell A or Cell C.

Maximum duration of test

7 minutes.

Expected sequence

Step	Direction	Message	Contents
			The following messages shall be sent and received on Cell B.
1	MS		The MS is switched on by either using the Power Switch or by applying power.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
7	SS		Cell A is made available.
8	SS		Cell C is made available.
9	SS		The SS waits a period of 7 minutes. During this time no messages shall be received on Cell A or C.

Specific message contents

None.

26.7.4.5.4.6 Location updating/periodic search for higher priority PLMN when the list of equivalent PLMNs includes the HPLMN, when a MS is registered in a foreign country's VPLMN/MS is in automatic mode.

26.7.4.5.4.6.1 Conformance requirement

A UE in Automatic Mode shall make periodic attempts to look for a higher priority PLMN of the same country as the currently registered PLMN. For the ranking of PLMNs the UE shall use the order used in subclause 3.2.2.2. In the case that the MS has stored a list of equivalent PLMNs, the UE shall only select a PLMN if it has a higher priority than all the PLMNs, in the list of equivalent PLMNs, which are of the same country as the currently registered PLMN

The Mobile Equipment stores a list of "equivalent PLMNs". This list is replaced or deleted at the end of each location update procedure, routing area update procedure and GPRS attach procedure. The stored list consists of a list of equivalent PLMNs as downloaded by the network plus the PLMN code of the network that downloaded the list. All PLMNs in the stored list are regarded as equivalent to each other for PLMN selection, cell selection/re-selection and handover.

References.

1. 3GPP TS 22.011, subclause 3.2.2.5

2. 3GPP TS 23.122, subclause 4.4.3

26.7.4.5.4.6.2 Test purpose

To verify that, in automatic mode, when registered on a VPLMN of a country different to it's HPLMN, the MS only selects the highest priority network available from upon those of the same country as the serving PLMN. It also verifies that the MS does not take into account PLMNs, including the HPLMN, which are included in the Equivalent PLMN list.

26.7.4.5.4.6.3 Method of test

Initial conditions

System Simulator:

Three cells A, B and C, belonging to different location areas with location identification a, b and c. Cell A shall be a cell of the HPLMN, Cell B shall be a cell of the VPLMN with a different Mobile Country Codes that of Cell A and Cell C shall be a cell of a higher priority VPLMN but of the same Mobile Country Code as Cell B. Initially Cell A and Cell C shall not be broadcasting. The downlink input level setting for cells B and C shall be the same as cell A. The BA list of Cell B does not include Cell A or Cell C.

Mobile Station:

The MS is switched off. The HPLMN Search Period on the SIM shall be set to 6 minutes. The location area information on the SIM is "deleted".

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated" on Cell C.

Test Procedure

Only Cell B shall be broadcasting. The MS shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. During the location update procedure Cell B sends an equivalent PLMN list which includes the HPLMN (Cell A). The MS is in automatic selection mode. The MS receives and store the equivalent PLMN list. The Cell A and Cell C are made available. Cell C is of a higher priority VPLMN but of the same Mobile Country Code as Cell B. It is verified that the MS does not attempt to perform a location update on Cell A. It is verified that the MS does perform a location update on Cell C.

Maximum duration of test

8 minutes.

Expected sequence

Step	Direction	Message	Contents
			The following messages shall be sent and received on Cell B.
1	MS		The MS is switched on by either using the Power Switch or by applying power.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
5	SS -> MS	LOCATION UPDATING ACCEPT	The MS receives and store an equivalent PLMN list.
6	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
7	SS		Cell A is made available.
8	SS		Cell C is made available.
9	SS		The SS waits a period of 7 minutes. During this time no messages shall be received on Cell A but the following messages are received on Cell C.
10	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
11	SS -> MS	IMMEDIATE ASSIGNMENT	
12	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
13	SS -> MS	LOCATION UPDATING ACCEPT	
14	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.4a Location updating / periodic per-device timer

26.7.4.5.4a.1 Conformance requirement

1. In the case that the mobile has a stored "Equivalent PLMNs" list the mobile shall only select a PLMN if it is of a higher priority than those of the same country as the current serving PLMN which are stored in the "Equivalent PLMNs" list.

2. In steps i), ii) and iii) of the Automatic Network Selection Mode Procedure, the MS shall limit its attempts to access higher priority PLMNs to PLMNs of the same country as the current serving VPLMN;

3. If the MS is in idle mode in a VPLMN, the MS shall periodically attempt to obtain service on its HPLMN or higher priority PLMN listed in "user controlled PLMN selector" or "operator controlled PLMN selector". The MS shall make an attempt if the MS is on the VPLMN at time T after the last attempt.

4. If the MS is configured with the MinimumPeriodicSearchTimer, the MS shall not use a value for T that is less than the MinimumPeriodicSearchTimer. If the value stored in the SIM, or the default value for T (when no value is stored in the SIM), is less than the MinimumPeriodicSearchTimer, then T shall be set to the MinimumPeriodicSearchTimer

References

3GPP TS 23.122 subclause 4.4.3.3.

26.7.4.5.4a.2 Test purpose

To verify that if a MS is camped on a VPLMN it will perform a search for higher priority networks (e.g. HPLMN) with a periodicity of T, where T is the largest value of the Search Period stored in the SIM and the Minimum Periodic search timer, if present

This test will confirm that, if a cell from a new PLMN becomes available, within a time T the MS will perform a location updating on it only if the following requirements are met:

- The PLMN of this new cell if from the same country as the VPLMN, and

- This PLMN is the HPLMN stored in the SIM, or has a higher priority than the serving VPLMN or any PLMN from the country of the VPLMN that is stored in the equivalent PLMN list.

26.7.4.5.4a.3 Method of test

Initial conditions

System Simulator:

four cells A, B, C and D, belonging to different location areas with location identification a, b, c and d. Their country codes and mobile network codes are defined as follows:

Cell	Cell No.	MCC	MNC
A	1	001	01
B	2	022	02
C	7	001	10
D	4	001	11
E	3	001	30

initially Cells A, B and C shall not be broadcasting.

Cell E is not activated.

Mobile Station:

The MS is switched off. The HPLMN Search Period on the SIM shall be set to 6 minutes. The location area information on the SIM is "deleted".

The MS is configured with the Minimum Periodic search timer that shall be set to 9 minutes.

The following SIM fields are configured:

SIM field	Priority	PLMN
EF$_{HPLMNwAcT}$	1st	A
EF$_{PLMNwAcT}$	1st	B
	2nd	E
EF$_{OPLMNwAcT}$	1st	C
	2nd	D

In the table, PLMN X is the PLMN code from cell X (see above).

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated" on cell A.

Test procedure

Only Cell D shall be broadcasting. The MS shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell D. The SS shall include the PLMN E in the list of equivalent PLMNs that is sent in the Location Update Accept message. Cells B and C shall be made available after 10 minutes from switched on, thus ensuring the MS fails to find any higher priority PLMN during its first attempt. It is verified that the MS does not perform a location update request on Cell B or C (waiting for at least 10 minutes after broadcasting of Cells B and C).Then Cell A is also made available, and it is verified that the MS performs a location update request on Cell A within 10 minutes after broadcasting of Cell A.

Maximum duration of test

30 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages shall be sent and received on Cell D. Only cell D is made available
2	MS		The MS is switched on by either using the Power Switch or by applying power.
3	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
6	SS -> MS	LOCATION UPDATING ACCEPT	"Equivalent PLMNs": PLMN E
7	SS -> MS	CHANNEL RELEASE	The SS releases the signalling connection.
8	SS		The SS waits a period of 10 minutes after the MS is switched on, allowing the MS to make its first periodic search.
9	SS		Cells B and C are made available
10	SS		The SS shall wait for 10 minutes during which no messages should be received.
11	SS		Cell A is made available. Within 10 minutes after step 7, the following messages shall be sent and received on Cell A. The lower boundary of time T shall not be checked in this test step.
12	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
13	SS -> MS	IMMEDIATE ASSIGNMENT	
14	MS -> SS	LOCATION UPDATING REQUEST	"Location Update Type": normal.
15	SS -> MS	LOCATION UPDATING ACCEPT	
16	MS -> SS	TMSI REALLOCATION COMPLETE	
17	SS -> MS	CHANNEL RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.5.5   Location Updating / Multi-Band PLMN selection between different ITU regions /

The PLMN numbers indicated below are used in test cases to associate a cell with an MCC and MNC for that cell. The MCC used are in the range 310-316 to be considered for National Roaming (cf TS 23.122, s. 4.4.3.3 / Annex B)

**Table 26.7.4.5.5-1: MNC-MCC used in System Information
type 3 messages broadcast on the BCCH**

PLMN	MCC1	MCC2	MCC3	MNC1	MNC2	MNC3	Band
1 (HPLMN)	3	1	1	0	1	1	1900 (NOTE 1)
2	3	1	2	1	1	1	1900 (NOTE 1)
3	3	1	3	2	1	1	850 (NOTE 2)
4	3	1	4	3	1	F	1800 (NOTE 2)
5	3	1	5	4	1	F	900(NOTE 2)
6	3	1	6	5	1	1	1900 (NOTE 1)
7	3	1	0	6	1	1	850 (NOTE 2)

NOTE 1: the main band used is by default the 1900 band. If the MS does NOT support the 1900 band, 850 band is used instead

NOTE 2: the band used is set according to the MS supported bands:

-        the 1900 band is used instead of 850 band if not supported,

- the 900 band is used instead of 1800 band if not supported,

- the 1800 band is used instead of 900 band is not supported.

The SIM used for testing is the standard SIM defined in Annex 4, except for the Following Parameters:

Table 26.7.4.5.5-2: SIM settings

SIM field	Priority	PLMN
EF$_{LOCI}$		PLMN 2 (NOTE 3)
EF$_{HHPLMN}$		1 (6 min)
EF$_{PLMNsel}$ (NOTE 4)	1st	PLMN 5
	2nd	PLMN 4
	3rd	PLMN 3
	4th	PLMN 2

NOTE 3: Unless otherwise stated in the method of test, in all of the tests of this clause, SIM is idle updated in the PLMN 2 at the beginning of each test to achieve EF$_{LOCI}$ as PLMN 2.

NOTE 4: In case additional fields EF$_{PLMNwAcT}$, EF$_{OPLMNwAcT}$ are present on the SIM they shall have same settings as EF$_{PLMNsel}$.

LAC is valid and different from 0000 or FFFE (LAI is not deleted) or 0001.

26.7.4.5.5.1   Higher Priority PLMN / Automatic PLMN Selection Mode / Normal Service

Conformance requirement

At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If the MS is in a VPLMN, the MS shall periodically attempt to obtain service on its HPLMN (if the EHPLMN list is not present or is empty) or one of its EHPLMNs (if the EHPLMN list is present) or a higher priority PLMN/access technology combinations listed in "user controlled PLMN selector" or "operator controlled PLMN selector" by scanning in accordance with the requirements that are applicable to i), ii) and iii) as defined in the Automatic Network Selection Mode in subclause 4.4.3.1.1. In the case that the mobile has a stored "Equivalent PLMNs" list the mobile shall only select a PLMN if it is of a higher priority than those of the same country as the current serving PLMN which are stored in the "Equivalent PLMNs" list. For this purpose, a value T minutes may be stored in the SIM, T is either in the range 6 minutes to 8 hours in 6 minute steps or it indicates that no periodic attempts shall be made. If no value is stored in the SIM, a default value of 60 minutes is used.

The attempts to access the HPLMN or an EHPLMN or higher priority PLMN shall be as specified below:

a) The periodic attempts shall only be performed in automatic mode when the MS is roaming;

b) After switch on a period of at least 2 minutes and at most T minutes shall elapse before the first attempt is made;

References

TS 23.122, clause 4.4.3.1, 4.5.2 and section 4.4.3.3.1

Test purpose

To verify that in Automatic Network Selection Mode Procedure, after Power On:

1   the MS selects the Last Registered PLMN if available,

2   the MS selects the Highest Priority PLMN available (regardless of the ITU region) according to the SIM "PLMN Selector" Data

3   the MS reselects the Highest Priority PLMN available (regardless of the ITU region) according to the SIM "PLMN Selector" Data

Initial conditions

The MS is in automatic PLMN selection mode.

Cell	RF signal level [dBm]
Cell 2 / PLMN 2	-60
Cell 3 / PLMN 3	-50
Cell 4 / PLMN 4	-50
Cell 5 / PLMN 5	-50

NOTE: the Band used are defined in section 26.7.4.5.5.

The SIM parameters and the MNC-MCC used are also defined in section 26.7.4.5.5.

Specific PICS statements:

- Support of GSM 900 Band (TSPC_Type_GSM_E_Band, TSPC_Type_GSM_P_Band)

- Support of GSM 1800 Band (TSPC_Type_DCS_Band)

- Support of GSM 850 Band (TSPC_Type_GSM_850_Band)

- Support of PCS 1900 Band (TSPC_Type_PCS_Band)

PIXIT statements:

Test procedure

a) The SS activates Cell 2, Cell 3 and Cell 4 and monitors the cells for random access requests from the MS.

b) The MS is switched on.

c) The SS waits for the MS registration.

d) The SS waits for the PLMN reselection triggered by the MS

e) Cell 4 is deactivated and Cell 5 activated.

f) The SS waits for the MS registration.

Test Requirements

1. In step c), the MS must select and register on Cell 2 / PLMN 2.

2. In step d), the MS must reselect and register on Cell 4 / PLMN 4 within 2 to 6 min (± 10%) of step b).

3. In step f), the MS must select and register on Cell 5 / PLMN 5.

26.7.4.5.5.2   Higher Priority PLMN / Automatic PLMN Selection Mode / Limited Service

Conformance requirement

If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode.

The behaviour of the MS in the roaming not allowed state is dependent on the LR reject cause as shown in table 2 in clause 5. Additionally:

- in automatic mode, "PLMN not allowed" and "roaming not allowed in this location area" cause the Automatic Network Selection procedure of clause 4.4.3.1.1 to be started;

At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

References

   TS 23.122, clause 3.1, 4.3.3, 4.4.3.1 and section 3.5.

Test purpose

To verify that in Automatic Network Selection Mode Procedure, after Power On:

   1. the MS selects the Last Registered PLMN if available

   2. the MS attempts to obtain service on its HPLMN or a Higher priority PLMN when a its registration on a VPLMN is rejected with "PLMN not allowed".

Initial conditions

The MS is in automatic PLMN selection mode.

Cell	RF signal level [dBm]
Cell 2 / PLMN 2	-60
Cell 3 / PLMN 3	-50
Cell 4 / PLMN 4	-50

   NOTE: the Band used are defined in section 26.7.4.5.5.

The SIM parameters and the MNC-MCC used are also defined in section 26.7.4.5.5.

Specific PICS statements:

   -   Support of GSM 900 Band (TSPC_Type_GSM_E_Band, TSPC_Type_GSM_P_Band)

   -   Support of GSM 1800 Band (TSPC_Type_DCS_Band)

   -   Support of GSM 850 Band (TSPC_Type_GSM_850_Band)

   -   Support of PCS 1900 Band (TSPC_Type_PCS_Band)

PIXIT statements:

Test procedure

   a) The SS activates Cell 2, Cell 3 and Cell 4 and monitors the cells for random access requests from the MS.

   b) The MS is switched on.

   c) The SS waits for the MS registration.

   d) The SS reject the MS registration on Cell 2 / PLMN 2 with the cause #11 "PLMN Not allowed"

   e) The SS waits for the MS registration.

Test Requirements

   1. In step c), the MS must select and try to register on Cell 2 / PLMN 2.

2. In step e), the MS must reselect and register on Cell 4 / PLMN 4. Verified for 2 mins.

26.7.4.5.5.3 Higher Priority PLMN / Automatic PLMN Selection Mode / Recovery from Lack of Service

Conformance requirement

At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

References

TS 23.122, clause 4.4.3.1.

Test purpose

To verify that in Automatic Network Selection Mode Procedure, after Power On:

1. the MS selects the Last Registered PLMN if available,

2. the MS selects the Highest Priority PLMN available (regardless of the ITU region) according to the SIM "PLMN Selector" Data

3. the MS reselects the Highest Priority PLMN available (regardless of the ITU region) according to the SIM "PLMN Selector" Data

Initial conditions

The MS is in automatic PLMN selection mode.

Cell	RF signal level [dBm]
Cell 2 / PLMN 2	-60
Cell 3 / PLMN 3	-50
Cell 4 / PLMN 4	-50

NOTE 1: the Band used are defined in section 26.7.4.5.5.

The SIM parameters and the MNC-MCC used are also defined in section 26.7.4.5.5.

Specific PICS statements:

- Support of GSM 900 Band (TSPC_Type_GSM_E_Band, TSPC_Type_GSM_P_Band)

- Support of GSM 1800 Band (TSPC_Type_DCS_Band)

- Support of GSM 850 Band (TSPC_Type_GSM_850_Band)

- Support of PCS 1900 Band (TSPC_Type_PCS_Band)

PIXIT statements:

Test procedure

a) The SS activates Cell 2 and monitors the cells for random access requests from the MS.

b) The MS is switched on.

c) The SS waits for the MS registration.

d) The SS waits 3 min and deactivates Cell 2.

e) The SS waits 2 more minutes and actives Cell 3 and Cell 4.

f) The SS waits for the MS registration.

Test Requirements

1. In step c), the MS must select and register on Cell 2 / PLMN 2.

2. In step f), the MS must select and register on Cell 4 / PLMN 4 (Note).

NOTE 2: If the MS registers first on Cell 3 / PLMN 3, it must reselect and register on Cell 4 / PLMN 4 within 6 min (+10%) of the registration on PLMN 3.

26.7.4.5.5.4   User Selection / Manual PLMN Selection Mode

Conformance Requirements

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

NOTE 1: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

The MS selects and attempts registration on PLMNs, if available and allowable, in all of its bands of operation in accordance with the following order:

i)   HPLMN;

ii) PLMNs contained in the " User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order) excluding the previously selected PLMN;

iii) PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order) excluding the previously selected PLMN;

iv) other PLMN/access technology combinations with the received high quality signal in random order excluding the previously selected PLMN;

v)   other PLMN/access technology combinations, excluding the previously selected PLMN in order of decreasing signal quality or, alternatively, the previously selected PLMN may be chosen ignoring its signal quality;

vi) The previously selected PLMN.

The previously selected PLMN is the PLMN which the MS has selected prior to the start of the user reselection procedure.

NOTE 2: If the previously selected PLMN is chosen, and registration has not been attempted on any other PLMNs, then the MS is already registered on the PLMN, and so registration is not necessary.

References

TS 23.122, clause 4.4.3.1.2, 4.4.3.2.1

Test purpose

To verify that in Manual Network Selection Mode Procedure:

- the MS registers in the PLMN selected by the user, regardless of the ITU region.

Initial conditions

The MS is in automatic PLMN selection mode.

Cell	RF signal level [dBm]
Cell 2 / PLMN 2	-60
Cell 3 / PLMN 3	-50
Cell 4 / PLMN 4	-50
Cell 5 / PLMN 5	-50

NOTE 3: the Band used are defined in section 26.7.4.5.5.

The SIM parameters and the MNC-MCC used are also defined in section 26.7.4.5.5, except for the Last Registered PLMN being set to PLMN 1 (EF$_{LOCI}$ set to HPLMN) SIM is idle updated in PLMN 1.

Specific PICS statements:

- Support of GSM 900 Band (TSPC_Type_GSM_E_Band, TSPC_Type_GSM_P_Band)

- Support of GSM 1800 Band (TSPC_Type_DCS_Band)

- Support of GSM 850 Band (TSPC_Type_GSM_850_Band)

- Support of PCS 1900 Band (TSPC_Type_PCS_Band)

- Support of automatically enter automatic selection of PLMN mode.(TSPC_AddInfo_AutoAutoMode)

PIXIT statements:

-

Test procedure

a1) If the MS does not support TSPC_AddInfo_AutoAutoMode: The MS is switched On and set in Manual PLMN selection Mode and powered Off (Note 4).

a2) If the MS does support TSPC_AddInfo_AutoAutoMode: The MS is switched On and set in Manual PLMN selection Mode (Note 4).

b) The SS activates Cell 2, Cell 3, Cell 4 and Cell 5.

c) If the MS does not support TSPC_AddInfo_AutoAutoMode: The MS is switched On.

d) PLMN 4 is selected for Manual Reselection

e) The MS is set to Automatic PLMN selection mode

f) The SS waits for the MS registration.

NOTE 4: Depending on MS implementation it might be needed to activate a Cell/PLMN in order to put the MS in Manual selection mode. The Test Simulator MUST handle this case with Cell 1/ PLMN 1 if needed.

Test Requirements

1. In step c), the MS must remain in Limited Service and do not register on any of the available PLMN,

2. In step d), the MS must register on Cell 4 / PLMN 4,

3. In step f), the MS must select and register on Cell 5 / PLMN 5.

26.7.4.5.6 Location updating / periodic per-device timer

26.7.4.5.6.1 Conformance requirement

Periodic updating may be used to notify periodically the availability of the mobile station to the network. Periodic updating is performed by using the location updating procedure. The location updating type information element in the LOCATION UPDATING REQUEST message shall indicate periodic updating.

The procedure is controlled by the timer T3212 in the mobile station. The MS indicates in the MS network feature support IE whether it supports the extended value for timer T3212. If the MS receives the Per MS T3212 IE in the Location Updating Accept message, the MS shall use this IE to determine the value of T3212 instead of the value of T3212 that is broadcast.

References

3GPP TS 24.008 subclause 4.4.2.

26.7.4.5.6.2 Test purpose

To verify that the MS uses the per-device timer value for Periodic Location Area Update broadcast by the network.

26.7.4.5.6.3 Method of test

Initial conditions

System Simulator:

One cell, T3212 is set to 30 minutes.

IMSI attach is allowed in the cell.

Mobile Station:

The MS is deactivated. The stored MCC, MNC and LAC correspond to the broadcasted values. The stored update status is "updated".

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test procedure

The MS is activated. It performs IMSI attach. The MS signals that it supports the extended periodic timer. The SS provides the per device timer, T3212, with a value of 6 minutes. The MS shall perform periodic location updating 6 minutes after the end of the IMSI attach procedure.

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is activated.
2	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"location updating type": IMSI attach. "MS network feature support": 1 (MS supports the extended periodic timer in this domain)
5	SS -> MS	LOCATION UPDATING ACCEPT	"Per MS T3212" : 6 minutes
	MS -> SS	TMSI REALLOCATION COMPLETE	
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall be sent by the MS between 5minutes 45s and 6minutes 15s after step 6.
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	LOCATION UPDATING REQUEST	"location updating type": periodic updating.
10	SS -> MS	LOCATION UPDATING ACCEPT	
11	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.4.6 Location updating / interworking of attach and periodic

26.7.4.6.1 Conformance requirement

1) If the Mobile Station is in service state NO CELL AVAILABLE, LIMITED SERVICE, PLMN SEARCH or PLMN SEARCH-NORMAL SERVICE when the timer expires the location updating procedure is delayed until this service state is left.

2) The T3212 time-out value shall not be changed in the NO CELL AVAILABLE, LIMITED SERVICE, PLMN SEARCH and PLMN SEARCH-NORMAL SERVICE states.

3) If the selected cell is in the location area where the mobile station is registered and IMSI ATTACH is not required and timer T3212 has not expired, then the state is NORMAL SERVICE.

References

1. 3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.2.

2. 3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.2.

3. 3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.2.1.1.

26.7.4.6.2 Test purpose

1) To check that if the PLU timer expires while the MS is out of coverage, the MS informs the network of its return to coverage.

2) To check that the PLU timer is not disturbed by cells of forbidden PLMNs.

3) To check that if the PLU timer does not expire while out of coverage and if the mobile returns to the LA where it is updated, the mobile does not inform the network of its return to coverage.

26.7.4.6.3 Method of test

Initial conditions

System Simulator:

Two cells, a and b, of different PLMNs.

T3212 is set to 12 minutes on cell a.

T3212 is set to 6 minutes on cell b.

IMSI attach is allowed in both cells.

Mobile Station:

The MS is deactivated. The PLMN of cell b is entered in the SIM's forbidden PLMN list.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS is "idle updated". The PLMN of cell b is entered in the SIM's forbidden PLMN list.

Test procedure

The MS is activated and placed in automatic network selection mode. It performs IMSI attach. 1 minute after the end of the IMSI attach procedure, cell a is switched off. The MS shall not location update on cell b. 8 minutes after the end of the IMSI attach procedure, cell a is switched on. The MS shall not location update on cell a before 11,75 minutes after the end of the IMSI attach procedure. The MS shall perform a periodic location update on cell a between 11,75 minutes and 12,25 minutes after the end of the IMSI attach procedure.

3 minutes after the end of the periodic location updating procedure, cell a is switched off. The MS shall not location update on cell b. 14 minutes after the end of the periodic location updating procedure, cell a is switched on and cell b is switched off. The MS shall perform a location update on cell a before 17 minutes after the end of the periodic location updating procedure.

Maximum duration of test

35 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is activated in automatic network selection mode.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"location updating type": IMSI attach.
5	SS -> MS	LOCATION UPDATING ACCEPT	
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	SS		1 minute after step 6, cell a is switched off.
8	SS		8 minutes after step 6, cell a is switched on.
9	MS -> SS	CHANNEL REQUEST	This message shall be sent by the MS between 11 minutes 45s and 12 minutes 15s after step 6.
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	LOCATION UPDATING REQUEST	"location updating type": periodic updating.
12	SS -> MS	LOCATION UPDATING ACCEPT	
13	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
14	SS		3 minutes after step 13, cell a is switched off.
15	SS		14 minutes after step 13, cell a is switched on and cell b is switched off.
16	MS -> SS	CHANNEL REQUEST	This message shall be sent by the MS before 17 minutes after step 13.
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
19	SS -> MS	LOCATION UPDATING ACCEPT	
22	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5   MM connection

26.7.5.1   Introduction

[tbd]

26.7.5.2   MM connection / establishment with cipher and repeated FACCH

26.7.5.2.1   Conformance requirement

The Mobile Station shall be able to correctly set up an MM connection in a Mobile Originating CM connection attempt and send a CM Service Request message with CKSN information element as stored in the SIM and Mobile Identity information element set to the TMSI.

The Mobile Station shall be able to interpret cipher mode setting as acceptance of its CM service request i.e. send a CM message.

    3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.5.1.1;

The MS shall, when receiving a downlink FACCH block, always attempt to decode it without combining with any previously received FACCH block.

If the current FACCH block is successfully decoded and an identical FACCH block was previously received (successfully decoded and spaced in time from the current FACCH block as specified in sub-clause 10.2), the MS shall not send the LAPDm frame of the current FACCH block to the LAPDm entity.

    3GPP TS 44.006 subclause 10.4;

26.7.5.2.2 Test purpose

To verify that the MS can correctly set up an MM connection in an origination and interpret cipher mode setting as acceptance of its CM service request.

To verify that the MS behaves correctly when Repeated FACCH is used by the SS for LAPDm command frames, and additionally where the MS supported repeated FACCH for LAPDm response frames.

26.7.5.2.3 Method of test

Initial conditions

> System Simulator:

> > 1 cell, default parameters.

> Mobile Station:

> > The MS has a valid TMSI. It is "idle updated".

Specific PICS statements:

- at least one half rate service (TSPC_AddInfo_HalfRate)

- Support of Repeated FACCH (TSPC_Repeated_FACCH)

PIXIT statements:

> -

Foreseen final state of the MS

The MS has valid TMSI, CKSN. It is "idle updated".

Test Procedure

A mobile originating CM connection is initiated. After the MS has sent the CM SERVICE REQUEST message to the SS, an authentication procedure and a ciphering mode setting procedure are performed. Then, the MS sends a CM message and the SS clears the call and releases the channel.

For k=2 and k=3, the SS shall activate Repeated FACCH for LAPDm command frames on FACCH.

If the MS supports Repeated FACCH, the SS shall additionally activate Repeated FACCH for LAPDm response frames on FACCH. It is checked by the SS that the MS does not respond to identical FACCH blocks which are repeated.

If the MS does not support Repeated FACCH, the MS may respond to the identical FACCH blocks which are repeated, with a REJ frame.

This test is repeated for:

> k=1;

> k=2;

> k=3 where the MS supports at least one half rate service.

Maximum duration of test

3 minute.

Expected sequence

Step	Direction	Message	Comments
If the MS supports Repeated FACCH (TSPC_Repeated_FACCH), the SS shall check that the MS does not respond to identical FACCH blocks which are repeated.
If the MS does not support Repeated FACCH (TSPC_Repeated_FACCH), the MS may respond to the identical FACCH blocks which are repeated, with a REJ frame.
1	MS		A MO CM connection is attempted.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	The SS starts deciphering.
8	MS -> SS	CIPHERING MODE COMPLETE	The SS starts enciphering.
A9	MS -> SS	SETUP	
A10	SS -> MS	RELEASE COMPLETE	"Cause" IE: "unassigned number".
B9	MS -> SS	REGISTER	
B10	SS -> MS	RELEASE COMPLETE	
C9	MS -> SS	CP-DATA	
C10	SS -> MS	CP-ACK	
C11	SS -> MS	CP-DATA	
C12	MS -> SS	CP-ACK	
C13	SS -> MS	RELEASE COMPLETE	
14	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

IMMEDIATE ASSIGNMENT

Information Element	value/remarks
Channel description	k=1: SDCCH k=2: TCH/F k=3: TCH/H

26.7.5.3   MM connection / establishment without cipher

26.7.5.3.1   Conformance requirement

Upon reception of the CM SERVICE ACCEPT message, the MS shall send a CM message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1.

26.7.5.3.2   Test purpose

To verify that the MS can correctly set up an MM connection in an originating CM connection establishment when ciphering mode setting is not required.

26.7.5.3.3   Method of test

Initial conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS has a valid TMSI. It is "idle updated".

Specific PICS statements:

   -

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test Procedure

A mobile originating CM connection is attempted. The MM-connection is established without invoking the ciphering mode setting procedure.

Then, the MS sends a CM message and the SS releases the channel.

Maximum duration of test

one minute.

Expected sequence

Step	Direction	Message	Comments
1	MS		A MO CM connection is attempted.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
A6	MS -> SS	SETUP	
B6	MS -> SS	REGISTER	
C6	MS -> SS	CP-DATA	
C7	SS -> MS	CP-ACK	
C8	SS -> MS	CP-DATA	
C9	MS -> SS	CP-ACK	
10	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.4 MM connection / establishment rejected

26.7.5.4.1 Conformance requirement

Upon reception of a CM SERVICE REJECT message, the MS shall not send any layer 3 message, start timer T3240 and enter the "wait for network command" state.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.5.1.1.

26.7.5.4.2 Test purpose

To verify that the MS does not send a layer 3 message when the service request is rejected by the SS.

26.7.5.4.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a valid TMSI. It is "idle updated".

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI; It is "idle updated".

Test Procedure

A mobile originating CM connection is attempted. After the MS has sent the CM SERVICE REQUEST message to the SS, the SS responds with a CM SERVICE REJECT message with reject cause "requested service option not subscribed". It is checked that the MS does not send a layer 3 message.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	MS		A MO CM connection is attempted
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE REJECT	"Reject cause" IE: "requested service option not subscribed".
6	SS		The MS shall not send a layer 3 message. This is checked during 5 s.
7	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.5 MM connection / establishment rejected cause 4

26.7.5.5.1 Conformance requirement

1) The Mobile Station shall be able to correctly set up an MM connection in a Mobile Originating CM connection attempt and send a CM Service Request message with CKSN information element as stored in the SIM and Mobile Identity information element set to the TMSI.

2) The Mobile Station, when receiving a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR" shall wait for the network to release the RR connection.

3) The Mobile Station shall then be able to perform a location updating procedure.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.5.1.1.

26.7.5.5.2 Test purpose

To verify that the MS can correctly accept a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR".

26.7.5.5.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a valid TMSI. It is "idle updated".

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has valid TMSI, CKSN. It is "idle updated".

Test Procedure

A mobile originating CM connection is attempted. After the MS has sent the CM SERVICE REQUEST message to the SS, the SS responds with a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR". On receipt of this message, the MS shall delete any TMSI, LAI, cipher key and cipher key sequence number. The channel is released. It is checked that the MS performs a normal location updating procedure.

Maximum duration of test

One minute.

Expected sequence

Step	Direction	Message	Comments
1	MS		A MO CM connection is attempted.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE REJECT	"Reject cause" = "IMSI unknown in VLR".
6	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	LOCATION UPDATING REQUEST	"Ciphering key sequence number" = "No key is available". "Mobile identity" = IMSI. "Location area identification" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
10	SS -> MS	AUTHENTICATION REQUEST	
11	MS -> SS	AUTHENTICATION RESPONSE	
12	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI.
13	MS -> SS	TMSI REALLOCATION COMPLETE	
14	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.6 MM connection / expiry T3230

26.7.5.6.1 Conformance requirement

At T3230 expiry (i.e. no response is given but an RR connection is available) the MM connection establishment shall be aborted.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.2 and 11.2.

26.7.5.6.2 Test purpose

To verify that at T3230 expiry, the MS aborts the MM-connection establishment.

26.7.5.6.3 Method of test

Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS has a valid TMSI. It is "idle updated".

Specific PICS statements:

    -

PIXIT statements:

    -

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test Procedure

A mobile originating CM connection is attempted. After the MS has sent the CM SERVICE REQUEST message to the SS, the SS waits for expiry of timer T3230. It is checked that the MS does not send a layer 3 message but waits for the release of the RR-connection.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	MS		A MO CM connection is attempted.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS		The SS waits for expiry of timer T3230.
6	SS -> MS	CM SERVICE ACCEPT	
7	MS -> SS	MM STATUS	"Reject cause" IE is "message not compatible with the call state or not implemented".
8	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.7 MM connection / abortion by the network

26.7.5.7.1 MM connection / abortion by the network / cause #6

26.7.5.7.1.1 Conformance requirement

1) Upon reception of an ABORT message, the MS shall release any ongoing MM connection and enter the "wait for network command" state.

2) If the cause in the ABORT message was cause #6, the Mobile Station shall:

2.1 not perform normal location updating;

2.2 not perform periodic location updating;

2.3 not respond to paging with TMSI;

2.4 reject any request for Mobile Originating call establishment except Emergency call;

2.5 not perform IMSI detach if deactivated.

3) After reception of an ABORT message with cause #6, the Mobile Station, if it supports speech, shall accept a request for an emergency call by sending a Channel Request message with the establishment cause set to "emergency call".

4) After reception of an ABORT message with cause #6, the Mobile Station shall delete the stored LAI, CKSN and TMSI.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.3.5.

26.7.5.7.1.2   Test purpose

To check that upon reception of an ABORT message with cause #6 during call establishment:

- the MS does not send any layer 3 message;

- after reception of an ABORT message and after having been deactivated and reactivated, the MS performs location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN;

- the MS does not perform location updating, does not answer to paging with TMSI, rejects any request for mobile originating call except emergency call, does not perform IMSI detach;

- the MS accepts a request for emergency call.

26.7.5.7.1.3   Method of test

Initial Conditions

System Simulator:

2 cells, default parameters.

Mobile Station:

The MS has a valid TMSI, CKSN and Kc. It is "idle updated" on cell B.

Specific PICS statements:

- On/Off switch (TSPC_Feat_OnOff)

- SIM removable without power down (TSPC_AddInfo_SIMRmv)

- Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated" on cell A.

Test procedure

A mobile originating CM connection is attempted. Upon reception of the AUTHENTICATION RESPONSE message, the SS sends an ABORT message with cause #6. The SS waits for 5 s. The MS shall not send any layer 3 message. The SS releases the RR connection.

The SS checks that the MS has entered the state MM IDLE substate NO IMSI, i.e. does not perform normal location updating, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if deactivated.

Maximum Duration Of Test

10 minutes.

Expected Sequence

Step	Direction	Message	Comments
The following messages are sent and shall be received on cell B			
1	MS		A mobile originating CM connection is attempted.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	ABORT	"reject cause" = #6.
8	SS		The SS waits for 5 s.
9	MS		The MS shall not send any layer 3 message during that time.
10	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
The following messages are sent and shall be received on cell A.			
11	SS		The RF levels are changed to make the MS reselect cell A.
12	MS		The MS performs cell reselection according to procedure as specified in 3GPP TS 05.08 (this however is not checked until step 22). The MS shall not initiate an RR connection establishment on cell A or on cell B.
13	SS		The SS waits at least 7 minutes for a possible periodic updating.
14	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B.
15	SS -> MS	PAGING REQUEST TYPE 1	"Mobile identity" IE contains TMSI.
16	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is verified during 3 s.
17	MS		A MO CM connection is attempted.
18	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.
19	MS		If the MS supports speech (see PICS), an emergency call is attempted.
20	MS -> SS	CHANNEL REQUEST	"Establishment cause": Emergency call.
21	SS -> MS	IMMEDIATE ASSIGNMENT	
22	MS -> SS	CM SERVICE REQUEST	"CM service type": Emergency call establishment.
23	SS -> MS	CM SERVICE ACCEPT	
24	MS -> SS	EMERGENCY SETUP	
25	SS -> MS	RELEASE COMPLETE	"Cause" = unassigned number.
26	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
27	MS		If possible (see PICS) SIM detachment is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
28	MS		The MS shall not initiate an RR connection establishment on cell A or on cell B. This is checked during 3 s.
29	MS		Depending on what has been performed in step 29 the MS is brought back to operation.
30	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
31	SS -> MS	IMMEDIATE ASSIGNMENT	
32	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
33	SS -> MS	AUTHENTICATION REQUEST	"CKSN" = CKSN1.
34	MS -> SS	AUTHENTICATION RESPONSE	
35	SS -> MS	LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
36	MS -> SS	TMSI REALLOCATION COMPLETE	
37	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.7.2 MM connection / abortion by the network / cause not equal to #6

26.7.5.7.2.1 Conformance requirement

Upon reception of an ABORT message, the MS shall release any ongoing MM connection and enter the "wait for network command" state.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.3.5.

26.7.5.7.2.2 Test purpose

1. When multiple MM connections are established, the MS releases all MM connections upon reception of an ABORT message, in the case when the two MM connections are established for a mobile terminating call and a non call related supplementary service operation.

2. The TMSI isn't deleted from MS after reception of ABORT message with cause another than #6.

26.7.5.7.2.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

T3212 is set to 6 minutes.

Mobile Station:

The MS is in state U10 of a mobile terminating call.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test procedure

A non call related supplementary service operation is attempted at the MS. Upon reception of the REGISTER message, the SS sends an ABORT message with cause # 17. The SS waits for 5 s. The MS shall not send any layer 3 message. The SS releases the RR connection. The MS shall perform periodic location updating 6 minutes after the CHANNEL RELEASE message. TMSI shall be used as an MS Identity in LOCATION UPDATING REQUEST

Maximum Duration Of Test

15 minutes.

Expected Sequence

This procedure is performed if the MS supports non call related supplementary service operation.

Step	Direction	Message	Comments
1	MS		A non call related supplementary service operation is attempted at the MS.
2	MS -> SS	CM SERVICE REQUEST	
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	ABORT	"reject cause" = #17.
6	SS		The SS waits for 5 seconds. The MS shall not send any layer 3 message during that time.
7	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating This message shall be sent by the MS between 5minutes 45s and 6minutes 15s after step 7.
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	"location updating type": periodic updating. Mobile identity IE specifies the TMSI of the MS.
11	SS -> MS	LOCATION UPDATING ACCEPT	
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.8 MM connection / follow-on request pending

26.7.5.8.1 MM connection / follow-on request pending / test 1

26.7.5.8.1.1 Conformance requirement

The MS shall not attempt to establish a new MM connection after location updating on the same RR connection if not allowed by the network.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.6.

26.7.5.8.1.2 Test purpose

To check that when the network does not include the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a MS that has a CM application request pending does not attempt to establish a new MM connection on that RR connection.

26.7.5.8.1.3 Method of test

Initial Conditions

System Simulator:

1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".

Mobile Station:

The MS has a valid TMSI and is deactivated.

Specific PICS statements:

-

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test procedure

The MS is activated and a CM connection is attempted during the location updating procedure. The SS does not include the follow on proceed information element in the LOCATION UPDATING ACCEPT message. The SS waits for at least 8 seconds. The MS shall not send any layer 3 message for 8 seconds.

Maximum Duration of Test

60 s.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is activated.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	location updating type = IMSI attach. Then the SS waits for 15 s. During this delay a CM connection is attempted.
5	SS -> MS	LOCATION UPDATING ACCEPT	follow on proceed IE not included.
6	SS		The SS wait for at least 8 seconds.
7	MS		The MS shall not send any layer 3 message for 8 seconds after reception of the LOCATION UPDATING ACCEPT message.
8	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.8.2 MM connection / follow-on request pending / test 2

26.7.5.8.2.1 Conformance requirement

A MS supporting the follow-on request procedure and having a CM connection request pending shall correctly establish an MM connection following a location update when allowed by the network.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.6.

26.7.5.8.2.2 Test purpose

To check that when the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a MS that supports the follow on request procedure and that has a CM application request pending establishes successfully a new MM connection on that RR connection.

26.7.5.8.2.3 Method of test

Initial Conditions

System Simulator:

1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".

Mobile Station:

The MS has a valid TMSI and is deactivated.

Specific PICS statements:

- follow-on request procedure (TSPC_AddInfo_followOnReq)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test procedure

The MS is activated and a CM connection is attempted during the location updating procedure. The SS includes the follow on proceed information element in the LOCATION UPDATING ACCEPT message. The SS waits for at least 8 seconds.

If the MS supports the follow on request procedure:

The MS shall send a CM SERVICE REQUEST. Upon reception of that message, the SS sends a CM SERVICE ACCEPT message. The MS shall send an initial CM message. Upon reception of that message, the SS releases the RR connection.

If the MS does not support the follow on request procedure:

The MS shall not send any layer 3 message for 8 seconds.

Maximum Duration of Test

60 s.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is activated.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	Location updating type = IMSI attach. Then the SS waits for 15 s. During this delay a CM connection is attempted.
5	SS -> MS	LOCATION UPDATING ACCEPT	follow on proceed IE included.
			If the MS supports the follow on request procedure (see PICS) steps A6 to A8 are performed, otherwise steps B6 to B7 are performed.
A6	MS -> SS	CM SERVICE REQUEST	
A7	SS ->MS	CM SERVICE ACCEPT	
A8	MS -> SS	An initial CM message	
B6	SS		The SS wait for at least 8 seconds.
B7	MS		The MS shall not send any layer 3 message for 8 seconds after reception of the LOCATION UPDATING ACCEPT message.
9	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.5.8.3 MM connection / follow-on request pending / test 3

26.7.5.8.3.1 Conformance requirement

1) The MS shall not set the follow on request bit in a LOCATION UPDATING REQUEST message if no MM connection request is pending.

2) When the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a MS that has no CM application request pending shall not attempt to establish a new MM connection on that RR connection.

3) The MS shall correctly handle a CM connection established by the network on the RR connection that was used for the location updating procedure.

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.4.4.6.

26.7.5.8.3.2 Test purpose

1) To check that a MS that has no CM application request pending sets the Follow-On-Request bit to No follow-on request pending in a LOCATION UPDATING REQUEST message.

2) To check that when the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a MS that has no CM application request pending does not attempt to establish a new MM connection on that RR connection.

3) To check that the MS accepts establishment by the network of a new MM connection on the existing RR connection.

26.7.5.8.3.3 Method of test

Initial Conditions

System Simulator:

1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".

Mobile Station:

The MS has a valid TMSI and is deactivated.

Specific PICS statements:

- at least one MO circuit switched basic service (TSPC_Addinfo_MOsvc)

PIXIT statements:

-

Foreseen final state of the MS

The MS has a valid TMSI. It is "idle updated".

Test procedure

The MS is activated. The MS performs location updating. The MS shall set the FOR bit to No follow-on request pending in the LOCATION UPDATING REQUEST message. The SS includes the follow on proceed information element in the LOCATION UPDATING ACCEPT message. The SS waits for 5 s. The MS shall not send any layer 3 message for 5 s. The SS sends a SETUP message to the MS requesting a basic service supported by the MS. The MS shall send either a CALL CONFIRMED message if it supports a service on TCH or a RELEASE COMPLETE with cause #88.

Maximum Duration of Test

20 s.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is activated.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	"Location updating type" = IMSI attach. The FOR bit is set to No follow-on request pending.
5	SS -> MS	LOCATION UPDATING ACCEPT	follow on proceed IE is included.
6	SS		The SS wait for 5 s.
7	MS		The MS shall not send any layer 3 message for 5 s after reception of the LOCATION UPDATING ACCEPT message.
8	SS -> MS	SETUP	
A9	MS -> SS	CALL CONFIRMED	If the MS supports a basic service on TCH.
B9	MS -> SS	RELEASE COMPLETE	If the MS does not support any basic service on TCH. cause #88.
10	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Specific message contents

None.

26.7.6 Network Identity and Time zone (NITZ)

26.7.6.1 NITZ and CS location update procedures

26.7.6.1.1 NITZ / CS location update / Time zone, Time and DST Handling

26.7.6.1.1.1 Conformance requirement

The feature Network Identities and Time zone shall make it possible for a serving PLMN to transfer its current identity, universal time, DST and LTZ to MSs, and for the MS to store and use this information. Each one of these elements is optional. The feature significantly enhances roaming as it enables the accurate indication of network identities that are either newer than the ME or have changed their name since the ME was manufactured or sold. Additionally time and time zone information can be utilised by MEs as desired.

The serving PLMN shall make Local Time Zone (LTZ) available to the MS as an offset from Universal Time in units of 15 minutes.

When the LTZ is compensated for DST (summertime), the serving PLMN shall provide a DST parameter to indicate this. The adjustment for DST can be +1h or +2h.

The Time Zone code enables the receiver to calculate the equivalent time in GMT from the other semi-octets in the Service-Centre-Time-Stamp, or indicate the time zone (GMT, GMT+1H etc.), or perform other similar calculations as required by the implementation. The value contained in the Time Zone field must take into account daylight saving time, such that when the sending entity changes from regular (winter) time to daylight saving (summer) time, there is a change to the value in the Time Zone field.

The mobile station should assume that this time zone applies to the Location Area of the cell to which the Channel Request message was sent.

If the local time zone has been adjusted for Daylight Saving Time, the network shall indicate this by including the IE Network Daylight Saving Time.

The network may be able to select particular instants where it can send the MM INFORMATION message without adding delay to, or interrupting, any CM layer transaction, e.g. immediately after the AUTHENTICATION REQUEST message.

Reference(s):

3GPP TS 02.42 / 3GPP TS 22.042 subclause 4

3GPP TS 03.40 / 3GPP TS 23.040 subclause 9.2.3.11

3GPP TS 04.08 / 3GPP TS 24.008 subclause 9.4.19.4, 4.3.6

26.7.6.1.1.2   Test purpose

To verify that a MS supporting any of the NITZ Time related feature (Local Time Zone, Universal Time and DST IE and thus MM Information) is able to handle them properly.

26.7.6.1.1.3   Method of test

Initial conditions

    System Simulator:

        One cell (cell A)

    IMSI attach/detach allowed in the cell

    Mobile Station:

        The MS has a valid IMSI. MS is powered off.

Specific PICS statements:

-   On/Off switch (TSPC_Feat_OnOff)

-   Use of NITZ DST (TSPC_NITZ_DST)

-   Use of NITZ Universal Time for PLMN (TSPC_NITZ_Universal_Time)

-   Use of NITZ Local Time Zone for PLMN (TSPC_NITZ_Time_Zone)

PIXIT statements:

-

Test procedure

During the Location Update procedure on Cell A, SS sends its local time and date (UK, Winter Time) using the MM INFORMATION Message to the MS. The operator verifies then the supported parameters and/or the time and date stored in the MS.

The MS is powered off and then powered on. During the location update the SS sets local time and date (UK, Summer Time). The operator verifies then the supported parameters and/or the time and date stored in the MS.

This is then repeated for the follow scenarios: US East coast summer time (GMT−5+1), US West coast summer time (GMT−8+1), US Mountain time (no summer adjustment) (GMT−7).

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is powered up or switched on (see PICS) and initiates a location update.
2	MS -> SS	LOCATION UPDATE REQUEST	
3	SS -> MS	AUTHENTICATION REQUEST	
4	MS -> SS	AUTHENTICATION RESPONSE	
5	SS ->MS	MM INFORMATION	Universal Time IE is included : "< Current Year >/ 05/15 06:25:00" for UT "0 hour" for Timezone Local Time Zone IE included: "0 hour" for Timezone No DST IE included See specific message content

Step	Direction	Message	Comments
6	SS -> MS	LOCATION UPDATE ACCEPT	
7	MS		**Operator Action :** The use of the supported Fields is checked: Universal Time: Year: < Current Year > Month: May Day: 15th Hour: 6 Hours Minute: 25 Minutes Timezone: GMT+0 Local Time Zone: Timezone: GMT+0 DST: Daylight Saving Time not in use (i.e. winter time) cf note
8	MS		The MS is switched off or power is removed (see PICS).
9	MS -> SS	IMSI DETACH	Message not sent if power is removed. Detach type = IMSI detach
10	MS		The MS is powered up or switched on (see PICS) and initiates a location update.
11	MS -> SS	LOCATION UPDATE REQUEST	
12	SS -> MS	AUTHENTICATION REQUEST	
13	MS -> SS	AUTHENTICATION RESPONSE	
14	SS ->MS	MM INFORMATION	Universal Time IE is included : "< Current Year >/ 05/15 06:25:00" for UT "1 hour" for Timezone (including DST) DST = +1 hour See specific message content
15	SS -> MS	LOCATION UPDATE ACCEPT	
16	MS		**Operator Action :** The use of the supported Fields is checked: Universal Time: Year: < Current Year > Month: May Day: 15th Hour: 7 Hours Minute: 25 Minutes Timezone: GMT+0 Local Time Zone: Not sent DST: Daylight Saving Time in use (i.e. summer time) cf note
17	MS		The MS is switched off or power is removed (see PICS).
18	MS -> SS	IMSI DETACH	Message not sent if power is removed. Detach type = IMSI detach
19	MS		The MS is powered up or switched on (see PICS) and initiates a location update.
20	MS -> SS	LOCATION UPDATE REQUEST	
21	SS -> MS	AUTHENTICATION REQUEST	
22	MS -> SS	AUTHENTICATION RESPONSE	
23	SS ->MS	MM INFORMATION	UniversalTime IE is included : "< Current Year >/ 05/15 06:25:00" for UT "-4 hours" for Timezone (including DST) DST = +1 hour See specific message content

Step	Direction	Message	Comments
24	SS -> MS	LOCATION UPDATE ACCEPT	
25	MS		**Operator Action :** The use of the supported Fields is checked: Universal Time: Year: < Current Year > Month: May Day: 15th Hour: 2 Hours Minute: 25 Minutes Timezone: GMT-5 Local Time Zone: Not sent DST: Daylight Saving Time in use (i.e. summer time) cf note
26	MS		The MS is switched off or power is removed (see PICS).
27	MS -> SS	IMSI DETACH	Message not sent if power is removed. Detach type = IMSI detach
28	MS		The MS is powered up or switched on (see PICS) and initiates a location update.
29	MS -> SS	LOCATION UPDATE REQUEST	
30	SS -> MS	AUTHENTICATION REQUEST	
31	MS -> SS	AUTHENTICATION RESPONSE	
32	SS ->MS	MM INFORMATION	Universal Time IE is included : "< Current Year >/ 05/15 06:25:00" for UT "-7 hours" for Timezone (including DST) DST = +1 hour See specific message content
33	SS -> MS	LOCATION UPDATE ACCEPT	
34	MS		**Operator Action :** The use of the supported Fields is checked: Year: < Current Year > Month: May Day: 14th Hour: 23 Hours Minute: 25 Minutes Timezone: GMT-8 Local Time Zone: Not sent DST: Daylight Saving Time in use (i.e. summer time) cf note
35	MS		The MS is switched off or power is removed (see PICS).
36	MS -> SS	IMSI DETACH	Message not sent if power is removed. Detach type = IMSI detach
37	MS		The MS is powered up or switched on (see PICS) and initiates a location update.
38	MS -> SS	LOCATION UPDATE REQUEST	
39	SS -> MS	AUTHENTICATION REQUEST	
40	MS -> SS	AUTHENTICATION RESPONSE	
41	SS ->MS	MM INFORMATION	Universal Time IE is included : "< Current Year >/ 05/15 06:25:00" for UT "-7 hour" for Timezone No DST IE included See specific message content

Step	Direction	Message	Comments
42	SS -> MS	LOCATION UPDATE ACCEPT	
43	MS		**Operator Action :** The use of the supported Fields is checked: Universal Time: Year: < Current Year > Month: MayDay: 14th Hour: 23 Hours Minute: 25 Minutes Timezone: GMT-7 Local Time Zone: No sent DST: Daylight Saving Time not in use (i.e. winter time) cf note
44	MS		The MS is switched off or power is removed (see PICS).
45	MS -> SS	IMSI DETACH	Message not sent if power is removed. Detach type = IMSI detach

Note: In steps 7, 16, 25, 34 and 43 the "minute" is not so relevant and can be higher than "25" depending on operator's action time.

Current Year is derived by the SS.

The check of Timezone and DST is done implicitly by checking the time only in case MS does not support the display of these two fields.

Specific message contents

MM Information on step 5:

Information element	Value/remark
Universal Time IE	47
Year	40 - < Current Year >
Month	50 – May
Day	51 - 15th
Hour	60 - 6 hours
Minute	52 - 25 Minutes
Second	00 - 0 second
Time Zone	00 - GMT+0 (0*15 minutes + 0*15 minutes DST)
Local Time Zone IE	46
Time Zone	00 - GMT+0 (0*15 minutes + 0*15 minutes DST)

MM Information on step 14:

Information element	Value/remark
UniversalTime IE	47
Year	40 - < Current Year >
Month	50 - May
Day	51 - 15th
Hour	60 - 6 hours
Minute	52 - 25 Minutes
Second	00 - 0 second
Time Zone	40 - GMT+0+1 (0*15 minutes + (1*4)*15 minutes DST)
Daylight Saving Time IE	49
Length of DST Content	1
Value	1 - + 1 hour (summer time)

MM Information on step 23:

Information element	Value/remark
Universal Time IE	47
Year	40 - < Current Year >
Month	50 - May
Day	51 - 15th
Hour	60 - 6 hours
Minute	52 - 25 Minutes
Second	00 - 0 second
Time Zone	69 - GMT-5+1 ((-5*4)*15 minutes + (1*4)*15 minutes DST)
Daylight Saving Time IE	49
Length of DST Content	1
Value	1 - + 1 hour (summer time)

MM Information on step 32:

Information element	Value/remark
UniversalTime IE	47
Year	40 - < Current Year >
Month	50 – May
Day	51 - 15th
Hour	60 - 6 hours
Minute	52 - 25 Minutes
Second	00 - 0 second
Time Zone	8A - GMT-8+1 ((-8*4)*15 minutes + (1*4)*15 minutes DST)
Daylight Saving Time IE	49
Length of DST Content	1
Value	1 - + 1 hour (summer time)

MM Information on step 41:

Information element	Value/remark
Universal Time IE	47
Year	40 - < Current Year >
Month	50 – May
Day	51 - 15th
Hour	60 - 6 hours
Minute	52 - 25 Minutes
Second	00 - 0 second
Time Zone	8A - GMT-7 ((-7*4)*15 minutes)

26.8 Tests related to circuit switched call control

26.8.1 Circuit switched Call Control (CC) state machine verification

26.8.1.1 General on CC state machine verification

The principle of checking the call control functions consists in the validation of each call control identified state.

State U0 as an initial state is not verified in the tests of 26.8.1.2 (establishment of an outgoing call).

State U0.1 is never verified.

The steps to be followed within each performed test are:

- bring the MS into the required state;

- trigger the tested event;

- check the MS response and new state.

In subclauses 26.8.1.2 and 26.8.1.3 different tables are defined to bring the MS into the required initial state. The exact table to be chosen is specified individually in subclause "Initial conditions" of "Method of test" for each test case.

For each test, unless otherwise specified, a circuit switched basic service among those supported by the MS but excluding the emergency call teleservice shall be chosen arbitrarily, and the test shall be performed according to that basic service. If the only circuit switched basic service supported by the mobile is emergency call, then the incoming call tests shall not be performed and the other call control tests shall be performed with the EMERGENCY SETUP message replacing the SETUP message.

The initial states are to be checked through STATUS ENQUIRY messages sent by the SS, when feasible. This is not explicitly stated in the tables of expected sequences of signalling messages. The checking of final states are explicitly included into the expected sequences of signalling messages.

The following postamble may be used by the SS to bring MS back to idle mode in those test cases, in which it is not already included into expected sequence of signalling messages:

Table 26.8.1.1/1: A postamble to bring the MS back to idle mode.

Step	Direction	Message	Comments
n	SS -> MS	CHANNEL RELEASE	
n+1	MS		the MS shall release the main signalling link (DISC/UA)

The postamble has not been included into the all of the tests in order to leave an option to concatenate the procedures in the future by using a final state of a test case as an initial state to another one.

For the special case of U0, the state is checked by sending STATUS ENQUIRY message with all possible values of transaction identifier (seven values) as U0 is the only state in which for every TI the MS will answer with release complete with cause #81. If U0 is to be verified when no RR connection exists, first a mobile terminating radio connection must be established.

The MS responses are either call management messages received by the SS or lower layers functions activated within the MS or MMI actions (e.g. the buzzing of an alerting tone).

A time-out within the MS is triggered by the SS when it does not answer back an MS expected response.

The test sequences may be split in 3 main groups:

- establishment and release of an outgoing call;

- establishment and release of an incoming call;

- in-call functions.

Remark on verification of transient states:

Some call control states of the mobile station may be transient, depending on implementation, configuration of the MS and previous messages (see annex 3, subclause 3.1.6).

If a test starts in a transient state, then the test is executed without verification of the starting state.

26.8.1.2 Establishment of an outgoing call

Initial conditions

As a minimum requirement the MS is updated and has been given a TMSI, a ciphering key and cipher key sequence number, and the layer 2, RR and MM functionalities have been verified.

There are as many CM initial conditions as states to be checked.

The tables below describe message exchanges which bring the MS in the requested initial states.

A state may be taken as initial only when all the states which lead to this initial state have been validated. The order followed in the test procedure will be U0, U0.1, U1, U3, U4, U10, U12, U19, U11 as seen in the table underneath.

The MS is brought again in the initial state starting with U0 at each new test performed.

Table 26.8.1.2/1: Establishment of an outgoing call, procedure 1 (late assignment)

Step	Direction	Message	Comments/actions/next state
1	MS -> SS	CHANNEL REQUEST	initiate outgoing call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH, U0
3	MS -> SS	CM SERVICE REQUEST	U0.1
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	U1
7	SS -> MS	CALL PROCEEDING	U3
8	SS -> MS	ALERTING	U4
9	SS -> MS	ASSIGNMENT COMMAND	TCH
10	MS -> SS	ASSIGNMENT COMPLETE	
11	SS -> MS	CONNECT	
12	MS -> SS	CONNECT ACKNOWLEDGE	U10
A13	SS -> MS	DISCONNECT	U12 (note 1)
B13	SS -> MS	DISCONNECT	U12 (note 2)
B14	MS -> SS	RELEASE	U19
C13			MMI action, terminate call
C14	MS -> SS	DISCONNECT	U11
NOTE 1:	The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.		
NOTE 2:	The Progress Indication IE is not included.		

Table 26.8.1.2/2: Establishment of an outgoing call, procedure 2

Step	Direction	Message	Comments/actions/next state
1	MS -> SS	CHANNEL REQUEST	initiate outgoing call
2	SS -> MS	IMMEDIATE ASSIGNMENT	TCH, U0
3	MS -> SS	CM SERVICE REQUEST	U0.1
4	SS -> MS	CHANNEL MODE MODIFY	(note 1)
5	MS -> SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
6	SS -> MS	CIPHERING MODE COMMAND	
7	MS -> SS	CIPHERING MODE COMPLETE	
8	MS -> SS	SETUP	U1
9	SS -> MS	CALL PROCEEDING	U3
10	SS -> MS	ALERTING	U4
11	SS -> MS	CONNECT	
12	MS -> SS	CONNECT ACKNOWLEDGE	U10
A13	SS -> MS	DISCONNECT	U12 (note 2)
B13	SS -> MS	DISCONNECT	U12 (note 3)
B14	MS -> SS	RELEASE	U19
C13			MMI action, terminate call
C14	MS -> SS	DISCONNECT	U11
NOTE 1:	Assigned channel is appropriate for the chosen bearer capability (see subclause 26.8.1).		
NOTE 2:	The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available' is included.		
NOTE 3:	The Progress Indicator IE is not included.		

Table 26.8.1.2/3: Establishment of an outgoing call, procedure 3

Step	Direction	Message	Comments/actions/next state
1	MS -> SS	CHANNEL REQUEST	initiate outgoing call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH, U0
3	MS -> SS	CM SERVICE REQUEST	U0.1
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	U1
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	U3
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> MS	ALERTING	U4
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	U10
A15	SS -> MS	DISCONNECT	U12 (note 1)
B15	SS -> MS	DISCONNECT	U12 (note 2)
B16	MS -> SS	RELEASE	U19
C15			MMI action, terminate call
C16	MS -> SS	DISCONNECT	U11
NOTE 1: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.			
NOTE 2: The Progress indicator IE is not included.			

Table 26.8.1.2/4: Establishment of an outgoing call, procedure 4

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	initiate outgoing call
2	SS -> MS	IMMEDIATE ASSIGNMENT	TCH, U0
3	MS -> SS	CM SERVICE REQUEST	U0.1
4	SS -> MS	IDENTITY REQUEST	
5	MS -> SS	IDENTITY RESPONSE	
6	SS -> MS	CIPHERING MODE COMMAND	
7	MS -> SS	CIPHERING MODE COMPLETE	
8	MS -> SS	SETUP	U1
9	SS -> MS	CHANNEL MODE MODIFY	(note 1)
10	MS -> SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
11	SS -> MS	CALL PROCEEDING	U3
12	SS -> MS	ALERTING	U4
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	U10
A15	SS -> MS	DISCONNECT	U12 (note 2)
B15	SS -> MS	DISCONNECT	U12 (note 3)
B16	MS -> SS	RELEASE	U19
C15			MMI action, terminate call
C16	MS -> SS	DISCONNECT	U11
NOTE 1: Assigned channel is appropriate for the chosen bearer capability (see subclause 26.8.1).			
NOTE 2: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.			
NOTE 3: The Progress Indicator IE is not included.			

26.8.1.2.1 Outgoing call / U0 null state

26.8.1.2.1.1 Outgoing call / U0 null state / MM connection requested

26.8.1.2.1.1.1 Definition

The call control entity of the Mobile Station requests the MM-sublayer to establish a mobile originating MM-connection. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.1.1.2   Conformance requirement

1) Upon initiation of an outgoing basic call by user the MS shall initiate establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.1.1, 4.5.1.1 and 3.3.1.1.

26.8.1.2.1.1.3   Test purpose

To verify that upon initiation of an outgoing basic call by user the MS initiates establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

26.8.1.2.1.1.4   Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

U0, null.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. When the SS receives CM SERVICE REQUEST, the contents of it shall be checked.

Maximum duration of test

30 s.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	initiate outgoing call
2	SS -> MS	IMMEDIATE ASSIGNMENT	TCH
3	MS -> SS	CM SERVICE REQUEST	verify the type of call which is asked for "basic" or "emergency by the MS
4	SS -> MS	CHANNEL RELEASE	
5	MS		the MS shall release the main signalling link (DISC/UA)

Specific message contents:

None.

26.8.1.2.2 Outgoing call / U0.1 MM connection pending

26.8.1.2.2.1 Outgoing call / U0.1 MM connection pending / CM service rejected

26.8.1.2.2.1.1 Definition

A request for MM connection is rejected by the SS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.2.1.2 Conformance requirement

Upon receiving indication of an MM-connection establishment being rejected, CC entity should inform upper layer of this rejection.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 4.5.1.1, 3GPP TS 04.07 / 3GPP TS 24.007, subclause 6.2.2.

26.8.1.2.2.1.3 Test purpose

To verify that a CC entity of the MS in CC-state U0.1, "MM-connection pending", upon the MS receiving a CM SERVICE REJECT message, returns to CC state U0, "Null".

26.8.1.2.2.1.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U0.1 by using table 26.8.1.2/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. When the SS receives CM SERVICE REQUEST, the contents of it shall be checked. The SS rejects it by CM SERVICE REJECT. Then the SS will check the state of the MS by using STATUS ENQUIRY with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CM SERVICE REJECT	
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	RELEASE COMPLETE	cause shall be 81# (invalid TI value)
4	SS		repeat steps 2-3 to cover all the transaction identifiers from 000 ...110
5	SS -> MS	CHANNEL RELEASE	
6	MS		the MS shall release the main signalling link (DISC/UA)

Specific message contents:

None.

26.8.1.2.2.2   Outgoing call / U0.1 MM connection pending / CM service accepted

26.8.1.2.2.2.1   Definition

A CM request is accepted for the MM-connection by the SS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.2.2.2   Conformance requirement

A CC entity of the MS in CC-state U0.1, "MM-connection pending", upon the MS receiving a CM SERVICE ACCEPT message, shall send a SETUP message specifying the Called party BCD number that was entered into the MS and then enter CC state U1, "Call initiated".

References

    3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.5.1.1 and 5.2.1.1.

26.8.1.2.2.2.3   Test purpose

To verify that a CC entity of the MS in CC-state U0.1, "MM-connection pending", upon the MS receiving a CM SERVICE ACCEPT message, sends a SETUP message specifying the Called party BCD number that was entered into the MS and then enters CC state U1, "Call initiated".

26.8.1.2.2.2.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

        The MS is brought into the state U0.1 by using table 26.8.1.2/1.

Foreseen final state of the MS

U1, call initiated.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. When the MS is requesting a MM-connection, the SS will indicate acceptance by sending a CM SERVICE ACCEPT message. The MS shall respond with SETUP. Then the SS will check the state of the call control entity by STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CM SERVICE ACCEPT	
2	MS -> SS	SETUP	with called party BCD number.
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause shall be 30# (response to enq.) and state U1 call initiated.

Specific message contents:

None.

26.8.1.2.2.3   Outgoing call / U0.1 MM connection pending / lower layer failure

26.8.1.2.2.3.1   Definition

The call control entity of the MS being in the state, U0.1, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.2.3.2   Conformance requirement

1) Upon a lower layer failure the MS releases the MM connection in progress and returns to idle mode. In that state no call exists and the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.5.1.2, 5.2.1.1, 5.5.3.2 and 8.3.

26.8.1.2.2.3.3   Test purpose

To verify that after the MS with a CC entity in state U0.1, "MM-connection pending", has detected a lower layer failure and has returned to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

26.8.1.2.2.3.4   Method of test

Specific PICS statements

- Support of UTRAN Radio Access Technology (TSPC_Type_UTRAN)

PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U0.1 by using table 26.8.1.2/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. When the MS has sent a CM SERVICE REQUEST message, the SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure.
2	SS		If PICS statement "Support of UTRAN Radio Access Technology" is 'NO', then the SS waits 20 s for the MS to return to listening to paging. If PICS statement "Support of UTRAN Radio Access Technology" is 'YES', then the SS waits 50 s for the MS to return to listening to paging.
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause shall be 81# (invalid TI value).
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000 ...110.
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.3 Outgoing call / U1 call initiated

26.8.1.2.3.1 Outgoing call / U1 call initiated / receiving CALL PROCEEDING

26.8.1.2.3.1.1 Definition

The call control entity of the MS being in the state, U1, a CALL PROCEEDING message is sent by the SS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.3.1.2 Conformance requirement

1) A CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a CALL PROCEEDING message, shall enter CC state U3, "Mobile originating call proceeding".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.1.1, 5.2.1.2 and 5.2.1.3.

26.8.1.2.3.1.3 Test purpose

To verify that a CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a CALL PROCEEDING message, enters CC state U3, "Mobile originating call proceeding".

26.8.1.2.3.1.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U1 by using table 26.8.1.2/2.

Foreseen final state of the MS

U3, Mobile originating call proceeding.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U1. The SS sends a CALL PROCEEDING message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U3.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CALL PROCEEDING	tone generation not mandatory
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	STATUS	cause 30#, state U3

Specific message contents:

None.

26.8.1.2.3.2 Outgoing call / U1 call initiated / rejecting with RELEASE COMPLETE

26.8.1.2.3.2.1 Definition

The call control entity of the MS being in the state, U1, the call is rejected by a RELEASE COMPLETE message sent by the SS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.3.2.2 Conformance requirement

1) A CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

2) On returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

3) On releasing the MM-connection, the MS shall wait for MM layer release initiated by the network.

References

    Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.4.2 and 5.4.4.

    Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.5.3.2.

    Conformance requirement 3:   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.4.4.3 and 4.5.3,
                                        3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.13.1

26.8.1.2.3.2.3   Test purpose

1) To verify that a CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

2) To verify that in returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

3) To verify that in releasing the MM-connection, the MS shall wait for MM layer release initiated by SS.

26.8.1.2.3.2.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

        The MS is brought into the state U1 by using table 26.8.1.2/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U1. The SS sends a RELEASE COMPLETE message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE COMPLETE	See specific message content below.
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
4	SS		repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

RELEASE COMPLETE

1) With a valid cause value among:

related to numbering,

#1 unallocated number

#3 no route to destination

#22 number changed

#28 invalid number format

related to bearer capabilities,

#8 operator determined barring

#57 bearer capability not authorized

#58 bearer capability not presently available

#63 service or option not available

#65 bearer service not implemented

#34 no circuit/channel available (call queuing).

26.8.1.2.3.3 Outgoing call / U1 call initiated / T303 expiry

26.8.1.2.3.3.1 Definition

The call control entity of the MS being in the state, U1, if no response is then received from the SS, timer T303 expires at the MS side. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.3.3.2 Conformance requirement

1) A CC entity of the MS in CC-state U1, "Call initiated", upon expiry of T303 shall send a DISCONNECT message to its peer entity and enter state U11, "Disconnect request".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.1.1 and 5.4.

26.8.1.2.3.3.3 Test purpose

1) To verify that a CC entity of the MS in CC-state U1, "Call initiated", upon expiry of T303 (accuracy ±20 % between reception of CM SERVICE REQUEST and DISCONNECT by SS) sends a DISCONNECT message to its peer entity and enters state U11, "Disconnect request".

26.8.1.2.3.3.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

   The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

   The MS is brought into the state U1 by using table 26.8.1.2/2.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

1 minute.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U1. When T303 expires at the MS, the MS shall send DISCONNECT. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS waits for T303 expiry.
2	MS -> SS	DISCONNECT	Shall be transmitted between 24 s and 36 s after the CM SERVICE REQUEST.
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, status U11

Specific message contents:

None.

26.8.1.2.3.4   Outgoing call / U1 call initiated / lower layer failure

26.8.1.2.3.4.1   Definition

The call control entity of the MS being in the state, U1, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.3.4.2   Conformance requirement

Upon a lower layer failure MM informs the relevant CM entities that the MM connection has been interrupted. As call re-establishment is not allowed, the CC entity must perform a local release. The MS returns to idle mode. In that state no call exists, and the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

References

   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.5.2.3, 5.2.1.1 and 5.5.3.2.

26.8.1.2.3.4.3   Test purpose

To verify that after the MS with a CC entity in state U1 "Call initiated", has detected a lower layer failure and has returned to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

26.8.1.2.3.4.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

    The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

    The MS is brought into the state U1 by using table 26.8.1.2/4.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The MS is brought to the state U1. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure.
2	SS		SS waits 20 s for the MS to return to listening to paging.
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value).
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110.
10	SS -> MS	CHANNEL RELEASE	
11	MS		the MS shall release the main signalling link (DISC/UA).

Specific message contents:

None.

26.8.1.2.3.5   Outgoing call / U1 call initiated / receiving ALERTING

26.8.1.2.3.5.1   Definition

The call control entity of the MS being in the state, U1, an ALERTING message is sent to the MS as a indication that a call is being alerted at a called end. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.3.5.2   Conformance requirement

1) A CC entity of the MS in CC-state U1, "Call initiated", upon receipt of an ALERTING message, shall enter CC state U4, "Call delivered".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.2.1.1.

26.8.1.2.3.5.3 Test purpose

To verify that a CC entity of the MS in CC-state U1, "Call initiated", upon receipt of an ALERTING message, enters CC state U4, "Call delivered".

26.8.1.2.3.5.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U1 by using table 26.8.1.2/4.

Foreseen final state of the MS

U4, call delivered.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U1. The SS sends an ALERTING message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ALERTING	
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	STATUS	cause 30#, state U4

Specific message contents:

None.

26.8.1.2.3.6 Outgoing call / U1 call initiated / entering state U10

26.8.1.2.3.6.1 Definition

The call control entity of the MS being in the state, U1, a CONNECT message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.3.6.2 Conformance requirement

1) A CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a CONNECT message, shall send a CONNECT ACKNOWLEDGE message to its peer entity and enter CC state U10, "Active".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.1.1 and 5.2.1.6.

26.8.1.2.3.6.3 Test purpose

To verify that a CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a CONNECT message, sends a CONNECT ACKNOWLEDGE message to its peer entity and enters CC state U10, "Active".

26.8.1.2.3.6.4 Method of test

Specific PICS statements

-

PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U1 by using table 26.8.1.2/4.

Foreseen final state of the MS

U10, call active.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U1. The SS sends a CONNECT message to the MS. The MS shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CONNECT	
2	MS -> SS	CONNECT ACKNOWLEDGE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

None.

26.8.1.2.3.7   Outgoing call / U1 call initiated / unknown message received

26.8.1.2.3.7.1   Definition

The call control entity of the MS being in the state, U1, an unknown message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.3.7.2   Conformance requirement

1) A CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a message with message type not defined for the protocol discriminator from its peer entity shall return a STATUS message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.4.

26.8.1.2.3.7.3   Test purpose

To verify that a CC entity of the MS in CC-state U1, "Call initiated", upon receipt of a message with message type not defined for the protocol discriminator unknown message from its peer entity returns a STATUS message.

26.8.1.2.3.7.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U1 by using table 26.8.1.2/1.

Foreseen final state of the MS

U1, call initiated.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U1. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U1
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U1

Specific message contents:

None.

26.8.1.2.4 Outgoing call / U3 MS originating call proceeding

26.8.1.2.4.1 Outgoing call / U3 MS originating call proceeding / ALERTING received

26.8.1.2.4.1.1 Definition

The call control entity of the MS being in the state, U3, an ALERTING message is sent to the MS as a indication that a call is being alerted at a called end. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.1.2 Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a ALERTING message shall enter CC-state U4, "Call Delivered".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.5.

26.8.1.2.4.1.3 Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a ALERTING message enters CC-state U4, "Call Delivered".

26.8.1.2.4.1.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/2.

Foreseen final state of the MS

U4, call delivered.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends an ALERTING message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ALERTING	
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	STATUS	cause 30#, state U4

Specific message contents:

None.

26.8.1.2.4.2   Outgoing call / U3 MS originating call proceeding / CONNECT received

26.8.1.2.4.2.1   Definition

The call control entity of the MS being in the state, U3, a CONNECT message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.2.2   Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a CONNECT message shall return a "CONNECT ACKNOWLEDGE" message to its peer entity and enter the CC state U10, "Active".

2) The MS shall then stop any locally generated indication.

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.6.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.6.

26.8.1.2.4.2.3   Test purpose

1) To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a CONNECT message returns a "CONNECT ACKNOWLEDGE" message to its peer entity and enters the CC state U10, "Active".

2) To verify that the MS stops locally generated indication, if any.

26.8.1.2.4.2.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/2.

Foreseen final state of the MS

U10, active.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends a CONNECT message to the MS. The MS shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CONNECT	the MS shall stop tone generation, if any
2	MS -> SS	CONNECT ACKNOWLEDGE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

None.

26.8.1.2.4.3   Outgoing call / U3 MS originating call proceeding / PROGRESS received without in band information

26.8.1.2.4.3.1   Definition

The call control entity of the MS being in the state, U3, a PROGRESS message is received by the MS. The PROGRESS message does not contain indication of in-band information availability. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.3.2   Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message with valid cause values shall stay in CC-state U3.

2) After receipt of the PROGRESS message timer T310 shall be stopped.

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.4.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 11.3.

26.8.1.2.4.3.3   Test purpose

1) To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message with valid cause values stays in CC-state U3.

2) To verify that after receipt of the PROGRESS message timer T310 is stopped.

26.8.1.2.4.3.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/2.

Foreseen final state of the MS

U3, mobile originating call proceeding.

Maximum duration of test

1 min.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends a PROGRESS message not containing indication of in-band information availability to the MS. The SS checks that the MS has stopped T310, i.e. at T310 time-out no DISCONNECT message is sent by the MS. Then the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PROGRESS	(note)
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	STATUS	cause 30#, state U3
4	SS		SS waits at least 45 s and checks no DISCONNECT is sent by the MS
5	SS -> MS	STATUS ENQUIRY	
6	MS -> SS	STATUS	cause 30#, state U3

NOTE: Tested with a valid cause value among:

#4 call has returned to PLMN/ISDN;

#32 call is end-to-end PLMN/ISDN; or

any value in the set #(21-127).

Specific message contents:

None.

26.8.1.2.4.4   Outgoing call / U3 MS originating call proceeding / PROGRESS with in band information

26.8.1.2.4.4.1   Definition

The call control entity of the MS being in the state, U3, a PROGRESS message indicating availability of in band information is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.4.2   Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message indicating in-band announcement shall through-connect the traffic channel for speech, if TCH is in a speech mode. If TCH is not in speech mode, the MS shall not through-connect the TCH.

2) After receipt of the PROGRESS message, T310 shall be stopped.

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3,

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.1.3, 5.2.1.4, 5.2.1.9, 5.5.1 and 11.3.

26.8.1.2.4.4.3   Test purpose

1) To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message indicating in-band announcement through-connects the traffic channel for speech, if TCH is in speech mode. If TCH is not in a speech mode, the MS does not through-connect the TCH.

2) To verify that after receipt of the PROGRESS message, T310 is stopped.

26.8.1.2.4.4.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/2.

Foreseen final state of the MS

U3, mobile originating call proceeding.

Maximum duration of test

1 minute.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends a PROGRESS message containing indication of in-band information availability to the MS. The SS checks that if channel mode is speech, the TCH shall be through connected. If channel mode is not speech, the TCH shall not be through connected. Also the SS checks that the MS has stopped T310, i.e. at T310 time-out no DISCONNECT message is sent by the MS. Then the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PROGRESS 1)	the MS shall stop all the CC timers (note), if channel mode is speech, the TCH shall be through connected. If channel mode is not speech, the TCH shall not be through connected.
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	STATUS	cause 30#, state U3
4	SS		SS waits at least 45 s and checks no DISCONNECT is sent by the MS.
5	SS -> MS	STATUS ENQUIRY	
6	MS -> SS	STATUS	cause 30#, state U3
7	SS		If the channel mode is speech the SS will check that the user connection for speech is attached (both downlink and uplink).

Specific message contents:

NOTE: Tested with a valid cause value among:

#1 call is not end to end PLMN/ISDN;

#2 destination address is non PLMN/ISDN;

#3 originating address is non PLMN/ISDN;

#8 in band information or appropriate pattern now available or any value in the set #(6-20).

26.8.1.2.4.5 Outgoing call / U3 MS originating call proceeding / DISCONNECT with in band tones

26.8.1.2.4.5.1 Definition

The call control entity of the MS being in the state, U3, a DISCONNECT message indicating availability of in band information is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.5.2 Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT with progress indicator #8, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If TCH is not in speech mode, the MS shall send a RELEASE message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.1.4 and 5.4.4.

26.8.1.2.4.5.3 Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT with progress indicator #8 through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If TCH is not in speech mode, the MS sends a RELEASE message.

26.8.1.2.4.5.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/2.

Foreseen final state of the MS

U12, disconnect indication.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends a DISCONNECT message containing indication of in-band information availability to the MS. The SS checks that if channel mode is speech, the TCH shall be through connected and the MS enters state U12, disconnect indication. If channel mode is not speech, the TCH shall not be through connected and the MS shall enter state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	(note)
B2	SS		TCH in speech mode: the SS will check that the audio path for in band tones is attached.
B3	SS -> MS	STATUS ENQUIRY	
B4	MS -> SS	STATUS	cause 30#, state U12
C2	MS -> SS	RELEASE	TCH is not in speech mode:
C3	SS -> MS	STATUS ENQUIRY	
C4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

NOTE: the cause value:

#8 in band information or appropriate pattern now available.

26.8.1.2.4.6   Outgoing call / U3 MS originating call proceeding / DISCONNECT without in band tones

26.8.1.2.4.6.1   Definition

The call control entity of the MS being in the state, U3, a DISCONNECT message is received by the MS. The DISCONNECT message does not contain indication of in-band information availability. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.6.2   Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT without progress indicator shall return a RELEASE message and enter the CC-state U19, "Release Request"

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

26.8.1.2.4.6.3   Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT without progress indicator returns a RELEASE message and enters the CC-state U19, "Release Request".

26.8.1.2.4.6.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

        The MS is brought into the state U3 by using table 26.8.1.2/2.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends a DISCONNECT message not containing indication of in-band information availability to the MS. The MS shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the MS has entered the state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

None.

26.8.1.2.4.7   Outgoing call / U3 MS originating call proceeding / RELEASE received

26.8.1.2.4.7.1   Definition

The call control entity of the MS being in the state, U3, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.7.2 Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) The MS on returning to the idle mode shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

3) On releasing the MM-connection, the MS shall wait for MM layer release initiated by the network.

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.2 and 5.4.4.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3 and 5.5.3.2.

Conformance requirement 3:   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.4.4.3 and 4.5.3,
3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.13.1

26.8.1.2.4.7.3 Test purpose

1) To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the MS on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

3) To verify that in releasing the MM-connection, the MS shall wait for MM layer release initiated by SS.

26.8.1.2.4.7.4 Method of test

Specific PICS statements

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PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 minute 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends a RELEASE message to the MS. The MS shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	with cause "Normal, unspecified"
2	MS -> SS	RELEASE COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.4.8 Outgoing call / U3 MS originating call proceeding / termination requested by the user

26.8.1.2.4.8.1 Definition

The call control entity of the MS being in the state, U3, the user requests to terminate the call. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.8.2 Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2,

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.3.

26.8.1.2.4.8.3 Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

26.8.1.2.4.8.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator: 1 cell, default parameters.

Mobile Station: The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/3.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The user requests termination of the call. The MS shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction	Message	Comments
1			MMI action, terminate call
2	MS -> SS	DISCONNECT	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.2.4.9 Outgoing call / U3 MS originating call proceeding / traffic channel allocation

26.8.1.2.4.9.1 Definition

The call control entity of the MS being in the state, U3, a traffic channel assignment procedure is performed. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.9.2 Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH without changing the state of the call in progress.

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3,

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.9.

26.8.1.2.4.9.3 Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding", when allocated a traffic channel by the network performing the assignment procedure, performs a layer 2 establishment on the FACCH without changing the state of the call in progress.

26.8.1.2.4.9.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/3.

Foreseen final state of the MS

U3, mobile originating call proceeding.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends an ASSIGNMENT COMMAND for traffic channel to the MS. The MS shall establish layer 2 link on the newly allocated channel and respond with an ASSIGNMENT COMPLETE message. The SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ASSIGNMENT COMMAND	(TCH) the MS shall perform L2 establishment on the FACCH
2	MS -> SS	ASSIGNMENT COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U3

Specific message contents:

None.

26.8.1.2.4.10   Outgoing call / U3 MS originating call proceeding / timer T310 time-out

26.8.1.2.4.10.1   Definition

The call control entity of the MS being in the state, U3, if no response is then received from the SS, timer T310 expires at the MS side. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.10.2   Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding" shall, upon expiry of timer T310, and not before, initiate call release by sending DISCONNECT and enter the CC-state U11, "Disconnect Request".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.1.3./Abnormal case, 5.4.3 and 11.3.

26.8.1.2.4.10.3   Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding" will, upon expiry of timer T310 (accuracy minus 2 %, plus 50 %), initiate call release by sending DISCONNECT and enter the CC-state U11, "Disconnect Request".

26.8.1.2.4.10.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/3.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

1 minute.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The T310 expires at the MS and the MS shall send DISCONNECT. The SS checks timer T310 accuracy and that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction	Message	Comments
1	SS		the SS waits for T310 time-out
2	MS -> SS	DISCONNECT	check the timer T310 accuracy (minus 2 % to plus 50 %)
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.2.4.11 Outgoing call / U3 MS originating call proceeding / lower layer failure

26.8.1.2.4.11.1 Definition

The call control entity of the MS being in the state, U3, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.11.2 Conformance requirement

1) If a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding" has detected a lower layer failure and has returned to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.5.2.3, 4.5.3 and 5.5.3.2.

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.13.2.1.

26.8.1.2.4.11.3 Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding" having detected a lower layer failure and having returned to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

26.8.1.2.4.11.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/4.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 minute 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The MS is brought to the state U3. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		SS waits 20 s for the MS to return to listening to paging
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 18-19 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.4.12   Outgoing call / U3 MS originating call proceeding / unknown message received

26.8.1.2.4.12.1   Definition

The call control entity of the MS being in the state, U3, an unknown message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.4.12.2 Conformance requirement

1) A CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding" having received an unknown message from its peer entity shall return a STATUS message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.5.

26.8.1.2.4.12.3 Test purpose

To verify that a CC-entity of the MS in CC-state U3, "Mobile Originating Call Proceeding" having received an unknown message from its peer entity returns a STATUS message.

26.8.1.2.4.12.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/1.

Foreseen final state of the MS

U3, mobile originating call proceeding.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U3. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U3
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U3

Specific message contents:

None.

26.8.1.2.4.13 Outgoing call / U3 MS originating call proceeding / Internal alerting indication

26.8.1.2.4.13.1 Definition

The call control entity of the MS being in the state, U3, an ALERTING message is sent to the MS when the user connection is not attached to the radio path. This test is applicable for any equipment supporting mobile originated circuit switched basic service for telephony.

26.8.1.2.4.13.2 Conformance requirement

1) When the call control entity of the MS in the "mobile originating call proceeding" state receives an ALERTING message then it shall enter "call delivered" state and, for speech calls, if the user connection is not attached to the radio path, the MS shall internally generate an alerting indication.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.5.

26.8.1.2.4.13.3 Test purpose

When the call control entity of the MS in the "mobile originating call proceeding" state receives an ALERTING message then it enters "call delivered" state and, for speech calls, if the user connection is not attached to the radio path, the MS generates internally an alerting indication.

26.8.1.2.4.13.4 Method of test

Specific PICS statements

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PIXIT statements

- way to give internally generated alerting indication for outgoing calls

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U3 by using table 26.8.1.2/1.

Foreseen final state of the MS

U4, call delivered.

Maximum duration of test

30 s.

Test procedure

The SS sends an ALERTING message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered. Also it is checked that the MS generates internally alerting indication to the user in the way described in the PIXIT statements.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ALERTING	the MS shall generate an alerting indication to the user in the way described in the PIXIT statements
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	STATUS	cause 30#, state U4

Specific message contents:

None.

26.8.1.2.5 Outgoing call / U4 call delivered

26.8.1.2.5.1 Outgoing call / U4 call delivered / CONNECT received

26.8.1.2.5.1.1 Definition

The call control entity of the MS being in the state, U4, a CONNECT message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.1.2 Conformance requirement

1) A CC-entity of the MS in CC-state U4, "Call Delivered", upon receipt of the CONNECT message shall return a CONNECT ACKNOWLEDGE to its peer entity and enter the CC-state U10, "Active".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.6.

26.8.1.2.5.1.3 Test purpose

To verify that a CC-entity of the MS in CC-state U4, "Call Delivered", upon receipt of the CONNECT message returns a CONNECT ACKNOWLEDGE to its peer entity and enters the CC-state U10, "Active".

26.8.1.2.5.1.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/3.

Foreseen final state of the MS

U10, active.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The SS sends a CONNECT message to the MS. The MS shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CONNECT	
2	MS -> SS	CONNECT ACKNOWLEDGE	MS stops alerting, if applicable
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

None.

26.8.1.2.5.2   Outgoing call / U4 call delivered / termination requested by the user

26.8.1.2.5.2.1   Definition

The call control entity of the MS being in the state, U4, the user requests to terminate the call. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.2.2   Conformance requirement

1) A CC-entity of the MS in CC-state U4, "Call Delivered", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2.

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.3.

26.8.1.2.5.2.3   Test purpose

To verify that a CC-entity of the MS in CC-state U4, "Call Delivered", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

26.8.1.2.5.2.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/3.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The user requests termination of the call. The MS shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction	Message	Comments
1			MMI action, terminate call
2	MS -> SS	DISCONNECT	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.2.5.3 Outgoing call / U4 call delivered / DISCONNECT with in band tones

26.8.1.2.5.3.1 Definition

The call control entity of the MS being in the state, U4, a DISCONNECT message indicating availability of in band information is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.3.2 Conformance requirement

1) A CC-entity of the MS in CC-state U4, "Call Delivered" shall, upon receipt of a DISCONNECT with a progress indicator indicating in-band information, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If TCH is not in speech mode, the MS shall send a RELEASE message.

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3,

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.4.1, 5.5.1 and 5.2.1.9.

26.8.1.2.5.3.3 Test purpose

To verify that a CC-entity of the MS in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT with a progress indicator indicating in-band information, through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If TCH is not in speech mode, the MS shall send a RELEASE message.

26.8.1.2.5.3.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/2.

Foreseen final state of the MS

U12, disconnect indication.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The SS sends a DISCONNECT message containing indication of in-band information availability to the MS. The SS checks that if channel mode is MO telephony, the TCH shall be through connected and the MS enters state U12, disconnect indication. If channel mode is not speech, the TCH shall not be through connected and the MS shall enter state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	(note)
A2	SS		TCH in speech mode: the SS will check that the audio path for in band tones is attached.
A3	SS -> MS	STATUS ENQUIRY	
A4	MS -> SS	STATUS	cause 30#, state U12
B2	MS -> SS	RELEASE	TCH is not in speech mode:
B3	SS -> MS	STATUS ENQUIRY	
B4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

> NOTE: the Progress Indicator, Progress Description:
>
> #8 in band information or appropriate pattern now available.

26.8.1.2.5.4 Outgoing call / U4 call delivered / DISCONNECT without in band tones

26.8.1.2.5.4.1 Definition

The call control entity of the MS being in the state, U4, a DISCONNECT message is received by the MS. The DISCONNECT message does not contain indication of in-band information availability. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.4.2 Conformance requirement

1) A CC-entity of the MS in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

> 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

26.8.1.2.5.4.3 Test purpose

To verify that a CC-entity of the MS in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

26.8.1.2.5.4.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/2.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The SS sends a DISCONNECT message not containing indication of in-band information availability to the MS. The MS shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the MS has entered the state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

None.

26.8.1.2.5.5   Outgoing call / U4 call delivered / RELEASE received

26.8.1.2.5.5.1   Definition

The call control entity of the MS being in the state, U4, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.5.2   Conformance requirement

1) A CC-entity of the MS in CC-state U4, "Call Delivered", upon receipt of the RELEASE message shall respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".

2) The MS on returning to idle mode shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.2 and 5.4.4.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3 and 5.5.3.2.

26.8.1.2.5.5.3 Test purpose

1) To verify that a CC-entity of the MS in CC-state U4, "Call Delivered", upon receipt of the RELEASE message will respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".

2) To verify that the MS on returning the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

26.8.1.2.5.5.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The SS sends a RELEASE message to the MS. The MS shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	with cause "Normal, unspecified"
2	MS -> SS	RELEASE COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 19-20 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.5.6 Outgoing call / U4 call delivered / lower layer failure

26.8.1.2.5.6.1 Definition

The call control entity of the MS being in the state, U4, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.6.2 Conformance requirement

1) When CC-entity of the MS in CC-state U4, "Call Delivered" has detected a lower layer failure and has returned to idle mode, the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.2.3, 4.5.3 and 5.5.3.2,

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.13.2.1.

26.8.1.2.5.6.3 Test purpose

To verify that a CC-entity of the MS in CC-state U4, "Call Delivered" having detected a lower layer failure and has returned to idle mode, the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

26.8.1.2.5.6.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 minute 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The MS is brought to the state U4. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		SS waits 20 s for the MS to return to listening to paging
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.5.7 Outgoing call / U4 call delivered / traffic channel allocation

26.8.1.2.5.7.1 Definition

The call control entity of the MS being in the state, U4, a traffic channel assignment procedure is performed. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.7.2 Conformance requirement

1) A CC-entity of the MS in CC-state U4, "Call Delivered", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH without changing the state of the call in progress.

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3,

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.9.

26.8.1.2.5.7.3 Test purpose

To verify that a CC-entity of the MS in CC-state U4, "Call Delivered", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH without changing the state of the call in progress.

26.8.1.2.5.7.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/1.

Foreseen final state of the MS

U4, call delivered.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The SS sends an ASSIGNMENT COMMAND for traffic channel to the MS. The MS shall establish layer 2 link on the newly allocated channel and respond with an ASSIGNMENT COMPLETE message. The SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ASSIGNMENT COMMAND	TCH, the MS shall perform L2 establishment on the FACCH
2	MS -> SS	ASSIGNMENT COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U4

Specific message contents:

None.

26.8.1.2.5.8   Outgoing call / U4 call delivered / unknown message received

26.8.1.2.5.8.1   Definition

The call control entity of the MS being in the state, U4, an unknown message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.5.8.2   Conformance requirement

1) A CC-entity of the MS in CC-state U4, "Call Delivered", having received an unknown message from its peer entity shall return a STATUS message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.4.

26.8.1.2.5.8.3   Test purpose

To verify that a CC-entity of the MS in CC-state U4, "Call Delivered", having received an unknown message from its peer entity returns a STATUS message.

26.8.1.2.5.8.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U4 by using table 26.8.1.2/4.

Foreseen final state of the MS

U4, call delivered.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U4
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U4

Specific message contents:

None.

26.8.1.2.6 U10 call active

26.8.1.2.6.1 U10 call active / termination requested by the user

26.8.1.2.6.1.1 Definition

The call control entity of the MS being in the state, U10, the user requests to terminate the call. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.6.1.2 Conformance requirement

1) A CC-entity of the MS in CC-state U10, "Call Active", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2,

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.3.

26.8.1.2.6.1.3 Test purpose

To verify that the a CC-entity of the MS in CC-state U10, "Call Active", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

26.8.1.2.6.1.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

        The MS is brought into the state U10 by using table 26.8.1.2/1.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U10. The user requests termination of the call. The MS shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction	Message	Comments
1			MMI action, terminate call
2	MS -> SS	DISCONNECT	U11
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.2.6.2   U10 call active / RELEASE received

26.8.1.2.6.2.1   Definition

The call control entity of the MS being in the state, U10, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.6.2.2   Conformance requirement

1) A CC-entity of the MS in CC-state U10, "Call Active", upon receipt of the RELEASE shall respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null"

2) When the MS returns to the idle mode it shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null"

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.2 and 5.4.4.

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3 and 5.5.3.2.

26.8.1.2.6.2.3 Test purpose

1) To verify that the a CC-entity of the MS in CC-state U10, "Call Active", upon receive of the RELEASE will respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".

2) To verify that the MS on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

26.8.1.2.6.2.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U10 by using table 26.8.1.2/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U10. The SS sends a RELEASE message to the MS. The MS shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	with cause "Normal, unspecified"
2	MS -> SS	RELEASE COMPLETE	the MS starts T3240
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA)

Specific message contents:

None.

26.8.1.2.6.3 U10 call active / DISCONNECT with in band tones

26.8.1.2.6.3.1 Definition

The call control entity of the MS being in the state, U10, a DISCONNECT message indicating availability of in band information is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.6.3.2 Conformance requirement

1) A CC-entity of the MS in CC-state U10, "Call Active", upon receipt of a DISCONNECT message with a Progress Indicator indicating in-band information, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If TCH is not in speech mode, the MS shall send a RELEASE message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.4.1 and 5.5.1.

26.8.1.2.6.3.3 Test purpose

To verify that a CC-entity of the MS in CC-state U10, "Call Active", upon receipt of a DISCONNECT message with a Progress Indicator indicating in-band information, through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If TCH is not in speech mode, the MS sends a RELEASE message.

26.8.1.2.6.3.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U10 by using table 26.8.1.2/2.

Foreseen final state of the MS

U12, disconnect indication.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U10. The SS sends a DISCONNECT message containing indication of in-band information availability to the MS. The SS checks that if channel mode is speech, the TCH shall be through connected and the MS enters state U12, disconnect indication. If channel mode is not speech, the TCH shall not be through connected and the MS enters state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	(note)
A2	SS		TCH in speech mode: the SS will check that the audio path for in band tones is attached.
A3	SS -> MS	STATUS ENQUIRY	
A4	MS -> SS	STATUS	cause 30#, state U12
B2	MS -> SS	RELEASE	TCH is not in speech mode:
B3	SS -> MS	STATUS ENQUIRY	
B4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

> NOTE: the Progress Indicator, Progress Description:

>> #8 in band information or appropriate pattern now available.

26.8.1.2.6.4 U10 call active / DISCONNECT without in band tones

26.8.1.2.6.4.1 Definition

The call control entity of the MS being in the state, U10, a DISCONNECT message is received by the MS. The DISCONNECT message does not contain indication of in-band information availability. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.6.4.2 Conformance requirement

1) A CC-entity of the MS in CC-state U10, "Call Active", upon receipt of a DISCONNECT message without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

> 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

26.8.1.2.6.4.3 Test purpose

To verify that the a CC-entity of the MS in CC-state U10, "Call Active", upon receipt of a DISCONNECT message without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

26.8.1.2.6.4.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

> System Simulator:

>> 1 cell, default parameters.

> Mobile Station:

>> The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

>> The MS is brought into the state U10 by using table 26.8.1.2/2.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U10. The SS sends a DISCONNECT message not containing indication of in-band information availability to the MS. The MS shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the MS has entered the state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

None.

26.8.1.2.6.5   U10 call active / RELEASE COMPLETE received

26.8.1.2.6.5.1   Definition

The call control entity of the MS being in the state, U10, the call is cleared by a RELEASE COMPLETE message sent by the SS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.6.5.2   Conformance requirement

1) A CC entity of the MS in CC-state U10, "active", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

2) On returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.4.2 and 5.4.4.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.4.4.3.

26.8.1.2.6.5.3   Test purpose

1) To verify that a CC entity of the MS in CC-state U10, "Call active" upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

2) To verify that in returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

26.8.1.2.6.5.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

        The MS is brought into the state U10 by using table 26.8.1.2/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

30 s.

Test procedure

The SS sends a RELEASE COMPLETE message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE COMPLETE	note 1
2	SS -> MS	STATUS ENQUIRY	note 2
3	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value),
4	SS		repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

    NOTE 1: With the cause value chosen arbitrarily.

    NOTE 2: TI flag has the value indicating the MS as a originator of the call.

26.8.1.2.6.6   U10 call active / SETUP received

26.8.1.2.6.6.1   Definition

If the MS does not react correctly when receiving a SETUP message on a new Transaction Identifier during an active call, the active call may be lost.

This test is applicable for all MS supporting at least one mobile originated circuit switched basic service.

26.8.1.2.6.6.2   Conformance requirement

1) A Mobile Station that has a call established when receiving a SETUP message shall respond either with a CALL CONFIRMED message or a RELEASE COMPLETE message, both with cause #17 "user busy".

2) The call control state of the existing transaction shall not be affected by the incoming SETUP message.

Reference(s):

    Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.2.2.3.1.

    Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.1.1.

26.8.1.2.6.6.3 Test purpose

1) To verify that a Mobile Station that has a call established and receives a SETUP message answers either with a CALL CONFIRMED message with cause "user busy" if it supports call waiting, or with a RELEASE COMPLETE message with cause "user busy" otherwise.

2) To verify that after having sent this message, the MS is still in state U10 for the established call.

26.8.1.2.6.6.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is idle updated with valid TMSI and CKSN.

The MS is brought into the state U10 by using table 26.8.1.2/14.

Specific PICS statements

- support of call waiting (TSPC_Serv_SS_CW)

PIXIT statements

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Foreseen final state of the MS

U10, call active.

Maximum duration of test

30 s.

Test Procedure

The MS has a mobile originated call in the U10 state.

The SS sends a SETUP message to the MS (with signal IE indicating "call waiting tone on").

If the MS does not support call waiting it shall answer by a RELEASE COMPLETE message.

If the MS supports call waiting it shall answer by a CALL CONFIRMED message followed by an ALERTING. The second transaction is then released by the SS with a RELEASE COMPLETE message.

In both cases the SS checks by using the status enquiry procedure that the CC entity of the MS is still in state U10, active call for the original call.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	SETUP	this message establishes a second transaction The TI value shall be the same as the one that is in use for the MO call. The TI flag shall have the value specified for an MT call.
A2	MS -> SS	RELEASE COMPLETE	if the MS does not support call waiting with cause user busy" with the TI of the second transaction
B2	MS -> SS	CALL CONFIRMED	if the MS supports call waiting with cause user busy" with the TI of the second transaction
B3	MS -> SS	ALERTING	with the TI of the second transaction
B4	SS -> MS	RELEASE COMPLETE	with the TI of the second transaction
5	SS -> MS	STATUS ENQUIRY	with the TI of the original transaction
6	MS -> SS	STATUS	cause 30#, state U10 with the TI of the original transaction

NOTE: The Transaction Identifier of the second transaction shall be different from the one of the already established transaction.

Specific message contents

SETUP message contains a Signal IE with value "call waiting tone on" (H'07).

26.8.1.2.6.7 U10 call active / RELEASE received with Normal call clearing

26.8.1.2.6.7.1 Definition

The call control entity of the MS being in the state, U10, a RELEASE message is received by the MS with cause value 16 "normal call clearing". This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.6.7.2 Conformance requirement

1) A CC-entity of the MS in CC-state U10, "Call Active", upon receipt of the RELEASE shall respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008 sub clauses 4.5.3, 5.4.2 and 5.4.3.

26.8.1.2.6.7.3 Test purpose

1) To verify that the a CC-entity of the MS in CC-state U10, "Call Active", upon receipt of the RELEASE will respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".

26.8.1.2.6.7.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U10 by using table 26.8.1.2/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U10. The SS sends a RELEASE message to the MS. The MS shall respond with a RELEASE COMPLETE message.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	with cause "Normal call clearing"
2	MS -> SS	RELEASE COMPLETE	the MS starts T3240
3	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA)

Specific message contents:

None

26.8.1.2.7 U11 disconnect request

26.8.1.2.7.1 U11 disconnect request / clear collision

26.8.1.2.7.1.1 Definition

The call control entity of the MS being in the state, U11, a DISCONNECT message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.7.1.2 Conformance requirement

1) A CC-entity of the MS in CC-state U11, "Disconnect Request", upon receipt of a DISCONNECT message, shall return to its peer entity the RELEASE message and enter the CC-state U19, "Release Request".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.5.

26.8.1.2.7.1.3 Test purpose

To verify that the a CC-entity of the MS in CC-state U11, "Disconnect Request", upon receipt of a DISCONNECT message, returns to its peer entity the RELEASE message and enters the CC-state U19, "Release Request".

26.8.1.2.7.1.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U11 by using table 26.8.1.2/3.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U11. The SS sends a DISCONNECT message to the MS. The MS shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the MS has entered the state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

None.

26.8.1.2.7.2   U11 disconnect request / RELEASE received

26.8.1.2.7.2.1   Definition

The call control entity of the MS being in the state, U11, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.7.2.2   Conformance requirement

1) A CC-entity of the MS in CC-state U11, "Disconnect Request", upon receipt of the RELEASE message shall return RELEASE COMPLETE and enter the CC-state U0, "Null".

2) On returning to the idle mode the MS shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.3.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3, 5.5.3.2 and 8.3.

26.8.1.2.7.2.3   Test purpose

1) To verify that the a CC-entity of the MS in CC-state U11, "Disconnect Request", upon receipt of the RELEASE message shall return RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the MS on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

26.8.1.2.7.2.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U11 by using table 26.8.1.2/3.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U11. The SS sends a RELEASE message to the MS. The MS shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	
2	MS -> SS	RELEASE COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.7.3   U11 disconnect request / timer T305 time-out

26.8.1.2.7.3.1   Definition

The call control entity of the MS being in the state, U11, if no response is then received from the SS, timer T305 expires at the MS side. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.7.3.2   Conformance requirement

1) A CC-entity of the MS in CC-state U11, "Disconnect Request" shall on expiry of T305, proceed with the connection release procedure by sending the RELEASE message to its peer entity and shall enter the CC-state U19, "Release Request".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.3 and 11.3.

26.8.1.2.7.3.3   Test purpose

To verify that the CC-entity of the MS in CC-state U11, "Disconnect Request" shall on expiry of T305 (accuracy ±10 %), proceed with the connection release procedure by sending the RELEASE message to its peer entity and enters the CC-state U19, "Release Request".

26.8.1.2.7.3.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U11 by using table 26.8.1.2/3.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

1 minute.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U11. Then T305 expires at the MS and the MS shall send a RELEASE message. The SS checks timer T305 accuracy and that the CC entity has entered the state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS waits until T305 expires at the MS
2	MS -> SS	RELEASE	SS checks the time between DISCONNECT and RELEASE (note), (T305 ± 10 %)
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

NOTE: With the same cause value as originally contained in the DISCONNECT message. An additional cause information element (#102 recovery on timer expiry) may be included.

26.8.1.2.7.4 U11 disconnect request / lower layer failure

26.8.1.2.7.4.1 Definition

The call control entity of the MS being in the state, U11, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.7.4.2 Conformance requirement

1) A CC-entity of the MS in CC-state U11, "Disconnect Request" having detected a lower layer failure shall return to the idle mode. The CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.2.3, 4.5.3, 5.5.3.2 and 8.3.

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.13.2.1.

26.8.1.2.7.4.3 Test purpose

To verify that the a CC-entity of the MS in CC-state U11, "Disconnect Request" having detected a lower layer failure returns to the idle mode. The CC entities relating to the seven mobile originating transaction identifiers are thus in state U0, "Null".

26.8.1.2.7.4.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U11 by using table 26.8.1.2/4.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 minute 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The MS is brought to the state U11. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		SS waits 20 s for the MS to return to listening to paging
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.7.5   U11 disconnect request / unknown message received

26.8.1.2.7.5.1   Definition

The call control entity of the MS being in the state, U11, an unknown message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.7.5.2   Conformance requirement

1) A CC-entity of the MS in CC-state U11, "disconnect request", having received an unknown message from its peer entity shall return a STATUS message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.4.

26.8.1.2.7.5.3   Test purpose

To verify that a CC-entity of the MS in CC-state U11, "disconnect request", having received an unknown message from its peer entity returns a STATUS message.

26.8.1.2.7.5.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U11 by using table 26.8.1.2/4.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U11. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U11
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.2.8 U12 disconnect indication

26.8.1.2.8.1 U12 disconnect indication / call releasing requested by the user

26.8.1.2.8.1.1 Definition

The call control entity of the MS being in the state, U12, the user requests to terminate the call. This test is applicable only for mobile stations supporting bearer capability for speech.

26.8.1.2.8.1.2 Conformance requirement

1) A CC-entity of the MS in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall, upon receiving a call release request from the user send a RELEASE to its peer entity and enter CC-state U19, "Release Request".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2,

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

26.8.1.2.8.1.3 Test purpose

To verify that a CC-entity of the MS in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall, upon receiving a call release request from the user sends a RELEASE to its peer entity and enters CC-state U19, "Release Request"

26.8.1.2.8.1.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U12 by using Option A of table 26.8.1.2/1.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U12. The user requests termination of the call. The MS shall send a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1			MMI action, "on hook"
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

None.

26.8.1.2.8.2   U12 disconnect indication / RELEASE received

26.8.1.2.8.2.1   Definition

The call control entity of the MS being in the state, U12, a RELEASE message is received by the MS. This test is applicable only for mobile stations supporting bearer capability for speech.

26.8.1.2.8.2.2   Conformance requirement

1) A CC-entity of the MS in CC-state U12, "Disconnect Indication", upon receipt of a RELEASE message shall return to its peer entity the RELEASE COMPLETE message and enter the CC-state U0, "Null".

2) On returning to the idle mode the MS shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.2.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3, 5.5.3.2 and 8.3.

26.8.1.2.8.2.3   Test purpose

1) To verify that a CC-entity of the MS in CC-state U12, "Disconnect Indication", upon receipt of a RELEASE message returns to its peer entity the RELEASE COMPLETE message and enters the CC-state U0, "Null".

2) To verify that the MS on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

26.8.1.2.8.2.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

        The MS is brought into the state U12 by using Option A of table 26.8.1.2/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U12. The SS sends a RELEASE message to the MS. The MS shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	
2	MS -> SS	RELEASE COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.8.3   U12 disconnect indication / lower layer failure

26.8.1.2.8.3.1   Definition

The call control entity of the MS being in the state, U12, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable only for mobile stations supporting bearer capability for speech.

26.8.1.2.8.3.2   Conformance requirement

1) A CC-entity of the MS in CC-state U12, "Disconnect Indication" having detected a lower layer failure shall return to idle mode. The CC-entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3.2, 4.5.3, 5.5.3.2, 3.4.13.2.1 and 8.3.

26.8.1.2.8.3.3 Test purpose

To verify that a CC-entity of the MS in CC-state U12, "Disconnect Indication" having detected a lower layer failure returns to idle mode. The CC-entities relating to the seven mobile originating transaction identifiers are thus in state U0, "Null".

26.8.1.2.8.3.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U12 by using Option A of table 26.8.1.2/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 minute 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The MS is brought to the state U12. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		SS waits 20 s for the MS to return to listening to paging
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.8.4   U12 disconnect indication / unknown message received

26.8.1.2.8.4.1   Definition

The call control entity of the MS being in the state, U12, an unknown message is received by the MS. This test is applicable only for mobile stations supporting bearer capability for speech.

26.8.1.2.8.4.2   Conformance requirement

A CC-entity of the MS in CC-state U12, "Disconnect Indication" having received an unknown message from its peer entity shall return a STATUS message.

References

   3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.4.

26.8.1.2.8.4.3   Test purpose

To verify that a CC-entity of the MS in CC-state U12, "Disconnect Indication" having received an unknown message from its peer entity returns a STATUS message.

26.8.1.2.8.4.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

   System Simulator:

      1 cell, default parameters.

   Mobile Station:

      The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

      The MS is brought into the state U12 by using Option A of table 26.8.1.2/3.

Foreseen final state of the MS

U12, disconnect indication.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U12. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U12
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U12

Specific message contents:

None.

26.8.1.2.9 Outgoing call / U19 release request

26.8.1.2.9.1 Outgoing call / U19 release request / timer T308 time-out

26.8.1.2.9.1.1 Definition

The call control entity of the MS being in the state, U19, if no response is then received from the SS, timer T308 expires at the MS side. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.9.1.2 Conformance requirement

1) A CC-entity of the MS in CC-state U19, "Release Request" will, upon the first expiry of timer T308 send the RELEASE message to its peer entity and remain in the CC-state U19.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.4.3.1 and 11.3.

26.8.1.2.9.1.3 Test purpose

To verify that a CC-entity of the MS in CC-state U19, "Release Request" will, upon the first expiry of timer T308 (accuracy ± 10 %) send the RELEASE message to its peer entity and remain in the CC-state U19.

26.8.1.2.9.1.4 Method of test

Specific PICS statements

 -

PIXIT statements

 -

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U19 by using table 26.8.1.2/4.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

1 min.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U19. When T308 expires at the MS, the MS shall send a RELEASE message. The SS checks timer T308 accuracy and that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS waits until T308 at the MS
2	MS -> SS	RELEASE	SS checks the time between the two RELEASE messages (T308 ± 10 %)
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

None.

26.8.1.2.9.2 Outgoing call / U19 release request / 2nd timer T308 time-out

26.8.1.2.9.2.1 Definition

The call control entity of the MS being in the state, U19, if no response is then received after timer T308 has expired two times in success at the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.9.2.2 Conformance requirement

1) A CC-entity of the MS in CC-state U19, "Release Request", upon the 2nd expiry of the timer T308, shall enter the CC-state U0, "Null".

2) Subsequently the MS shall proceed with releasing the MM-connection and enter the idle mode with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.4.3.1 and 11.3.

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3 and 5.5.3.2.

26.8.1.2.9.2.3 Test purpose

1) To verify that a CC-entity of the MS in CC-state U19, "Release Request", upon the 2nd expiry of the timer T308, enters the CC-state U0, "Null".

2) To verify that subsequently the MS proceeds with releasing the MM-connection and enters the idle mode with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

26.8.1.2.9.2.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U19 by using table 26.8.1.2/4.

Foreseen final state of the MS

U0, null.

Maximum duration of test

2 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U19. The SS allows T308 expiry at the MS, and the MS shall repeat sending the RELEASE message and start timer T308 again. The SS allows again T308 expiry at the MS. The MS shall abort the RR-connection (DISC/UA). The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS waits until T308 expiry at the MS
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19
5	SS		SS waits until the second T308 expiry at the MS
6	SS		SS waits T3240 expiry at the MS
7	MS		the main signalling link shall be released by the MS (L2: DISC/UA).
8	SS		SS waits 10 s for the MS to return to listening to paging
9	SS -> MS	PAGING REQUEST	
10	MS -> SS	CHANNEL REQUEST	
11	SS -> MS	IMMEDIATE ASSIGNMENT	
12	MS -> SS	PAGING RESPONSE	
13	SS -> MS	STATUS ENQUIRY	
14	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
15	SS		repeat steps 13-14 to cover all the transaction identifiers from 000...110
16	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.9.3 Outgoing call / U19 release request / RELEASE received

26.8.1.2.9.3.1 Definition

The call control entity of the MS being in the state, U19, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.9.3.2 Conformance requirement

1) A CC-entity of the MS in CC-state U19, "Release Request", upon receipt of a RELEASE, shall release the MM-connection and enter the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.5, 11.3 and 5.5.3.2.

26.8.1.2.9.3.3   Test purpose

To verify that a CC-entity of the MS in CC-state U19, "Release Request", upon receipt of a RELEASE, shall release the MM-connection and enters the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

26.8.1.2.9.3.4   Method of test

Specific PICS statements

    -

PIXIT statements

    -

Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

        The MS is brought into the state U19 by using table 26.8.1.2/4.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U19. The SS sends a RELEASE message to the MS. The MS shall release the MM-connection. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	(note)
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
4	SS		repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

    NOTE: With the same cause number as originally contained in DISC and optional cause #102 recovery on timer expiry.

26.8.1.2.9.4   Outgoing call / U19 release request / RELEASE COMPLETE received

26.8.1.2.9.4.1   Definition

The call control entity of the MS being in the state, U19, a RELEASE COMPLETE message is received by the MS. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.9.4.2   Conformance requirement

1) A CC-entity of the MS in CC-state U19, "Release Request", upon receipt of a RELEASE COMPLETE, shall release the MM-connection and enter the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.4.3, 4.5.3 and 8.3.

26.8.1.2.9.4.3   Test purpose

To verify that a CC-entity of the MS in CC-state U19, "Release Request", upon receipt of a RELEASE COMPLETE, shall release the MM-connection and enters the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

26.8.1.2.9.4.4   Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

    The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

    The MS is brought into the state U19 by using table 26.8.1.2/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U19. The SS sends a RELEASE COMPLETE message to the MS. The MS shall release the MM-connection. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE COMPLETE	
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
4	SS		repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.2.9.5 Outgoing call / U19 release request / lower layer failure

26.8.1.2.9.5.1 Definition

The call control entity of the MS being in the state, U19, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.1.2.9.5.2 Conformance requirement

A CC-entity of the MS in CC-state U19, "Release Request", having detected a lower layer failure, shall return to the idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.2.3, 4.5.3, 5.5.3.2 and 8.3.

26.8.1.2.9.5.3 Test purpose

To verify that a CC-entity of the MS in CC-state U19, "Release Request", having detected a lower layer failure, returns to the idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

26.8.1.2.9.5.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U19 by using table 26.8.1.2/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The MS is brought to the state U19. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		SS waits 20 s for the MS to return to listening to paging
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.3   Establishment of an incoming call / Initial conditions

The tables below describe message exchanges which bring the MS in the requested initial states in case of an incoming call.

A state may be taken as initial only when all the states which lead to this initial states have been validated. The order will be U0, U6, U9, U7, U8, U10, U26 etc. as in the following tables.

Table 26.8.1.3/1: Establishment of an incoming call, procedure 1

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	U0, SDCCH
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	
8	MS -> SS	CIPHERING MODE COMPLETE	
9	SS -> MS	SETUP	U6, (note 1)
10	MS -> SS	CALL CONFIRMED	U9
A11	MS -> SS	CONNECT	U8, p = Y, (note 2)
B11	MS -> SS	ALERTING	U7, p = N, (note 2)
B12	MS		(note 3)
B13	MS -> SS	CONNECT	U8
14	SS -> MS	ASSIGNMENT COMMAND	TCH
15	MS -> SS	ASSIGNMENT COMPLETE	
16	SS -> MS	CONNECT ACKNOWLEDGE	U10
NOTE 1:	With signal information included in the SETUP message.		
NOTE 2:	The MS is supporting immediate connect (p = Y/N). See PICS/PIXIT statement.		
NOTE 3:	If necessary (see PICS/PIXIT statement), the MS is made to accept the call in the way described in a PICS/PIXIT statement.		

Table 26.8.1.3/2: Establishment of an incoming call, procedure 2

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	U0, SDCCH
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	SS -> MS	SETUP	U6, (note 1)
8	MS -> SS	CALL CONFIRMED	U9
A9	MS -> SS	CONNECT	U8, p = Y, (note 2)
A10	SS -> MS	ASSIGNMENT COMMAND	TCH
A11	MS -> SS	ASSIGNMENT COMPLETE	
B9	MS -> SS	ALERTING	U7, p = N, (note 2)
B10	SS -> MS	ASSIGNMENT COMMAND	TCH
B11	MS -> SS	ASSIGNMENT COMPLETE	
B12	MS		(note 3)
B13	MS -> SS	CONNECT	U8
14	SS -> MS	AUTHENTICATION REQUEST	
15	MS -> SS	AUTHENTICATION RESPONSE	
16	SS -> MS	CONNECT ACKNOWLEDGE	U10
NOTE 1:	With signal information included in the SETUP message.		
NOTE 2:	The MS is supporting immediate connect (p = Y/N). See PICS/PIXIT statement.		
NOTE 3:	If necessary (see PICS/PIXIT statement), the MS is made to accept the call in the way described in a PICS/PIXIT statement.		

Table 26.8.1.3/3: Establishment of an incoming call, procedure 3

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	U0, TCH
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	
8	MS -> SS	CIPHERING MODE COMPLETE	
9	SS -> MS	CHANNEL MODE MODIFY	(note 1)
10	MS -> SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
11	SS -> MS	SETUP	U6, (note 2)
12	MS -> SS	CALL CONFIRMED	U9
A13	MS -> SS	CONNECT	U8, p = Y, (note 3)
B13	MS -> SS	ALERTING	U7, p = N, (note 3)
B14	MS		(note 4)
B15	MS -> SS	CONNECT	U8
16	SS -> MS	CONNECT ACKNOWLEDGE	U10
NOTE 1:	Assigned channel is appropriate for the chosen mobile originated circuit switched basic service.		
NOTE 2:	With signal information included in the SETUP message.		
NOTE 3:	The MS is supporting immediate connect (p = Y/N). See PICS/PIXIT statement.		
NOTE 4:	If necessary (see PICS/PIXIT statement), the MS is made to accept the call in the way described in a PICS/PIXIT statement.		

Table 26.8.1.3/4: Establishment of an incoming call, procedure 4

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	U0, SDCCH
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	SS -> MS	SETUP	U6, (note 1)
8	MS -> SS	CALL CONFIRMED	U9
9	SS -> MS	ASSIGNMENT COMMAND	TCH
10	MS -> SS	ASSIGNMENT COMPLETE	
A11	MS -> SS	CONNECT	U8, p = Y, (note 2)
B11	MS -> SS	ALERTING	U7, p = N, (note 2)
B12	MS		(note 3)
B13	MS -> SS	CONNECT	U8
14	SS -> MS	AUTHENTICATION REQUEST	
15	MS -> SS	AUTHENTICATION RESPONSE	
16	SS -> MS	CONNECT ACKNOWLEDGE	U10
NOTE 1:	The signal information element is not included in the SETUP message.		
NOTE 2:	The MS is supporting immediate connect (p = Y/N). See PICS/PIXIT statement.		
NOTE 3:	If necessary (see PICS/PIXIT statement), the MS is made to accept the call in the way described in a PICS/PIXIT statement.		

26.8.1.3.1 Incoming call / U0 null state

26.8.1.3.1.1 Incoming call / U0 null state / SETUP received with a non supported bearer capability

26.8.1.3.1.1.1 Definition

The call control entity of the MS being in the state, U0, a SETUP message is received with only one bearer capability and this bearer capability is not supported by the MS. This test is applicable for all equipment.

26.8.1.3.1.1.2 Conformance requirement

1) A CC entity of the MS, upon receipt of SETUP containing one bearer capability and this bearer capability is not supported, shall return a RELEASE COMPLETE with correct cause value to its peer entity and return to the idle mode. The CC-entities relating to the seven mobile terminating transaction identifiers shall be in the state U0,"Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.2.2 and annex B.

26.8.1.3.1.1.3 Test purpose

To verify that a CC entity of the MS, upon receipt of SETUP containing one bearer capability and this bearer capability is not supported, returns a RELEASE COMPLETE with correct cause value to its peer entity, and returns to the idle mode. To verify that the CC-entities relating to the seven mobile terminating transaction identifiers are then in the state U0,"Null".

26.8.1.3.1.1.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

U0, null.

Maximum duration of test

30 s.

Test procedure

A mobile terminated call is initiated. The MS receives a SETUP message that contains a bearer capability not supported by the MS. The MS returns a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity is still in the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	SS sends paging
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	(SDCCH)
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	
8	MS -> SS	CIPHERING MODE COMPLETE	
9	SS -> MS	SETUP	(note 1)
10	MS -> SS	RELEASE COMPLETE	(note 2)
11	SS -> MS	STATUS ENQUIRY	
12	MS ->SS	RELEASE COMPLETE	Cause #81 (invalid TI value).
13	SS		Repeat steps 11-12 to cover all the transaction identifiers from 000... 110.

Specific message contents:

NOTE 1: With one bearer capability and that bearer capability is not supported by the MS.

NOTE 2: With cause #88 incompatible destination.

26.8.1.3.2 Incoming call / U6 call present

26.8.1.3.2.1 Incoming call / U6 call present / automatic call rejection

26.8.1.3.2.1.1 Definition

Although the state U6 is transient, the ability to refuse a call (automatically) in this state is tested, if it is implemented at the MS. The test is applicable for those equipments described above supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.2.1.2 Conformance requirement

1) A CC entity of the MS in CC-state U6, "Call Present", upon receipt of a rejection indication of the incoming call from the user, send RELEASE COMPLETE with the appropriate cause value to its peer entity and enter the CC-state U0, "Null". The CC entities relating to the seven mobile terminating transaction identifiers shall be in state U0, "Null".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2,
3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.2.3.1, 5.5.3.2 and 8.3.

26.8.1.3.2.1.3 Test purpose

To verify that a CC entity of the MS in CC-state U6, "Call Present", shall upon receipt of a rejection indication of the incoming call from the user, shall send RELEASE COMPLETE with the appropriate cause value to its peer entity and enter the CC-state U0, "Null". The CC entities relating to the seven mobile terminating transaction identifiers are then in state U0, "Null".

26.8.1.3.2.1.4 Method of test

Specific PICS statements

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PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U6 by using table 26.8.1.3/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

A teleservice is selected that is supported by the MS; if the MS supports speech, the selected teleservice is speech. If necessary, the MS is configured for that teleservice. Then a mobile terminated call is initiated. The call control entire of the MS is brought to the state U6 (Note: The state U6 is not checked, since it is not stable). The MS is made to refuse the call (the refusal may require some preliminary preparations in order to achieve refusal at this point). The MS shall send a RELEASE COMPLETE message and enter a call control state U0. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1			the MS is made to refuse the call
2	MS -> SS	RELEASE COMPLETE	(note)
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

NOTE: With cause value #21 call rejected.

26.8.1.3.3 Incoming call / U9 mobile terminating call confirmed

26.8.1.3.3.1 Incoming call / U9 mobile terminating call confirmed / alerting or immediate connecting

26.8.1.3.3.1.1 Definition

The call control entity of the MS having entered the state, U9, with signal information received in the preceding SETUP message, the subsequent behaviour of the MS is tested. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.3.1.2 Conformance requirement

1) A CC entity in CC-state U9, "MS Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) shall either send a ALERTING message to its peer entity and enter state U7, or send a CONNECT message to its peer entity and enter U8.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.2.3.2

26.8.1.3.3.1.3 Test purpose

To verify that a CC entity in CC-state U9, "MS Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) will either send a ALERTING message to its peer entity and enter state U7, or send a CONNECT message to its peer entity and enter U8.

26.8.1.3.3.1.4 Method of test

Specific PICS statements

- Support of immediate connect (TSPC_AddInfo_ImmConn)

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U9 by using table 26.8.1.3/2.

Foreseen final state of the MS

- U8, connect request, if the MS supports immediate connect for the selected basic service;

- otherwise U7, call received.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U9 by using a SETUP message containing signalling information element. (The state U9 is not a stable state in this case, and consequently it is not checked as an initial state.) If the MS supports immediate connect for the selected basic service (p = Y), it sends a CONNECT message and enters the state U8, connect request. Otherwise (p = N) the MS sends an ALERTING message and enters the state U7, call receiving. The SS checks by using the status enquiry procedure that the CC entity has entered its state as described.

Expected sequence

Step	Direction	Message	Comments
A1	MS -> SS	CONNECT	p = Y
A2	SS -> MS	STATUS ENQUIRY	
A3	MS -> SS	STATUS	cause 30#, state U8
B1	MS -> SS	ALERTING	p = N
B2	SS -> MS	STATUS ENQUIRY	
B3	MS -> SS	STATUS	cause 30#, state U7

Specific message contents:

None.

26.8.1.3.3.2 Incoming call / U9 mobile terminating call confirmed / TCH assignment

26.8.1.3.3.2.1 Definition

The call control entity of the MS being in the state, U9, an assignment procedure is performed for traffic channel. This test is applicable for any equipment supporting at least one MT circuit switched basic service, for which immediate connect is not used.

26.8.1.3.3.2.2 Conformance requirement

1) A CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH, send a ALERTING message and enter state U7.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 3.4.3, 5.2.2.7 and 5.2.2.3.2.

26.8.1.3.3.2.3 Test purpose

To verify that a CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed", when allocated a traffic channel by the network performing the assignment procedure, performs a layer 2 establishment on the FACCH, sends a ALERTING message and enters state U7.

26.8.1.3.3.2.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U9 by using table 26.8.1.3/4.

Foreseen final state of the MS

U9, mobile terminating call confirmed.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U9 (by using a SETUP message not containing the signal information element). The SS sends an ASSIGNMENT COMMAND for traffic channel to the MS. The MS shall establish layer 2 link on the newly allocated channel and respond with an ASSIGNMENT COMPLETE message. The MS sends an ALERTING message and enters state U7, call received. The SS verifies by using the status enquiry procedure that the MS has entered the correct state.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ASSIGNMENT COMMAND	TCH, an appropriate non-signalling mode
2	MS		the MS shall establish L2 link
3	MS -> SS	ASSIGNMENT COMPLETE	
4	MS -> SS	ALERTING	
5	SS -> MS	STATUS ENQUIRY	
6	MS -> SS	STATUS	cause 30#, state U7

Specific message contents:

None.

26.8.1.3.3.3 Void

26.8.1.3.3.4 Incoming call / U9 mobile terminating call confirmed / DISCONNECT received

26.8.1.3.3.4.1 Definition

The call control entity of the MS being in the state, U9, a DISCONNECT message is received by the MS. This test is applicable for any equipment supporting at least one MT circuit switched basic service, for which immediate connect is not used.

26.8.1.3.3.4.2 Conformance requirement

1) A CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed", upon receipt of a DISCONNECT shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

26.8.1.3.3.4.3 Test purpose

To verify that a CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed", upon receipt of a DISCONNECT returns a RELEASE message and enters the CC-state U19, "Release Request".

26.8.1.3.3.4.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U9 by using table 26.8.1.3/4.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U9. The SS sends a DISCONNECT message to the MS. The MS responds by sending a RELEASE message and enters state U19, release request. The SS verifies by using the status enquiry procedure that the MS has entered the correct state.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

None.

26.8.1.3.3.5 Incoming call / U9 mobile terminating call confirmed / RELEASE received

26.8.1.3.3.5.1 Definition

The call control entity of the MS being in the state, U9, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one MT circuit switched basic service, for which immediate connect is not used.

26.8.1.3.3.5.2 Conformance requirement

1) A CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

2) On returning to the idle mode the MS shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3, 5.5.3.2 and 8.3.

26.8.1.3.3.5.3   Test purpose

1) To verify that a CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the MS on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

26.8.1.3.3.5.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U9 by using table 26.8.1.3/4.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U9. The SS sends a RELEASE message to the MS. The MS responds by sending a RELEASE COMPLETE message and enters state U0, null. The SS verifies by using the status enquiry procedure that the MS has entered the correct state with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	with cause "Normal, unspecified"
2	MS -> SS	RELEASE COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.3.3.6 Incoming call / U9 mobile terminating call confirmed / lower layer failure

26.8.1.3.3.6.1 Definition

The call control entity of the MS being in the state, U9, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one MT circuit switched basic service, for which immediate connect is not used.

26.8.1.3.3.6.2 Conformance requirement

1) A CC entity of the MS in CC-state U9, "MS Terminating Call Confirmed", having detected a lower layer failure shall return to idle mode with the CC entities relating to the seven mobile terminating transaction identifiers in CC-state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.2.3, 4.5.3, 5.5.3.2 and 8.3.

26.8.1.3.3.6.3 Test purpose

To verify that a CC entity of the MS in CC-state U9, "MS Terminating Call Confirmed", having detected a lower layer failure returns to idle mode with the CC entities relating to the seven mobile terminating transaction identifiers in CC-state U0, "Null".

26.8.1.3.3.6.4 Method of test

Specific PICS statements

- Support of UTRAN Radio Access Technology (TSPC_Type_UTRAN)

PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U9 by using table 26.8.1.3/4.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The MS is brought to the state U9. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		If PICS statement "Support of UTRAN Radio Access Technology" is 'NO', then the SS waits 20 s for the MS to return to listening to paging. If PICS statement "Support of UTRAN Radio Access Technology" is 'YES', then the SS waits 50 s for the MS to return to listening to paging.
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.3.3.7 Incoming call / U9 mobile terminating call confirmed / unknown message received

26.8.1.3.3.7.1 Definition

The call control entity of the MS being in the state, U9, an unknown message is received by the MS. This test is applicable for any equipment supporting at least MT circuit switched basic service, for which immediate connect is not used.

26.8.1.3.3.7.2 Conformance requirement

1) A CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed" having received an unknown message from its peer entity shall return a STATUS message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.4.

26.8.1.3.3.7.3 Test purpose

To verify that a CC-entity of the MS in CC-state U9, "MS Terminating Call Confirmed" having received an unknown message from its peer entity returns a STATUS message.

26.8.1.3.3.7.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U9 by using table 26.8.1.3/4.

Foreseen final state of the MS

U9, mobile terminating call proceeding.

Maximum duration of test

30 s.

Test procedure

A MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U9. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U9
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U9

Specific message contents:

None.

26.8.1.3.4 Incoming call / U7 call received

26.8.1.3.4.1 Incoming call / U7 call received / call accepted

26.8.1.3.4.1.1 Definition

The call control entity of the MS being in the state, U7, a user accepts the incoming call. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service for which immediate connect is not used.

26.8.1.3.4.1.2 Conformance requirement

1) A CC entity of a MS in CC-state U7, "Call Received", upon a user accepting the incoming call, shall send a CONNECT message to its peer entity and enter the CC-state U8, "Connect Request".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2,
3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.2.5.

26.8.1.3.4.1.3 Test purpose

To verify that a CC entity of a MS in CC-state U7, "Call Received", upon a user accepting the incoming call, shall send a CONNECT message to its peer entity and enter the CC-state U8, "Connect Request"

26.8.1.3.4.1.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U7 by using table 26.8.1.3/3.

Foreseen final state of the MS

U8, connect request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U7. The user accepts the incoming call. The MS sends a CONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered state U8, connect request.

Expected sequence

Step	Direction	Message	Comments
1			the MS is made to accept the call by the user
2	MS -> SS	CONNECT	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U8

Specific message contents:

None.

26.8.1.3.4.2   Incoming call / U7 call received / termination requested by the user

26.8.1.3.4.2.1   Definition

The call control entity of the MS being in the state, U7, a user requests to terminate incoming call. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service for which immediate connect is not used.

26.8.1.3.4.2.2   Conformance requirement

1) A CC entity of a MS in CC-state U7, "Call Received", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2,
3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.3.

26.8.1.3.4.2.3   Test purpose

To verify that a CC entity of a MS in CC-state U7, "Call Received", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

26.8.1.3.4.2.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

  System Simulator:

    1 cell, default parameters.

  Mobile Station:

    The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

    The MS is brought into the state U7 by using table 26.8.1.3/3.

Foreseen final state of the MS

  U11, disconnect request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U7. The user initiates clearing the incoming call. The MS sends a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered state U11, disconnect request.

Expected sequence

Step	Direction	Message	Comments
1			the MS is made to terminate/reject the call
2	MS -> SS	DISCONNECT	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.3.4.3   Incoming call / U7 call received / DISCONNECT received

26.8.1.3.4.3.1   Definition

The call control entity of the MS being in the state, U7, a DISCONNECT message is received by the MS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service for which immediate connect is not used.

26.8.1.3.4.3.2   Conformance requirement

1) A CC entity of a MS in CC-state U7, "Call Received", upon receipt of a DISCONNECT with a progress indicator indicating in-band information from network, if a TCH was not assigned, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

26.8.1.3.4.3.3 Test purpose

To verify that a CC entity of a MS in CC-state U7, "Call Received", upon receipt of a DISCONNECT with a progress indicator indicating in-band information from network, if a TCH was not assigned, returns a RELEASE message and enters the CC-state U19, "Release Request".

26.8.1.3.4.3.4 Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U7 by using table 26.8.1.3/1.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U7. The SS sends a DISCONNECT message. The MS responds with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	(note)
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

NOTE: With a progress indicator indicating in-band information; Progress Indicator, Progress Description #8.

26.8.1.3.4.4   Incoming call / U7 call received / RELEASE received

26.8.1.3.4.4.1   Definition

The call control entity of the MS being in the state, U7, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service for which immediate connect is not used.

26.8.1.3.4.4.2   Conformance requirement

1) A CC entity of a MS in CC-state U7, "Call Received", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) On returning to the idle mode the MS shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3 and 5.5.3.2.

26.8.1.3.4.4.3   Test purpose

1) To verify that a CC entity of a MS in CC-state U7, "Call Received", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the MS on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

26.8.1.3.4.4.4   Method of test

Specific PICS statements

-

PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U7 by using table 26.8.1.3/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U7. The SS sends a RELEASE message. The MS responds with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U0, null, with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	with cause "Normal, unspecified"
2	MS -> SS	RELEASE COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.3.4.5   Incoming call / U7 call received / lower layer failure

26.8.1.3.4.5.1   Definition

The call control entity of the MS being in the state, U7, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service for which immediate connect is not used.

26.8.1.3.4.5.2   Conformance requirement

1) A CC entity of a MS in CC-state U7, "Call Received", having detected a lower layer failure shall return to idle mode with the CC entities relating to the seven mobile terminating transaction identifiers in CC-state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.2.3, 4.5.3, 5.5.3.2 and 8.3.

26.8.1.3.4.5.3   Test purpose

To verify that a CC entity of a MS in CC-state U7, "Call Received", having detected a lower layer failure returns to idle mode with the CC entities relating to the seven mobile terminating transaction identifiers in CC-state U0, "Null".

26.8.1.3.4.5.4   Method of test

Specific PICS statements

- Support of UTRAN Radio Access Technology

PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U7 by using table 26.8.1.3/2.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The MS is brought to the state U7. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		If PICS statement "Support of UTRAN Radio Access Technology" is 'NO', then the SS waits 20 s for the MS to return to listening to paging. If PICS statement "Support of UTRAN Radio Access Technology" is 'YES', then the SS waits 50 s for the MS to return to listening to paging.
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.3.4.6   Incoming call / U7 call received / unknown message received

26.8.1.3.4.6.1   Definition

The call control entity of the MS being in the state, U7, an unknown message is received by the MS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service for which immediate connect is not used.

26.8.1.3.4.6.2   Conformance requirement

1) A CC entity of a MS in CC-state U7, "Call Received", having received an unknown message from its peer entity shall return a STATUS message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.4.

26.8.1.3.4.6.3   Test purpose

To verify that a CC entity of a MS in CC-state U7, "Call Received", having received an unknown message from its peer entity returns a STATUS message.

26.8.1.3.4.6.4   Method of test

Specific PICS statements

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PIXIT statements

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Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U7 by using table 26.8.1.3/3.

Foreseen final state of the MS

U7, call received.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U7. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U7
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U7

Specific message contents:

None.

26.8.1.3.4.7   Incoming call / U7 call received / TCH assignment

26.8.1.3.4.7.1   Definition

The call control entity of the MS being in the state, U7, an assignment procedure is performed for traffic channel. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service for which immediate connect is not used.

26.8.1.3.4.7.2   Conformance requirement

1) A CC entity of a MS in CC-state U7, "Call Received", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH without changing the state of the call in progress.

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3,
3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.2.7.

26.8.1.3.4.7.3   Test purpose

To verify that a CC entity of a MS in CC-state U7, "Call Received", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH without changing the state of the call in progress.

26.8.1.3.4.7.4   Method of test

Specific PICS statements

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PIXIT statements

   -

Initial conditions

   System Simulator:

      1 cell, default parameters.

   Mobile Station:

      The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

      The MS is brought into the state U7 by using table 26.8.1.3/1.

Foreseen final state of the MS

   U7, call received.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U7. The SS sends an ASSIGNMENT COMMAND for traffic channel to the MS. The MS shall establish layer 2 link on the newly allocated channel and respond with an ASSIGNMENT COMPLETE message. The SS verifies by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ASSIGNMENT COMMAND	TCH
2	MS		the MS shall establish L2 link
3	MS -> SS	ASSIGNMENT COMPLETE	
4	SS -> MS	STATUS ENQUIRY	
5	MS -> SS	STATUS	cause 30#, state U7

Specific message contents:

None.

26.8.1.3.4.8   Incoming call / U7 call received / RELEASE COMPLETE received

26.8.1.3.4.8.1   Definition

The call control entity of the MS being in the state, U7, the call is cleared by a RELEASE COMPLETE message sent by the SS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service, for which immediate connect is not used.

26.8.1.3.4.8.2 Conformance requirement

1) A CC entity of the MS in CC-state U7, "call received", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

2) On returning to idle mode, the CC entities relating to the seven mobile terminating transaction identifiers shall be in state U0, "Null".

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.4.2 and 5.4.4.

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.4.4.3.

26.8.1.3.4.8.3 Test purpose

1) To verify that a CC entity of the MS in CC-state U7, "Call received", upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

2) To verify that in returning to idle mode, the CC entities relating to the seven mobile terminating transaction identifiers are in state U0, "Null".

26.8.1.3.4.8.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U7 by using table 26.8.1.3/1.

Foreseen final state of the MS

U0, null.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS and for which the MS does not use immediate connection; if the MS supports MT telephony without immediate connection, the selected service is telephony. If necessary, the MS is configured for that basic service. The a mobile terminated call is initiated. the CC entity of the MS is brought to U7. The SS sends a RELEASE COMPLETE message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE COMPLETE	note 1
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value), note 2
4	SS		repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

NOTE 1: With the cause value chosen arbitrarily.

NOTE 2: TI flag has the value indicating the SS as a originator of the call.

26.8.1.3.5 Incoming call / U8 connect request

26.8.1.3.5.1 Incoming call / U8 connect request / CONNECT acknowledged

26.8.1.3.5.1.1 Definition

The call control entity of the MS being in the state, U8, a CONNECT ACKNOWLEDGE message is received by the MS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.1.2 Conformance requirement

A CC entity of a MS in CC-state U8, "Connect Request", upon receipt of CONNECT ACKNOWLEDGE shall enter the CC-state U10, "Call Active".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.2.6.

26.8.1.3.5.1.3 Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", upon receipt of CONNECT ACKNOWLEDGE shall enter the CC-state U10, "Call Active".

26.8.1.3.5.1.4 Method of test

Specific PICS statements

- Support of immediate connect (TSPC_AddInfo_ImmConn)

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U8 by using table 26.8.1.3/2.

Foreseen final state of the MS

U10, active.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8 (if the MS uses immediate connection for the selected basic service then p = Y, otherwise p = N). The SS sends a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity of the MS has entered state U10, active.

Expected sequence

Step	Direction	Message	Comments
A1	SS -> MS	ASSIGNMENT COMMAND	p = Y
A2	MS -> SS	ASSIGNMENT COMPLETE	
3	SS -> MS	CONNECT ACKNOWLEDGE	
4	SS -> MS	STATUS ENQUIRY	
5	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

None.

26.8.1.3.5.2   Incoming call / U8 connect request / timer T313 time-out

26.8.1.3.5.2.1   Definition

The call control entity of the MS being in the state, U8, if no response is then received from the SS, timer T313 expires at the MS side. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.2.2   Conformance requirement

A CC entity of a MS in CC-state U8, "Connect Request", having waited for a reasonable length of time (e.g. expiry of timer T313) without receiving the appropriate protocol message to complete the incoming call, shall initiate the clearing of that incoming call by sending the CC message DISCONNECT and enter the CC-state U11, "Disconnect Request".

If an MS disconnects too early then, in the case of very late assignment of a traffic channel, systematic waste of radio resources may occur.

References

    3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.2.6 and 5.4.3.

26.8.1.3.5.2.3   Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", having waited for a reasonable length of time (e.g. expiry of timer T313) without receiving the appropriate protocol message to complete the incoming call, shall initiate the clearing of that incoming call by sending the CC message DISCONNECT and enter the CC-state U11, "Disconnect Request"

26.8.1.3.5.2.4   Method of test

Specific PICS statements

    - Support of immediate connect (TSPC_AddInfo_ImmConn)

PIXIT statements

    -

Initial conditions

    System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U8 by using table 26.8.1.3/2.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

45 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8 (if the MS uses immediate connection for the selected basic service then p = Y, otherwise p = N). The T313 expires at the MS and the MS sends a DISCONNECT message and enters state U11, disconnect request. The SS checks by using the status enquiry procedure that the MS has entered the correct state.

Expected sequence

Step	Direction	Message	Comments
A1	SS -> MS	ASSIGNMENT COMMAND	p = Y
A2	MS -> SS	ASSIGNMENT COMPLETE	
3	MS -> SS	DISCONNECT	Shall not be sent before 15 s after entry into state U8. But, shall be sent before 1,1 * T313 after entry into state U8.
4	SS -> MS	STATUS ENQUIRY	
5	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.3.5.3 Incoming call / U8 connect request / termination requested by the user

26.8.1.3.5.3.1 Definition

The call control entity of the MS being in the state, U8, the user requests for releasing of the call. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.3.2 Conformance requirement

1) A CC entity of a MS in CC-state U8, "Connect Request", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

3GPP TS 04.07 / 3GPP TS 24.007 subclause 6.2.2,
3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.3

26.8.1.3.5.3.3 Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

26.8.1.3.5.3.4 Method of test

Specific PICS statements

- MT circuit switched basic services for which immediate connect is not used.

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U8 by using table 26.8.1.3/2.

Foreseen final state of the MS

U11, disconnect request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8 (if the MS uses immediate connection for the selected basic service then p = Y, otherwise p = N). Then the user requests termination of the call. The MS sends a DISCONNECT message and enters state U11, disconnect request. The SS verifies by using the status enquiry procedure that the MS has entered the correct state.

Expected sequence

Step	Direction	Message	Comments
A1	SS -> MS	ASSIGNMENT COMMAND	p = Y
A2	MS -> SS	ASSIGNMENT COMPLETE	
3			the user requests to clear the call
4	MS -> SS	DISCONNECT	
5	SS -> MS	STATUS ENQUIRY	
6	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

None.

26.8.1.3.5.4   Incoming call / U8 connect request / DISCONNECT received with in-band information

26.8.1.3.5.4.1   Definition

The call control entity of the MS being in the state, U8, a DISCONNECT message indicating availability of in band information is received by the MS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.4.2   Conformance requirement

A CC entity of a MS in CC-state U8, "Connect Request", upon receipt of a DISCONNECT with progress indicator #8 shall enter CC-state U12, if the traffic channel is in speech mode. If the TCH is not in speech mode, the MS shall send a RELEASE message and enter CC-state U19.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.4 and 5.5.1.

26.8.1.3.5.4.3   Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", upon receipt of a DISCONNECT with progress indicator #8 enters CC-state U12, if the traffic channel is in speech mode, and that the MS sends a RELEASE message and enters CC-state U19 if the TCH is not in speech mode.

26.8.1.3.5.4.4   Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN. The MS is brought into the state U8 by using table 26.8.1.3/3.

Foreseen final state of the MS

U12, disconnect indication or U19 depending on the bearer capabilities.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8. The SS sends a DISCONNECT message containing indication of in-band information availability to the MS. If channel mode is speech, the MS enters state U12, disconnect indication. If channel mode is not speech, the MS sends a RELEASE message and enters state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	(note)
A2	SS -> MS	STATUS ENQUIRY	TCH in speech mode:
A3	MS -> SS	STATUS	cause 30#, state U12
B2	MS -> SS	RELEASE	TCH is not in speech mode:
B3	SS -> MS	STATUS ENQUIRY	
B4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

NOTE: With a progress indicator indicating in-band information; Progress Indicator, Progress description #8.

26.8.1.3.5.5 Incoming call / U8 connect request / DISCONNECT received without in-band information

26.8.1.3.5.5.1 Definition

The call control entity of the MS being in the state, U8, a DISCONNECT message is received by the MS. The DISCONNECT message does not contain indication of in-band information availability. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.5.2 Conformance requirement

1) A CC entity of a MS in CC-state U8, "Connect Request", upon receipt of a DISCONNECT without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.4 and 5.4.4.2.

26.8.1.3.5.5.3 Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", upon receipt of a DISCONNECT without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

26.8.1.3.5.5.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U8 by using table 26.8.1.3/3.

Foreseen final state of the MS

U19, release request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8. The SS sends a DISCONNECT message not containing indication of in-band information availability to the MS. The MS shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the MS has entered the state U19, release request.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	(note)
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U19

Specific message contents:

NOTE: Without a progress indicator indicating in-band information.

26.8.1.3.5.6 Incoming call / U8 connect request / RELEASE received

26.8.1.3.5.6.1 Definition

The call control entity of the MS being in the state, U8, a RELEASE message is received by the MS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.6.2 Conformance requirement

1) A CC entity of a MS in CC-state U8, "Connect Request", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) On returning to the idle mode the MS shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.3 and 5.5.3.2.

26.8.1.3.5.6.3 Test purpose

1) To verify that a CC entity of a MS in CC-state U8, "Connect Request", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the MS on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

26.8.1.3.5.6.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U8 by using table 26.8.1.3/3.

Foreseen final state of the MS

U0, null.

Maximum duration of test

1 min.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8. The SS sends a RELEASE message. The MS responds with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U0, null, with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	RELEASE	with cause "Normal, unspecified"
2	MS -> SS	RELEASE COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.3.5.7 Incoming call / U8 connect request / lower layer failure

26.8.1.3.5.7.1 Definition

The call control entity of the MS being in the state, U8, a lower layer failure is accomplished at the MS and consequently, communication at layer 3 level with the peer entity is terminated. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.7.2 Conformance requirement

1) A CC entity of a MS in CC-state U8, "Connect Request", having detected a lower layer failure shall return to idle mode with the CC entities relating to the seven mobile terminating transaction identifiers in CC-state U0, "Null".

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.2.3, 4.5.3 and 5.5.3.2.

26.8.1.3.5.7.3 Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", having detected a lower layer failure returns to idle mode with the CC entities relating to the seven mobile terminating transaction identifiers in CC-state U0, "Null".

26.8.1.3.5.7.4 Method of test

Specific PICS statements

- Support of UTRAN Radio Access Technology (TSPC_Type_UTRAN)

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

> The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

> The MS is brought into the state U8 by using table 26.8.1.3/1.

Foreseen final state of the MS

> U0, null.

Maximum duration of test

1 min 30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The MS is brought to the state U8. The SS generates a lower layer failure at the MS. The SS waits long enough to enable the MS to return to idle state listening to paging, and then pages MS to create RR-connection. Finally, the SS will check the state of the MS by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction	Message	Comments
1	SS		SS generates lower layer failure
2	SS		If PICS statement "Support of UTRAN Radio Access Technology" is 'NO', then the SS waits 20 s for the MS to return to listening to paging. If PICS statement "Support of UTRAN Radio Access Technology" is 'YES', then the SS waits 50 s for the MS to return to listening to paging.
3	SS -> MS	PAGING REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	PAGING RESPONSE	
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	RELEASE COMPLETE	cause 81# (invalid TI value)
9	SS		repeat steps 7-8 to cover all the transaction identifiers from 000...110
10	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

None.

26.8.1.3.5.8   Incoming call / U8 connect request / TCH assignment

26.8.1.3.5.8.1   Definition

The call control entity of the MS being in the state, U8, an assignment procedure is performed for traffic channel. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.8.2   Conformance requirement

1) A CC entity of a MS in CC-state U8, "Connect Request", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH without changing the state of the call in progress.

References

> 3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3,
> 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.2.7.

26.8.1.3.5.8.3   Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", when allocated a traffic channel by the network performing the assignment procedure, shall perform a layer 2 establishment on the FACCH without changing the state of the call in progress.

26.8.1.3.5.8.4   Method of test

Specific PICS statements

   -

PIXIT statements

   -

Initial conditions

   System Simulator:

      1 cell, default parameters.

   Mobile Station:

      The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

      The MS is brought into the state U8 by using table 26.8.1.3/1.

Foreseen final state of the MS

   U8, connect request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8. The SS sends an ASSIGNMENT COMMAND for traffic channel to the MS. The MS shall establish layer 2 link on the newly allocated channel and respond with an ASSIGNMENT COMPLETE message. The SS verifies by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	ASSIGNMENT COMMAND	TCH
2	MS -> SS	ASSIGNMENT COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U8

Specific message contents:

None.

26.8.1.3.5.9   Incoming call / U8 connect request / unknown message received

26.8.1.3.5.9.1   Definition

The call control entity of the MS being in the state, U8, an unknown message is received by the MS. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.3.5.9.2   Conformance requirement

1) A CC entity of a MS in CC-state U8, "Connect Request", having received an unknown message from its peer entity shall return a STATUS message.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclause 8.4.

26.8.1.3.5.9.3   Test purpose

To verify that a CC entity of a MS in CC-state U8, "Connect Request", having received an unknown message from its peer entity returns a STATUS message.

26.8.1.3.5.9.4   Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U8 by using table 26.8.1.3/1.

Foreseen final state of the MS

U8, connect request.

Maximum duration of test

30 s.

Test procedure

An MT circuit switched basic service is selected that is supported by the MS; if the MS supports MT telephony, the selected basic service is telephony. If necessary the MS is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the MS is brought to the state U8. The SS sends a message with message type not defined for the protocol discriminator to the MS. The MS shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	unknown message	message type not defined for PD
2	MS -> SS	STATUS	cause 97#, state U8
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U8

Specific message contents:

None.

26.8.1.4　In call functions

26.8.1.4.1　In-call functions / DTMF information transfer

26.8.1.4.1.1　In-call functions / DTMF information transfer / basic procedures

26.8.1.4.1.1.1　Definition

Dual Tone Multi Frequency (DTMF) is an inband one out of four plus one out of four signalling system primarily used from terminal instruments in telecommunication networks.

The support of DTMF is only permitted when a bearer capability for speech is in use or during the speech phase of alternate speech/data and alternate speech/facsimile teleservices.

26.8.1.4.1.1.2　Conformance requirement

1) An MS supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone, shall send a START DTMF message on the correct DCCH.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.3.

2) An MS supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone (the corresponding IA5 character being selected from among the ones supported), shall send a START DTMF message specifying the correct IA5 character in the "keypad information" field of the keypad facility information element.

2.1 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.3.

26.8.1.4.1.1.3　Test purpose

1) To verify that an MS supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone, sends a START DTMF message on the correct DCCH.

2) To verify that an MS supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone (the corresponding IA5 character being selected from among the ones supported), sends a START DTMF message specifying the correct IA5 character in the "keypad information" field of the keypad facility information element.

26.8.1.4.1.1.4　Method of test

Specific PICS statements

-

PIXIT statements

- supported character set (e.g. 0-9, #, *, A, B, C, D);

- if and how DTMF tone is indicated to the user.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC-state "active".

Foreseen final state of the MS

CC-state "active".

Maximum duration of test

1 min.

Test procedure

The MS being in the call active state, a user causes a DTMF tone to be generated e.g. by depression of a key in the MS. A DTMF digit corresponding to the digit indicated by the user is sent in a START DTMF message by the MS. The SS will return a START DTMF ACKNOWLEDGE message to the MS. This acknowledgement may be used in the MS to generate an indication as a feedback for a successful transmission. Then the user indicates that the DTMF sending should cease e.g. by releasing the key. The MS will send a STOP DTMF message to the network which is acknowledged with STOP DTMF ACKNOWLEDGE by the SS.

The sequence described above is repeated for each of the applicable characters 0-9, #, *, A, B, C, and D.

Then a case of rejecting a DTMF tone is tested and the state of the MS is verified.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	START DTMF	the user causes DTMF tone to be generated
	SS		the SS will verify that the transmitted information corresponds to the digit pressed
2	SS -> MS	START DTMF ACKNOWLEDGE	possible indication of a DTMF tone depending the PIXIT statements
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U10
5	MS -> SS	STOP DTMF	
6	SS -> MS	STOP DTMF ACKNOWLEDGE	the DTMF tone indication shall be stopped
7			the steps 1-6 shall be repeated for each of the applicable characters 0-9, #, *, A, B, C, D.
8	SS -> MS	STATUS ENQUIRY	
9	MS -> SS	STATUS	cause 30#, state U10
10	MS -> SS	START DTMF	
11	SS -> MS	START DTMF REJECT	
12	SS -> MS	STATUS ENQUIRY	
13	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

None.

26.8.1.4.2 In-call functions / user notification

User notification procedure allows the network to notify a MS of any call-related event during the "active" state of a call. It also may allow a MS to notify the remote user of any appropriate call-related event during the "active" state of a call by sending a NOTIFY message containing a notification indicator to the network. No state change occurs at any of the interface sides during this procedure.

26.8.1.4.2.1 In-call functions / User notification / MS terminated

26.8.1.4.2.1.1 Definition

This is a case for testing user notification procedure terminated by the mobile station. The test is applicable for those equipments supporting at least one circuit switched basic service.

26.8.1.4.2.1.2 Conformance requirement

1) A CC entity of a MS in CC-state U10, "active", upon receiving of a NOTIFY message shall remain in the active state.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.1.

26.8.1.4.2.1.3   Test purpose

To verify that a CC entity of a MS in CC-state U10, "active", upon receiving of a NOTIFY message remains in the active state.

26.8.1.4.2.1.4   Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC-state "active".

Foreseen final state of the MS

CC-state "active".

Maximum duration of test

10 s.

Test procedure

The MS being in the call active state, the SS will send a NOTIFY message to the MS. The state of the MS is checked after that.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	NOTIFY	
2	SS -> MS	STATUS ENQUIRY	
3	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

None.

26.8.1.4.3   In-call functions / channel changes

The two following test cases are for testing some elementary radio resource level procedures during an active state of a call to ensure call maintenance also during physical channel changes.

26.8.1.4.3.1   In-call functions / channel changes / a successful channel change in active state/ Handover and Assignment Command

26.8.1.4.3.1.1   Definition

This is a case to test a change of a physical channel during active state of a call. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.4.3.1.2   Conformance requirement

1) The MS being in the call active state after having successful completed a channel assignment or a handover command, shall remain in the call active state.

References

> 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.2,
> 3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.6.1

26.8.1.4.3.1.3   Test purpose

To verify that the MS being in the call active state after having successful completed a channel assignment or having completed a handover command remains in the call active state.

26.8.1.4.3.1.4   Method of test

Specific PICS statements

> -

PIXIT statements

> -

Initial conditions

> System Simulator:
>
> > 1 cell, default parameters.
>
> Mobile Station:
>
> > The MS is in CC-state "active".

Foreseen final state of the MS

CC-state "active".

Maximum duration of test

10 s.

Test procedure

The SS initiates a call to the Mobile Station, using an arbitrarily chosen MT circuit switched basic service (see clause 10 for generic call set up procedures).

The MS being in the call active state, the SS initiated channel assignment procedure causing an intracell change of channel by sending ASSIGNMENT COMMAND message to the MS. The MS performs channel assignment procedure and after the main signalling link is successfully established, the MS returns an ASSIGNMENT COMPLETE message. The state of the MS is then checked.

The SS then initiates a Finely Synchronized handover intra cell procedure. On the successful completion of this procedure the state of the MS is checked.

Expected sequence

Step	Direction	Message	Comments
0			Generic call set up procedure defined in subclauses 10.1 and 10.3, depending on choice of Bearer Capability.
1	SS -> MS	ASSIGNMENT COMMAND	
2	MS -> SS	ASSIGNMENT COMPLETE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U10
5	SS -> MS	HANDOVER COMMAND	See Specific message contents.
6	MS -> SS	HANDOVER ACCESS	
7	MS -> SS	HANDOVER ACCESS	
8	MS -> SS	HANDOVER ACCESS	
9	MS -> SS	HANDOVER ACCESS	Before completion of the 4 access bursts on the new DCCH, additional access bursts may also be sent on the SACCH
10	MS -> SS	HANDOVER COMPLETE	
11	SS -> MS	STATUS ENQUIRY	
12	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

ASSIGNMENT COMMAND

Information Element	value/remark
Channel Description As used in Assignment Command when setting up the call, except: - Timeslot Number	 Arbitrary value, but different to originally used.

HANDOVER COMMAND

Information Element	value/remark
Cell Description - Network Colour Code - Base Station Colour Code - BCCH Carrier Number	 1 5 GSM 450 – ARFCN 263 GSM 480 – ARFCN 310 P-GSM 900 - ARFCN 20 DCS 1 800 - ARFCN 590 PCS 1 900 – ARFCN 650 GSM 710 – ARFCN 457 GSM 750 – ARFCN 457 T-GSM 810 – ARFCN 457 GSM 850 – ARFCN 147
Channel Description As used in Assignment Command when setting up the call, except: - Timeslot Number Synchronization Indication - Report Observed Time Difference - Synchronization Indication - Normal Cell Indication	 Arbitrary value, but different to originally used. Shall not be included. "Synchronized". Ignore out of range timing advance.

STATUS

Information Element	value/remark
cause	#30, statue U10.

26.8.1.4.3.2   In-call functions / channel changes / an unsuccessful channel change in active mode/ Handover and Assignment Command

26.8.1.4.3.2.1   Definition

This is a case to test an unsuccessful change of a physical channel during active state of a call. This test is applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

26.8.1.4.3.2.2   Conformance requirement

1) The MS, when returning to the old channel after handover or Assignment failure and having established the link, shall remain in the call active state.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.

26.8.1.4.3.2.3   Test purpose

To verify that the MS, when returning to the old channel after handover or Assignment failure and correctly establishing the link, will remain in the call active state.

26.8.1.4.3.2.4   Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC-state "active".

Foreseen final state of the MS

CC-state "active".

Maximum duration of test

30 s.

Test procedure

The SS initiates a call to the Mobile Station, using an arbitrarily chosen circuit switched basic service (see clause 10 for generic call set up procedures).

The MS being in the call active state, the SS initiates non synchronized handover procedure to cell B. The MS begins to send access bursts on the new DCCH (and optionally the SACCH). The SS activates the SACCH, but does not send a PHYSICAL INFORMATION MESSAGE, thus causing timer T3124 to time-out. Then the MS shall return back to the old channel and re-establish the signalling link on cell A and send a HANDOVER FAILURE message. The state of the MS is then checked.

The SS sends an Assignment command message allocating a hopping TCH/F, but does not activate the assigned channel. The MS shall attempt try to activate the new channel (this is not verified) and shall then reactivate the "old" channel and trigger the establishment of the main signalling link on the old channel. The MS shall send an ASSIGNMENT FAILURE message. The state of the MS is then checked.

Expected sequence

Step	Direction	Message	Comments
0			Generic call set up procedure defined in subclauses 10.1 and 10.3, depending on choice of Bearer Capability.
1	SS -> MS	HANDOVER COMMAND	
2	MS -> SS	HANDOVER ACCESS	Several messages are sent, all with the handover reference sent in the HANDOVER COMMAND message.
3	MS -> SS	HANDOVER FAILURE	
4	SS -> MS	STATUS ENQUIRY	
5	MS -> SS	STATUS	cause 30#, state U10
6	SS -> MS	ASSIGNMENT COMMAND	Channel type = TCH/F, hopping. The MS attempts and fails to establish a signalling link on the new channel.
7			The MS re-establishes the signalling link on the "old" channel.
8	MS -> SS	ASSIGNMENT FAILURE	RR cause value = "protocol error unspecified"
9	SS -> MS	STATUS ENQUIRY	
10	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

ASSIGNMENT FAILURE

Information Element	value/remark
RR cause	"protocol error unspecified"

HANDOVER FAILURE

Information Element	value/remark
RR cause	Not checked, as tested elsewhere.

STATUS

Information Element	value/remark
cause	#30, statue U10.

26.8.1.4.4 In-call functions / MS terminated in-call modification

26.8.1.4.4.1 In-call functions / MS terminated in-call modification / modify when new mode is not supported

26.8.1.4.4.1.1 Definition

This is to test a special case of a in-call modification procedure, in which the new mode is not supported (and consequently not one of those negotiated and agreed during the establishment phase of the call). This test is applicable for any equipment supporting at least one circuit switched basic service.

26.8.1.4.4.1.2 Conformance requirement

1) In the case that the MS supports the network originated in-call modification procedure, the MS after having received a MODIFY message with a new mode which is not the actual one and cannot be supported by the MS shall reject it by sending a MODIFY REJECT message or a STATUS message.

2) In the case that the MS does not support the network originated in-call modification procedure, the MS shall, when receiving a MODIFY message, treat the message as unknown and respond with a STATUS message.

References

1) 3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.3.4.3.4.2 and 5.3.4.4.

2) 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.

26.8.1.4.4.1.3 Test purpose

1) To verify that an MS supporting the network originated in-call modification procedure, after having received a MODIFY message with a new mode which is not the actual one and cannot be supported by the MS, rejects it by sending a MODIFY REJECT.

2) To verify that an MS not supporting the network originated in-call modification procedure, after having received a MODIFY message, responds with a STATUS message.

26.8.1.4.4.1.4 Method of test

Specific PICS statements

- the MS supports the network originated in-call modification procedure (p = Yes/No) (TSPC_AddInfo_InCallMod)

PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC-state "active".

Foreseen final state of the MS

CC-state "active".

Maximum duration of test

10 s.

Test procedure

The MS being in the call active state, the SS initiates in-call modification procedure by sending a MODIFY message with new mode different from actual mode and one of those not supported by the MS. The MS either returns a MODIFY REJECT message with the old bearer capability or a STATUS message with reject cause #97, depending on the PICS statement. The state of the MS is then checked.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	MODIFY	with new mode different from actual one
2a	MS -> SS	MODIFY REJECT	with the old call mode included OR, p = Yes
2b	MS -> SS	STATUS	cause #97, state U10, p = No
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

None.

26.8.1.4.5 In-call functions / MS originated in-call modification

26.8.1.4.5.1 In-call functions / MS originated in-call modification / a successful case of modifying

26.8.1.4.5.1.1 Definition

This test is to test a successful case of in-call modification, which is triggered by the calling tone identification (CNG) received by the MS. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.1.2 Conformance requirement

1) The procedure shall be initiated by the MS in the "active" state of the call. It shall send a MODIFY message including the new mode to be changed to; and enter the "mobile originating modify" state. The new mode given in the MODIFY message shall be one of those already negotiated and agreed during the establishment phase of the call. The MS shall stop sending Bm-channel information according to the old mode and enter the state U26 "Mobile Originating Modify".

2) Upon receipt of the MODIFY COMPLETE message the MS shall start sending channel information according to the new call mode and enter the "active" state.

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.1.

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.2.

26.8.1.4.5.1.3 Test purpose

1) To verify that the procedure is initiated by the MS in the "active" state of the call. It sends a MODIFY message including the new mode to be changed to; and enters the "mobile originating modify" state. The new mode given in the MODIFY message is one of those already negotiated and agreed during the establishment phase of the call. The MODIFY originating side stops sending Bm-channel information.

2) To verify that upon receipt of the MODIFY COMPLETE message the MS starts sending channel information according to the new call mode and enters the "active" state.

26.8.1.4.5.1.4 Method of test

Specific PICS statements

-

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modificationInitial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state "active".

Maximum duration of test

10 s.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with the new mode to the SS and the state of the MS is checked. The channel mode is modified with the CHANNEL MODE MODIFY message including the appropriate channel mode for the new service. The SS then returns a MODIFY COMPLETE message. The state of the MS is then checked.

NOTE: ICM can be initiated by manual intervention at the MS.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a dual mode call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	MS -> SS	SETUP	as specified in specific message contents
8	SS -> MS	AUTHENTICATION REQUEST	
9	MS -> SS	AUTHENTICATION RESPONSE	
10	SS -> MS	CALL PROCEEDING	as specified in specific message contents
11	SS -> MS	ASSIGNMENT COMMAND	channel mode: see subclause 10.4
12	MS -> SS	ASSIGNMENT COMPLETE	
13	SS -> MS	ALERTING	
14	SS -> MS	CONNECT	
15	MS -> SS	CONNECT ACKNOWLEDGE	
16	MS -> SS	MODIFY	as specified in specific message contents
17	SS -> MS	STATUS ENQUIRY	
18	MS -> SS	STATUS	cause 30#, state U26
19	SS -> MS	CHANNEL MODE MODIFY	as specified in specific message contents
20	MS -> SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
21	SS -> MS	MODIFY COMPLETE	contains the new mode as bearer capability
22	SS		allow at least 2 s for the MS to adapt for the new mode
23	SS -> MS	STATUS ENQUIRY	
24	MS -> SS	STATUS	cause 30#, state U10
25	SS		verify that the MS starts sending Bm channel information according to the new mode

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.2   In-call functions / MS originated in-call modification / modify rejected

26.8.1.4.5.2.1   Definition

This is to test a special case of a in-call modification procedure, in which the in-call modification is rejected. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.2.2   Conformance requirement

1) Upon receipt of the MODIFY REJECT message with the old bearer capability the MS shall: resume sending Bm-channel information according to the present call mode; resume interpreting received Bm-channel information according to the present call mode; and enter the "active" state.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.4.1.

26.8.1.4.5.2.3   Test purpose

To verify that upon receipt of the MODIFY REJECT message with the old bearer capability the MS resumes sending Bm-channel information according to the present call mode; resumes interpreting received Bm-channel information according to the present call mode; and enters the "active" state.

26.8.1.4.5.2.4   Method of test

Specific PICS statements

  -

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modification

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state "active".

Maximum duration of test

10 s.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with new mode to the SS. The SS returns a MODIFY REJECT message. The state of the MS is then checked.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	MMI action to initiate a dual mode call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	as specified in specific message contents
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	agreeing bearer capabilities for dual mode call
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> SS	ALERTING	
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	
15	MS -> SS	MODIFY	MMI action to change the mode
16	SS -> MS	MODIFY REJECT	with cause #58 bearer capability not available and with old bearer capabilities
17	SS -> MS	STATUS ENQUIRY	
18	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.3   In-call functions / MS originated in-call modification / an abnormal case of acceptance

26.8.1.4.5.3.1   Definition

This is to test a special case of a in-call modification procedure, in which the in-call modification is accepted incorrectly. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.3.2   Conformance requirement

1) Upon receipt of the MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one the MS shall discard it and take no action.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.4.

26.8.1.4.5.3.3   Test purpose

To verify that upon receipt of the MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one the MS discards it and takes no action.

26.8.1.4.5.3.4   Method of test

Specific PICS statements

-

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modification

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state U26 "Mobile Originating Modify".

Maximum duration of test

10 s.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with new mode to the SS. The SS returns a MODIFY COMPLETE message specifying a mode that does not correspond to the requested one. It will be verified then that the MS shall not take any action and the state of the MS will be checked.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	MMI action to initiate a dual mode call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	as specified in specific message contents
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	agreeing bearer capabilities for dual mode call
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> SS	ALERTING	
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	
15	MS -> SS	MODIFY	MMI action to change the mode
16	SS -> MS	MODIFY COMPLETE	with a mode that does not correspond to the requested one
17	SS -> MS	STATUS ENQUIRY	
18	MS -> SS	STATUS	cause 30#, state U26

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.4 In-call functions / MS originated in-call modification / an abnormal case of rejection

26.8.1.4.5.4.1 Definition

This is to test a special case of a in-call modification procedure, in which the in-call modification is rejected incorrectly. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.4.2 Conformance requirement

1) Upon receipt of the MODIFY REJECT message indicating a call mode which does not correspond to the actual one the MS shall discard it and take no action.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.4.

26.8.1.4.5.4.3 Test purpose

To verify that upon receipt of the MODIFY REJECT message indicating a call mode which does not correspond to the actual one the MS discards it and takes no action.

26.8.1.4.5.4.4 Method of test

Specific PICS statements

-

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modification

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state U26 "Mobile Originating Modify".

Maximum duration of test

10 s.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with new mode to the SS. The SS returns a MODIFY REJECT message specifying a mode that does not correspond to the actual one. The state of the MS is then checked.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	MMI action to initiate a dual mode call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	as specified in specific message contents
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	agreeing bearer capabilities for dual mode call
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> SS	ALERTING	
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	
15	MS -> SS	MODIFY	MMI action to change the mode
16	SS -> MS	MODIFY REJECT	with a mode that does not correspond to the actual one
17	SS -> MS	STATUS ENQUIRY	
18	MS -> SS	STATUS	cause 30#, state U26

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.5 In-call functions / MS originated in-call modification / time-out of timer T323

26.8.1.4.5.5.1 Definition

This is to test a special case of a in-call modification procedure, in which timer T323 expires in state U26, mobile originating modify. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.5.2 Conformance requirement

1) Upon expiration of T323 the MS shall initiate the procedures for call clearing with cause #102 "recovery on timer expiry".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.4.3.

26.8.1.4.5.5.3 Test purpose

To verify that upon expiration of T323 (accuracy ± 10 %) the MS shall initiate the procedures for call clearing with cause #102 "recovery on timer expiry".

26.8.1.4.5.5.4 Method of test

Specific PICS statements

-

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modification

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state U11 "disconnect request".

Maximum duration of test

1 minute.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with new mode to the SS. The SS does not respond until timer T323 expires at the MS. The MS is expected to respond with a DISCONNECT message. The SS checks timer T323 accuracy between emission of MODIFY and reception of DISCONNECT messages, the state of the MS and a cause value from the DISCONNECT message.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	MMI action to initiate a dual mode call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	as specified in specific message contents
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	agreeing bearer capabilities for dual mode call
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> MS	ALERTING	
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	
15	MS -> SS	MODIFY	MMI action to change the mode
16	SS		the SS waits for the timer T323 expiry
17	MS -> SS	DISCONNECT	cause value #102, the SS checks timer T323 accuracy (± 10 %) between MODIFY and DISCONNECT messages
18	SS -> MS	STATUS ENQUIRY	
19	MS -> SS	STATUS	cause 30#, state U11

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.6 In-call functions / MS originated in-call modification / a successful channel change in state mobile originating modify

26.8.1.4.5.6.1 Definition

This is to test a special case of a in-call modification procedure, in which a change of a physical channel occurs in state U26, mobile originating modify. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.6.2 Conformance requirement

1) A CC-entity of the MS in CC-state U26, "Mobile Originating Modify", after successful completion of a channel assignment procedure or channel mode modify procedure shall remain in the call state U26.

2) Upon receipt of the MODIFY COMPLETE message the MS shall start sending channel information according to the new call mode and enter the "active" state.

References

1) 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.2,
   3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.6.1.

2) 3GPP TS 04.08, subclause 5.3.4.3.2.

26.8.1.4.5.6.3 Test purpose

1) To verify that a CC-entity of the MS in CC-state U26, "Mobile Originating Modify", after successful completion of a channel assignment procedure remains in the call state U26.

2) To verify that upon receipt of the MODIFY COMPLETE message the MS starts sending channel information according to the new call mode and enters the "active" state.

26.8.1.4.5.6.4 Method of test

Specific PICS statements

-

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modification

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state U10, active.

Maximum duration of test

10 s.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with a new mode to the SS. The SS does not respond immediately, but performs channel assignment procedure including the appropriate channel mode for the new service. The state of the MS is then checked. The SS then returns a MODIFY COMPLETE message. The state of the MS is checked finally.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	MMI action to initiate a dual mode call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	as specified in specific message contents
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	agreeing bearer capabilities for dual mode call
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> MS	ALERTING	
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	
15	MS -> SS	MODIFY	MMI action to change the mode
16	SS -> MS	ASSIGNMENT COMMAND	channel mode implied by the MODIFY message
17	MS -> SS	ASSIGNMENT COMPLETE	
18	SS -> MS	STATUS ENQUIRY	
19	MS -> SS	STATUS	cause 30#, state U26
20	SS -> MS	MODIFY COMPLETE	
21	SS -> MS	STATUS ENQUIRY	
22	MS -> SS	STATUS	cause 30#, state U10

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.7   In-call functions / MS originated in-call modification / an unsuccessful channel change in state mobile originating modify

26.8.1.4.5.7.1   Definition

This is to test a special case of a in-call modification procedure, in which an unsuccessful change of a physical channel occurs in state U26, mobile originating modify. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.7.2   Conformance requirement

1) A CC-entity of the MS in CC-state U26, "Mobile Originating Modify", when returning to the old channel after handover failure and having established the link, shall remain in the call state U26.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.3.4.3.2.

26.8.1.4.5.7.3   Test purpose

To verify that a CC-entity of the MS in CC-state U26, "Mobile Originating Modify", when returning to the old channel after handover failure and having established the link, remains in the call state U26.

26.8.1.4.5.7.4 Method of test

Specific PICS statements

-

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modification

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state U26, mobile originating modify.

Maximum duration of test

10 s.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with a new mode to the SS. The SS initiates handover procedure. When the MS tries to establish the main signalling link, it is prohibited by the SS. Then the MS shall return back to the old channel and re-establish correctly the link. The state of the MS is then checked.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	MMI action to initiate a dual mode call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	as specified in specific message contents
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	agreeing bearer capabilities for dual mode call
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> SS	ALERTING	
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	
15	MS -> SS	MODIFY	MMI action to change the mode
16	SS -> MS	HANDOVER COMMAND	
17	MS -> SS	HANDOVER ACCESS	the SS does not respond
18	MS -> SS	HANDOVER FAILURE	after the MS has re-established the main signalling link in the old channel
19	SS -> MS	STATUS ENQUIRY	
20	MS -> SS	STATUS	cause 30#, state U26

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.8   In-call functions / MS originated in-call modification / unknown message received

26.8.1.4.5.8.1   Definition

This is to test a special case of a in-call modification procedure, in which an unknown message is received in state U26, mobile originating modify. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech/Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech/Group 3 fax).

26.8.1.4.5.8.2   Conformance requirement

A CC entity of a MS in CC-state U26, "Mobile Originating Modify", having received an unknown message from its peer entity shall return a STATUS message.

References

       3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.4.

26.8.1.4.5.8.3   Test purpose

To verify that a CC entity of a MS in CC-state U26, "Mobile Originating Modify", having received an unknown message from its peer entity returns a STATUS message.

26.8.1.4.5.8.4   Method of test

Specific PICS statements

   -

PIXIT statements

   -   a way to activate a dual mode call

   -   a way to activate in-call modification

Initial conditions

   System Simulator:

       1 cell, default parameters.

   Mobile Station:

       The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

CC-state U26, mobile originating modify.

Maximum duration of test

10 s.

Test procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with a new mode to the SS. The SS sends a message with message type not defined for the protocol discriminator. The state of the MS is then checked.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	MMI action to initiate a dual mode call
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	
5	MS -> SS	CIPHERING MODE COMPLETE	
6	MS -> SS	SETUP	as specified in specific message contents
7	SS -> MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	CALL PROCEEDING	agreeing bearer capabilities for dual mode call
10	SS -> MS	ASSIGNMENT COMMAND	TCH
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> SS	ALERTING	
13	SS -> MS	CONNECT	
14	MS -> SS	CONNECT ACKNOWLEDGE	
15	MS -> SS	MODIFY	MMI action to change the mode
16	SS -> MS	unknown message	message type not defined for PD
17	MS -> SS	STATUS	cause 97#, state U26

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.9 In-call functions / MS originated in-call modification / a release complete received

26.8.1.4.5.9.1 Definition

The call control entity of the MS being in the state, U26, the call is cleared by a RELEASE COMPLETE message sent by the SS. This test is applicable for any equipment supporting any dual mode bearer capability service (BS61 - Alternate Speech / Data, BS81 - Speech followed by Data, Teleservice 61 - Alternate Speech / Group 3 fax).

26.8.1.4.5.9.2 Conformance requirement

1) A CC entity of the MS in CC-state U26, "mobile originating modify", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

2) On returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

Reference(s)

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.4.2 and 5.4.4.

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.3.

26.8.1.4.5.9.3 Test purpose

1) To verify that a CC entity of the MS in CC-state U26, "mobile originating modify", upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

2) To verify that on returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

26.8.1.4.5.9.4 Method of test

Specific PICS statements

-

PIXIT statements

- a way to activate a dual mode call

- a way to activate in-call modification

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Maximum duration of test

30 s.

Test Procedure

The MS initiates a call for one of the supported dual mode services. The MS being in the call active state, in-call modification procedure is initiated for the selected service from the MS side. The MS shall send a MODIFY message with the new mode to the SS and the state of the MS is checked. The SS sends a RELEASE COMPLETE message to the MS. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

NOTE: ICM can be initiated by manual intervention at the MS.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a dual mode call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	MS -> SS	SETUP	as specified in specific message contents
8	SS -> MS	AUTHENTICATION REQUEST	
9	MS -> SS	AUTHENTICATION RESPONSE	
10	SS -> MS	CALL PROCEEDING	as specified in specific message contents
11	SS -> MS	ASSIGNMENT COMMAND	channel mode: see subclause 10.4
12	MS -> SS	ASSIGNMENT COMPLETE	
13	SS -> MS	ALERTING	
14	SS -> MS	CONNECT	
15	MS -> SS	CONNECT ACKNOWLEDGE	
16	MS -> SS	MODIFY	as specified in specific message contents
17	SS -> MS	STATUS ENQUIRY	
18	MS -> SS	STATUS	cause #30, state U26
19	SS -> MS	RELEASE COMPLETE	
20	SS -> MS	STATUS ENQUIRY	
21	MS -> SS	RELEASE COMPLETE	cause #81 (invalid TI value)
22	SS		repeat steps 20 - 21 to cover all the transaction identifiers from 000 ... 110
23	SS -> MS	CHANNEL RELEASE	the main signalling link shall be released by the MS (L2: DISC/UA)

Specific message contents:

As specified in subclause 26.8.1.4.5.10.

26.8.1.4.5.10 In-call functions/MS originated in-call modification/contents of some of the messages

The following messages are used for testing in-call modification procedures, test cases 26.8.1.4.5.*, as default messages for those ones defined below. If any other values are defined in the expected sequence of the actual test cases, those values take precedence over the ones defined hereafter.

SETUP (MS to SS)

Information element	Value/remark
BC Repeat indicator	
Repeat indication	Sequential, if BS81 is being tested, otherwise circular for successive selection
Bearer capability 1	Appropriate for the teleservice/Bearer Service selected as an initial call mode
Bearer capability 2	Appropriate for the teleservice/Bearer Service to be selected as a new call mode
Facility	Omitted
Calling party subaddress	Omitted
Called party BCD number	As entered
Called party subaddress	Omitted
LLC repeat indicator	The same repeat indication as the one for BC. Present if and only if LLC I and LLC II are present
Low layer compatibility I	See note
Low layer compatibility II	See note
HLC repeat indicator	The same repeat indication as the one for BC. Present if and only if HLC i and HLC ii are present.
High layer compatibility i	See note
High layer compatibility ii	See note
User-user	Omitted
SS version	Omitted
CLIR suppression	Omitted
CC Capabilities	present, but contents not checked
NOTE: HLC/LLC may or may not be present. The contents of HLC/LLC are not verified. If LLC I is present then LLC II shall be present. If HLC i is present then HLC ii shall be present.	

CALL PROCEEDING

If the MS offers a choice in a SETUP message with respect to its bearer capabilities (this choice is restricted to the connection element), the bearer capabilities 1 and 2 and BC repeat indicator must all be present in this message. Otherwise, all three IEs are omitted.

Information element	Value/remark
Repeat Indicator	See above
Repeat indication	As received in the SETUP message
Bearer Capability 1	Same as in subclause 10.4
Bearer Capability 2	Same as in subclause 10.4
Facility	Omitted
Progress indicator	Omitted

MODIFY

Information element	Value/remark
Bearer capability	If the bearer capability IEs were present in the CALL PROCEEDING message, then as it was specified in the bearer capability 2 of the CALL PROCEEDING message. Otherwise as in the bearer capability 2 of the SETUP message.
Reverse Call Setup Direction	Presence and value not checked
Low layer compatibility	See note
High layer compatibility	See note
NOTE: HLC (LLC) shall be included if the HLC (LLC) was included in the SETUP message. The contents of LLC/HLC are not verified.	

MODIFY COMPLETE

Information element	Value/remark
Bearer capability	If the bearer capability IEs were present in the CALL PROCEEDING message, then as it was specified in the bearer capability 2 of the CALL PROCEEDING message. Otherwise as in the bearer capability 2 of the SETUP message.
Reverse Call Setup Direction	Same as in MODIFY
Low layer compatibility	See note
High layer compatibility	See note
NOTE: HLC (LLC) shall be included if the HLC (LLC) was included in the SETUP message. The contents of LLC/HLC are not verified.	

MODIFY REJECT

Information element	Value/remark
Bearer capability	If the bearer capability IEs were present in the CALL PROCEEDING message, then as it was specified in the bearer capability 1 of the CALL PROCEEDING message. Otherwise as in the bearer capability 1 of the SETUP message.
Cause	#58 "bearer capability not presently available".
Low layer compatibility	See note
High layer compatibility	See note
NOTE: HLC (LLC) shall be included if the HLC (LLC) was included in the SETUP message. The contents of LLC/HLC are not verified.	

CHANNEL MODE MODIFY

Information element	Value/remark
Channel description	describes non-hopping Bm+ACCHs or Lm+ACCHs as appropriate for the test
Channel Mode	appropriate for the BC in the MODIFY

CHANNEL MODE MODIFY ACKNOWLEDGE

Information element	Value/remark
Channel description	as sent by the SS in the corresponding CHANNEL MODE MODIFY message
Channel mode	as sent by the SS in the corresponding CHANNEL MODE MODIFY message

26.8.2   Call Re-establishment

26.8.2.1   Call Re-establishment/call present, re-establishment allowed

26.8.2.1.1   Definition

This is to test a successful case of a call re-establishment procedure. This test is applicable for any equipment supporting at least one bearer capability. If the MS does not perform call re-establishment procedure correctly, the network will waste resources.

26.8.2.1.2   Conformance requirement

1) If the call is in the "active" state or "mobile originating modify" state, the indication from MM that re-establishment is possible shall cause call control to request re-establishment from the MM-connection, suspend any further message to be sent and await the completion of the re-establishment procedure.

2) When the call control entity is notified that the MM-connection is re-established, it shall then resume the transmission of possibly suspended messages and resume user data exchange when an appropriate channel is available.

References

    1) 3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.5.1.6 and 5.5.4.2.

    2) 3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.5.1.6 and 5.5.4.3.

26.8.2.1.3   Test purpose

The purpose of this test is to verify that the MS can correctly perform a call re-establishment procedure.

26.8.2.1.4   Method of test

Specific PICS statements

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PIXIT statements

    -

Initial conditions

    System Simulator:

        The SS simulates cells A and B. The LAC of cell A is different from the LAC of cell B. The PLMN identities of cell A and B are equal.

        The call re-establishment parameter concerning cell A is set to an arbitrary value.

        Cell B is not barred, the RACH control parameters information element sent in SYSTEM INFORMATION TYPE 1 to 4 messages of cell A and B specifies "call reestablishment allowed in the cell", the NCC of cell B is indicated as permitted in the PLMN permitted information element of SYSTEM INFORMATION TYPE 2 and 6 messages of cell A. Cell B is indicated as a neighbour cell of cell A in SYSTEM INFORMATION TYPE 2 and 5 messages of cell A. Cell reselect hysteresis parameter of cell A is set to zero.

    Mobile Station:

        The MS is in MM-state "idle, updated" with valid TMSI and CKSN on cell A.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Maximum duration of test

1 minute.

Test procedure

The MS is brought to active state by using procedure 26.9.2, "structured procedures, MS originated call, early assignment". The RF level of cell A is lowered so that cell B is to be selected (when the MS performs re-establishment after radio link failure), while keeping the C1 and C2 of cell A greater than zero. SS waits for at least 5 s. Then the SS stops transmission on the TCH/SACCH. The MS shall re-establish the call on cell B using a CM RE-ESTABLISHMENT message. The SS performs ciphering mode setting and assignment procedures. The MS shall through-connect the appropriate bearer channel. Then, the call is cleared by the SS.

Expected sequence

Step	Direction	Message	Comments
1			Steps 1-19 of test case 26.9.2 are performed (the appropriate bearer channel is through connected in both directions in TCH)
2	SS		The RF level of cell A is lowered. The SS waits at least 5 s. The SS stops transmission on the TCH/SACCH.
3	MS -> SS	CHANNEL REQUEST	this is sent on cell B. Establ. cause shall be "call re-establishment; TCH/F was in use,..."
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM REESTABLISHMENT REQUEST	note specific message contents
6	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
7	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
8	SS		SS starts ciphering.
9	SS -> MS	ASSIGNMENT COMMAND	
10	MS -> SS	ASSIGNMENT COMPLETE	
11	MS		The appropriate bearer channel is through connected in both directions.
12	SS -> MS	DISCONNECT	with cause value "Normal"
13	MS -> SS	RELEASE	
14	SS -> MS	RELEASE COMPLETE	
15	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific message contents:

CM RE-ESTABLISHMENT REQUEST

Information element	Value/remark
Protocol discriminator	Mobility Management
Skip indicator	Encoded as zeroes
Message type	CM RE-ESTABLISHMENT REQUEST
Ciphering key sequence number	The CKSN which the MS was allocated in step 6 of the procedure of subclause 26.9.2.
Spare half octet	zero
Mobile station classmark 2	
- ES_IND	as declared in the PICS/PIXIT
- RF Power capability	as declared in the PICS/PIXIT for band of operation
- Ciphering A5/1	as declared in the PICS/PIXIT
Mobile identity	The TMSI that the MS is having initially
Location area identification	Corresponding the LAI of cell A

26.8.2.2 Call Re-establishment/call present, re-establishment not allowed

26.8.2.2.1 Definition

This is to test a special case of a call re-establishment, in which it is not allowed for a MS to attempt re-establishment of a call. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.2.2.2 Conformance requirement

When a lower layer failure occurs while an MM-connection is active, if a cell allowing call re-establishment is not available, the MS shall release the MM-connection and shall not attempt call re-establishment.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.5.1.6 and 5.5.4.

26.8.2.2.3 Test purpose

The purpose of this test is to verify that the MS does not attempt call re-establishment when it is not allowed to take place because of the unavailability of a cell allowing call re-establishment.

26.8.2.2.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

The SS simulates cell A.

Cell A is not barred, the NCC of cell A is indicated as permitted in the PLMN permitted information element of SYSTEM INFORMATION TYPE 2 and 6 messages. The RE field of the RACH control parameters information element broadcast in messages SYSTEM INFORMATION TYPE 1, 2, 3 and 4 of cell A are set to "call reestablishment not allowed in the cell".

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Maximum duration of test

1 minute.

Test procedure

The MS is brought to active state by using procedure 26.9.2, "structured procedures, MS originated call, early assignment". The SS stops transmission on the TCH/SACCH. The MS shall not require re-establishment of the call.

Expected sequence

Step	Direction	Message	Comments
1			Steps 1-19 of test case 26.9.2 are performed (the appropriate bearer channel is through connected in both directions in TCH)
2	SS		the SS stops transmission on the TCH/SACCH
3	MS		the MS shall not attempt re-establishment on cell A. This is checked for 30 s after the radio link failure.

Specific message contents:

None.

26.8.2.3 Call Re-establishment/call under establishment, transmission stopped

26.8.2.3.1 Definition

This is to test a special case of a call re-establishment, in which it is not allowed for a MS to attempt re-establishment of a call, since the call has not been established yet. This test is applicable for any equipment supporting at least one mobile originated circuit switched basic service.

26.8.2.3.2 Conformance requirement

When a lower layer failure occurs while an MM-connection is active, if the state of the call control entity is not "active", the MS shall release the MM-connection and shall not attempt call re-establishment.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.5.1.6 and 5.5.4.2.

26.8.2.3.3   Test purpose

The purpose of this test is to verify that the MS does not attempt call re-establishment when it is not allowed to take place because of the call control state.

26.8.2.3.4   Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions

System Simulator:

The SS simulates cell A.

Cell A is not barred, the RACH control parameters information element sent in SYSTEM INFORMATION TYPE 1 to 4 messages of cell A specifies "call reestablishment allowed in the cell", the NCC of cell A is indicated as permitted in the PLMN permitted information element of SYSTEM INFORMATION TYPE 2 and 6 messages.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Maximum duration of test

1 minute.

Test procedure

The call control entity of the MS is brought to state U4, "call delivered" by using initial part of procedure 26.9.2, "structured procedures, MS originated call, early assignment". The SS stops transmission on the TCH/SACCH. The MS shall not require re-establishment of the call on cell A.

Expected sequence

Step	Direction	Message	Comments
1			the MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	MS -> SS	SETUP	
11	SS -> MS	CALL PROCEEDING	
12	SS -> MS	ASSIGNMENT COMMAND	
13	MS -> SS	ASSIGNMENT COMPLETE	
14	SS -> MS	ALERTING	
15	SS		the SS stops transmission on the TCH/SACCH
16	MS		the MS shall not attempt re-establishment on cell A. This is checked for 30 s after the radio link failure.

Specific message contents:

None.

26.8.3 User to user signalling

26.8.3.1 Definition

The "user to user" information element is used to convey information between the mobile user and a remote ISDN user. This test is therefore applicable for any equipment supporting at least one mobile terminating circuit switched basic service.

NOTE: There is no test for an MS originating call including a "user-user" information element since it is not a mandatory MS feature.

26.8.3.2 Conformance requirement

The inclusion of the "user-user" information element in downlink call control messages shall cause no adverse effects on the operation of the MS.

References

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.2, 9.3.7, 9.3.23.1 and 10.5.4.25.

26.8.3.3 Purpose of the test

The purpose of this test is to verify that inclusion of the "user-user" information element in either of the down link messages, SETUP or DISCONNECT causes no adverse effects on the operation of the MS.

26.8.3.4 Method of test

Specific PICS statements

-

PIXIT statements

-

Initial conditions.

System Simulator:

The SS simulates 1 cell, with default parameters.

Mobile Station:

The MS is in MM-state "idle updated", with a valid TMSI and CKSN.

Foreseen final state of the MS

The MS is in MM-state "idle updated", with a valid TMSI and CKSN.

Maximum duration of test

2 minutes.

Test procedure

The SS attempts to set up a mobile terminated call, with one of the supported circuit switched basic services which has been arbitrarily chosen, using one of the generic call set up procedures,(either speech or data) as specified in clause 10. The default SETUP message contents are modified to include the user-user Information Element. The MS shall not respond adversely to the inclusion of the user-user information element.

After 30 s the SS sends a DISCONNECT message, again the MS shall not respond adversely to the inclusion of the user-user information element, but shall continue to clear down the call normally.

Expected sequence

Step	Direction	Message	Comments
1			Generic Call Setup procedure defined in clauses 10.1 or 10.3, depending on choice of Bearer Capability. The SETUP message in either case contains the user-user IE, see Specific message contents.
2			The SS waits 30 s.
3	SS -> MS	DISCONNECT	Message contains the user-user IE, see Specific message contents
4	MS -> SS	RELEASE	As defined in subclause 26.8.4
5	SS-> MS	RELEASE COMPLETE	As defined in subclause 26.8.4
6	SS-> MS	CHANNEL RELEASE	As defined in subclause 26.8.4

Specific message contents:

SETUP

As default message contents as defined in the Generic Call setup procedures subclauses 10.1 or 10.3 except:

Information Element	value/remark
Bearer Capability	Bearer capability arbitrarily chosen from those supported by the Mobile Station under test.
user-user	
- length	Length of user-user contents (note)
- PD	IA5 characters (note)
- user-user	The following string coded in IA5 characters: "Call Setup" (note)

DISCONNECT

As default message contents as defined in subclause 26.8.4, except:

Information Element	value/remark
user-user	
- length	Length of user-user contents (note)
- PD	IA5 characters (note)
- user-user	The following string coded in IA5 characters: "Call Disconnect" (note)
NOTE: The codings above are for example only. For the case of an MS which supports "user-user" signalling it may be necessary to add meaning to the data fields, see PICS/PIXIT statement(s).	

26.8.4 Default contents of message

ALERTING (mobile station to network direction)

No default requirements defined for this message.

ALERTING (network to mobile station direction)

Information element	Value/remark
Facility	Omitted
Progress indicator	Omitted
User-user	Omitted

ASSIGNMENT COMMAND

Information element	Value/remark
Description of the first channel	describes non-hopping Bm+ACCHs or Lm+ACCHs as appropriate for the test
Power Command	As in subclause 6.3
Frequency list	Omitted
Cell channel description	Omitted
Mode of the first channel	appropriate for the bearer capability chosen for the test
Description of the second channel	Omitted
Mode of the second channel	Omitted
Mobile allocation	Omitted
Starting time	Omitted
Cipher mode setting	Omitted

ASSIGNMENT COMPLETE

Information element	Value/remark
RR cause	not checked

AUTHENTICATION REQUEST

Information element	Value/remark
Ciphering key sequence number	Arbitrary excluding 111B
Spare half octet	(spare bits)
Authentication parameter RAND	Arbitrary

AUTHENTICATION RESPONSE

Information element	Value/remark
Authentication parameter SRES	not checked

CALL CONFIRMED

No default requirements defined for this message.

CALL PROCEEDING

Information element	Value/remark
Repeat Indicator	Omitted
Bearer Capability 1	Omitted if the SETUP message did not specify in the bearer capability 1 IE a connection element value "both, transparent preferred" or "both, non-transparent preferred". Otherwise included; in that case the connection element specifies the value that is appropriate for the selected basic service (either value "transparent" or value "non transparent (RLP)"), all other parameters are same as in the bearer capability 1 IE of the received SETUP message.
Bearer Capability 2	Omitted
Facility	Omitted
Progress indicator	Omitted

CHANNEL MODE MODIFY

Information element	Value/remark
Channel description	describes non-hopping Bm+ACCHs or Lm+ACCHs as appropriate for the test
Channel mode	appropriate for the bearer capability chosen for the test

CHANNEL MODE MODIFY ACKNOWLEDGE

Information element	Value/remark
Channel description	as sent by the SS in the corresponding CHANNEL MODE MODIFY message
Channel mode	as sent by the SS in the corresponding CHANNEL MODE MODIFY message

CHANNEL RELEASE

Information element	Value/remark
RR cause	Normal event

CHANNEL REQUEST

Information element	Value/remark
Establishment cause	If in response to paging, then "100"; if a mobile originating call, then "111"
Random reference	Arbitrary value of 5 bits length

CIPHERING MODE COMMAND

Information element	Value/remark
Cipher mode setting	
algorithm identifier	indicates a supported algorithm
SC	Start ciphering
Cipher response	
CR	IMEI must not be included

CIPHERING MODE COMPLETE

No default requirements defined for this message.

CM SERVICE ACCEPT

No default values defined for this message.

CM SERVICE REJECT

Information element	Value/remark
Reject cause	Service or option not available, unspecified

CM SERVICE REQUEST

No default requirements defined for this message.

CONNECT (network to mobile station direction)

Information element	Value/remark
Facility	Omitted
Progress indicator	Omitted
Connected number	Omitted
Connected subaddress	Omitted
User-user	Omitted

CONNECT (mobile station to network direction)

No default requirements defined for this message.

CONNECT ACKNOWLEDGE

No default requirements defined for this message.

DISCONNECT (network to mobile station direction)

Information element	Value/remark
Cause	
Coding standard	GSM
Location	User
Cause value	Normal clearing
Facility	Omitted
Progress indicator	Omitted
User-user	Omitted

DISCONNECT (mobile station to network direction)

Information element	Value/remark
Cause	Shall be present, contents not checked
Facility	Omitted
User-user	Omitted
SS version	Omitted

HANDOVER ACCESS

No default requirements defined for this message.

HANDOVER COMMAND

Information element	Value/remark
Cell Description Description of the first channel	a BCCH frequency, which is one of the neighbour cells describes non-hopping Bm+ACCHs or Lm+ACCHs as appropriate for the test
Handover Reference	an arbitrary value
Power Command	as in 6.3
Synchronization indication	Omitted
Frequency short list	Omitted
Frequency List	Omitted
Cell Channel Description	Omitted
Channel Mode	Omitted
Channel Description	Omitted
Channel Mode 2	Omitted
Frequency Channel Sequence	Omitted
Mobile Allocation	Omitted
Starting Time	Omitted
Real time difference	Omitted
Timing advance	Omitted
Cipher Mode setting	Omitted

HANDOVER FAILURE

No default requirements defined for this message.

IMMEDIATE ASSIGNMENT

Information element	Value/remark
Page mode	Normal paging
Channel description	describes a valid SDCCH+SACCH in non-hopping mode
Request reference	
Random access information	As received from MS
T1', T2, T3	Corresponding to frame number of the CHANNEL REQUEST
Timing advance	corresponding the timing difference between the MS and the SS
Mobile allocation	Empty (L=0)
Starting time	Omitted

MODIFY

No default values defined for this message.

MODIFY COMPLETE

No default requirements defined for this message.

MODIFY REJECT

No default values defined for this message.

NOTIFY (network to mobile station direction)

Information element	Value/remark
Notification indicator	one of the valid values chosen arbitrarily

PAGING REQUEST TYPE 1

Information element	Value/remark
L2 pseudo length	L2 pseudo length of the message
Page Mode	Normal Paging
Channels needed for Mobiles 1 and 2	
channel (first)	any channel
channel (second)	any channel
Mobile identity 1	TMSI of MS under test
Mobile identity 2	Omitted
P1 rest octets	(spare octets)

PAGING RESPONSE

No default requirements defined for this message.

PROGRESS

No default values defined for this message.

RELEASE (network to mobile station direction)

Information element	Value/remark
Cause	Omitted
Second cause	Omitted
Facility	Omitted
User-user	Omitted

RELEASE (mobile station to network direction)

No default requirements defined for this message.

RELEASE COMPLETE (network to mobile station direction)

Information element	Value/remark
Cause	Omitted
Facility	Omitted
User-user	Omitted

RELEASE COMPLETE (mobile station to network direction)

No default requirements defined for this message.

SETUP (mobile station to network direction)

Information element	Value/remark
BC Repeat indicator	Omitted
Bearer capability 1	Appropriate for the basic service selected for the test
Bearer capability 2	Omitted
Facility	Omitted
Calling party subaddress	Omitted
Called party BCD number	As entered
Called party subaddress	Omitted
LLC repeat indicator	Omitted
Low layer compatibility I	Appropriate for the basic service selected for the test
Low layer compatibility II	Omitted
HLC repeat indicator	Omitted
High layer compatibility i	Appropriate for the basic service selected for the test
High layer compatibility ii	Omitted
User-user	Omitted
SS version	Omitted
CLIR suppression	Omitted
CC Capabilities	present, shall indicate support for DTMF as per subclause 5.5.7 of 3GPP TS 04.08 / 3GPP TS 24.008

SETUP (network to mobile station direction)

Information element	Value/remark
BC repeat indicator	Omitted
Bearer capability 1	Appropriate for the basic service selected for the test
Bearer capability 2	Omitted
Facility	Omitted
Progress indicator	Omitted
Signal	Any defined value as described for Signal IE in 3GPP TS 04.08 / 3GPP TS 24.008
Calling party BCD number	Omitted
Calling party subaddress	Omitted
Called party BCD number	Omitted
Called party subaddress	Omitted
LLC repeat indicator	Omitted
Low layer compatibility I	Appropriate for the basic service selected for the test
Low layer compatibility II	Omitted
HLC repeat indicator	Omitted
High layer compatibility i	Appropriate for the basic service selected for the test
High layer compatibility ii	Omitted
User-user	Omitted

START DTMF

No default requirements defined for this message.

START DTMF ACKNOWLEDGE

Information element	Value/remark
Keypad facility	corresponding to the DTMF digit indicated in the START DTMF message

START DTMF REJECT

Information element	Value/remark
Cause	value "Resources unavailable, unspecified"

STATUS

Information element	Value/remark
Cause	Value "Response to STATUS ENQUIRY"
Call state	Specified separately in each test case
Auxiliary states	Omitted

STATUS ENQUIRY

No default values defined for this message, except that when this message is used to check that "all the transaction identifiers from 000 to 110" are in the null state, the TI flag shall take the value "1" in mobile originating call tests and shall take the value "0" in mobile terminating call tests.

STOP DTMF

No default requirements defined for this message.

STOP DTMF ACKNOWLEDGE

No default values defined for this message.

Unknown Message

Protocol Discriminator	Call Control; Call Related SS
Transaction Identifier	same as in use in the test
Message Type	0000 0100

26.9 Structured procedures

26.9.1 Structured procedures / general

The purpose of these tests is to verify that the MS performs certain elementary procedures of the RR, MM, and CC protocol correctly within a structured procedure. The term "structured procedure" is defined in 3GPP TS 04.08 / 3GPP TS 23.108, clause 7, where also examples of structured procedures are given.

The reason for this test purposes is twofold:

- The behaviour of the MS in an elementary procedure may depend on the preamble which precedes the elementary procedure.

- Structured procedures tested in this subclause are used in other parts of this Technical Specification as preambles to establish the initial conditions for other tests; correct behaviour of an implementation under test in a preamble is essential for the validity of a test.

Mobile originating and terminating calls are tested in cases of both early and late assignment of the traffic channel; in one of the cases call release initiated by the network is tested, in another one, call release initiated by the MS.

The feature Directed Retry is tested in both Mobile Originated and Mobile Terminated Call. The configuration of the assigned channels is described in table 26.9-1:

Table 26.9-1

Directed Retry from	To	Call direction	Start Time	Sync.	Subclause	Exec. Counter
SDCCH/4	TCH/F, cycl. FH	MOC	None	No	26.9.7	1
SDCCH/8, cycl. FH	TCH/H, rand. FH	MOC	None	No	26.9.7	2
SDCCH/4	TCH/F, no FH	MTC	None	No	26.9.8	1
SDCCH/8, rand. FH	TCH/H, cycl. FH	MTC	1.1 sec.	No	26.9.8	2

The tests in this subclause only cover the successful outcome of elementary procedures (i.e. they do not deal with abnormal cases).

In this subclause, the emergency call service is tested for mobile stations that do not support the full rate speech version 2 in the following cases:

- emergency call initiated in the idle, updated state with authentication and ciphering, for speech full rate version 1 and if supported, speech half rate version 1;

- emergency call initiated in the idle, no IMSI state (hence without authentication and without ciphering), the network accepting the call, for either speech full rate version 1 or, provided it is supported, speech half rate version 1;

- emergency call initiated in the idle, no IMSI state (hence without authentication and without ciphering), the network rejecting the call, for either speech full rate version 1 or, provided it is supported, speech half rate version 1.

These tests on emergency calls are only applicable to an MS supporting speech.

For an MS supporting speech the test procedures in 26.9.2, 26.9.3, 26.9.4, 26.9.5, 26.9.7 and 26.9.8 are performed for speech (teleservice 11, telephony), once for speech full rate version 1 and, if supported, once for speech half rate version 1.

For an MS not supporting speech but supporting at least one teleservice, for each of the test procedures in subclauses 26.9.2, 26.9.3, 26.9.4, 26.9.5, 26.9.7 and 26.9.8 and each supported rate (full rate/half rate) a teleservice supported by the MS (see PICS/PIXIT statement) is chosen, and the test is performed corresponding to that teleservice (note that this teleservice is never a dual service).

In cases where a mobile originated call for the tested teleservice can be initiated both

- via the MMI; and

- via the R or S interface,

procedures 26.9.2 and 26.9.7 (m = 1) shall be performed when initiating the mobile originated call via the MMI and procedures 26.9.3 and 26.9.7 (m = 2) shall be performed when initiating the mobile originated call via an appropriate interface (R or S).

26.9.2 Structured procedures / MS originated call / early assignment

26.9.2.1 Conformance requirements

1) An MS in MM state "idle, updated" and in RR idle mode, when made to initiate a call, if it provides a human interface, shall display the dialled number.

2) An MS in MM state "idle, updated" and in RR idle mode, when made to initiate a call for a selected teleservice that is supported by the MS, shall start to initiate the immediate assignment procedure by sending a CHANNEL REQUEST message with correct establishment cause.

3) Subsequently after establishment of an MM connection, the MS shall send a SETUP message with correct parameters.

4) The call control entity of the Mobile Station in the "call initiated" state, in the "mobile originating call proceeding" state or in the "call delivered" state, shall, upon receipt of a CONNECT message:

   - attach the user connection to the radio path;

   - return a CONNECT ACKNOWLEDGE message.

5) Subsequently when the network initiates call clearing by sending a DISCONNECT message, the MS shall proceed to release the call by sending a RELEASE message.

6) On receipt of a CHANNEL RELEASE message, the MS shall disconnect the main signalling link.

References

Conformance requirement 1: 3GPP TS 02.07.

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.3.1.1

Conformance requirement 3: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.1.

Conformance requirement 4: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.6.

Conformance requirement 5: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.4.4.

Conformance requirement 6: 3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.13.1

26.9.2.2 Test purpose

1) To verify that the MS in MM state "idle, updated" with a TMSI assigned, when made to initiate a call for a selected teleservice that is supported by the MS as declared in a PICS/PIXIT statement, displays the dialled number in the way described in a PICS/PIXIT statement.

2) To verify that the MS in MM state "idle, updated" and in RR idle mode, with a TMSI assigned, when made to initiate a call for a selected teleservice that is supported by the MS as declared in a PICS/PIXIT statement, starts to initiate an immediate assignment procedure by sending the CHANNEL REQUEST message with correct establishment cause.

3) To verify that subsequently after receipt of an IMMEDIATE ASSIGNMENT message allocating an SDCCH, after completion of establishment of the main signalling link, after having sent a CM SERVICE REQUEST message, after having successfully performed the authentication and cipher mode setting procedures, the MS sends a SETUP message with correct parameters.

4) To verify that subsequently, after receipt of a CALL PROCEEDING message and of an ASSIGNMENT COMMAND message allocating an appropriate TCH, after having completed the traffic channel early assignment procedure by replying with the ASSIGNMENT COMPLETE message, after receipt of an ALERTING message and a CONNECT message, the MS returns a CONNECT ACKNOWLEDGE message.

5) To verify that subsequently the MS has attached the user connection to the radio path. (This is checked by verifying that there is a point in time after transmission of the first L2 frame containing the (complete) CONNECT message, where the MS is sending appropriate speech or data frames whenever it does not have to transmit or acknowledge an I frame on layer 2 of the FACCH.)

6) To verify that subsequently upon the network initiating call clearing by sending a DISCONNECT message, the MS proceed to release the call with RELEASE.

7) To verify that subsequently, on receipt of a RELEASE COMPLETE message followed by a CHANNEL RELEASE message, the MS disconnects the main signalling link.

These test purposes are tested for all rates supported by the MS (full rate/half rate).

26.9.2.3   Method of test

Initial Conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

    The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS statements:

-   Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

-   Speech supported for Half rate version 1 (GSM HR) (TSPC_AddInfo_Half_rate_version_1)

PIXIT statements:

-   Way to indicate mobile originated alerting

-   Way to display the called number

Foreseen Final State of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Test procedure

The following test is performed for all rates (full rate/half rate) supported by the MS:

    A teleservice is selected that is supported by the MS; if the MS supports speech version 1, the selected teleservice is speech. If necessary, the MS is configured for that teleservice.

    The MS is made to initiate a call. The call is established with early assignment. Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

1 minute.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The "called number" is entered.
2	MS		If supported, the MS must display the called number in the way defined in PIXIT.
3	MS -> SS	CHANNEL REQUEST	Establishment cause is "originating call and the network does not set the NECI bit to 1".
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
6	SS -> MS	AUTHENTICATION REQUEST	
7	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
8	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
9	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS		SS starts ciphering.
11	MS -> SS	SETUP	
12	SS -> MS	CALL PROCEEDING	
13	SS -> MS	ASSIGNMENT COMMAND	
14	MS -> SS	ASSIGNMENT COMPLETE	
15	SS -> MS	ALERTING	
16	MS		Depending on the PIXIT, an alerting indication is given.
17	SS -> MS	CONNECT	
18	MS -> SS	CONNECT ACKNOWLEDGE	
19	MS		The appropriate bearer channel is through connected in both directions.
20	SS -> MS	DISCONNECT	
21	MS -> SS	RELEASE	
22	SS -> MS	RELEASE COMPLETE	
23	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

None.

26.9.3 Structured procedures / MS originated call / late assignment

26.9.3.1 Conformance requirement

1) An MS in MM state "idle, updated" and in RR idle mode with a TMSI assigned, when made to initiate a call for a selected teleservice that is supported by the MS, shall start to initiate an immediate assignment procedure by sending the CHANNEL REQUEST message with correct establishment cause.

2) Upon receipt of the ASSIGNMENT COMMAND message, the Mobile Station initiates a local end release of link layer connections, disconnects the physical channels, commands the switching to the assigned channels and initiates the establishment of lower layer connections (this includes the activation of the channels, their connection and the establishment of the data links). After the main signalling link is successfully established, the MS returns an ASSIGNMENT COMPLETE message, specifying cause "normal event", to the network on the main DCCH.

3, 4) The call control entity of the Mobile Station in the "call initiated" state, in the "mobile originating call proceeding" state or in the "call delivered" state, shall, upon receipt of a CONNECT message:

- attach the user connection to the radio path;

- return a CONNECT ACKNOWLEDGE message.

References

Conformance requirement 1: 3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.3.1.1

Conformance requirement 2: 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.4.3.1 and 3.4.3.2.

Conformance requirement 3: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.1.6.

26.9.3.2 Test purpose

1) To verify that the MS in MM state "idle, updated" and in RR idle mode with a TMSI assigned, when made to initiate a call for a selected teleservice that is supported by the MS as declared in a PICS/PIXIT statement, starts to initiate an immediate assignment procedure by sending the CHANNEL REQUEST message.

2) To verify that subsequently after receipt of an IMMEDIATE ASSIGNMENT message allocating an SDCCH, after completion of establishment of the main signalling link, after having sent a CM SERVICE REQUEST message, after having successfully performed authentication and cipher mode setting procedures, after having sent a SETUP message, after having received a CALL PROCEEDING message followed by an ALERTING message and an ASSIGNMENT COMMAND message allocating an appropriate TCH, the MS sends an ASSIGNMENT COMPLETE message.

3) To verify that subsequently, after the suite of actions specified in test purposes 1 and 2, the MS after receiving a CONNECT message returns a CONNECT ACKNOWLEDGE message.

4) To verify that after the suite of actions specified in test purposes 1 and 2, the MS after receiving a CONNECT message attaches the user connection to the radio path. (This is checked by verifying that there is a point in time after transmission of the first L2 frame containing the (complete) CONNECT message, where the MS is sending appropriate speech or data frames whenever it does not have to transmit or acknowledge an I frame on layer 2 of the FACCH.)

These test purposes are tested for all rates supported by the MS (full rate/half rate).

26.9.3.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS statements:

- Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1)

- Speech supported for Half rate version 1 (GSM HR) (TSPC_AddInfo_Half_rate_version_1)

PIXIT statements:

- Way to indicate mobile originated alerting

-. Way to display the called number

Foreseen Final State of the MS

The MS has a MO call in state U10, "active".

Test procedure

The following test is performed for all rates (full rate/half rate) supported by the MS:

A teleservice is selected that is supported by the MS; if the MS supports speech version 1, the selected teleservice is speech. If necessary, the MS is configured for that teleservice.

The MS is made to initiate a call. The call is established with late assignment.

Maximum Duration of Test

30 s.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The "called number" is entered.
2	MS		
3	MS -> SS	CHANNEL REQUEST	Establishment cause is "originating call and the network does not set the NECI bit to 1".
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
6	SS -> MS	AUTHENTICATION REQUEST	
7	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
8	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
9	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS		SS starts ciphering.
11	MS -> SS	SETUP	
12	SS -> MS	CALL PROCEEDING	
13	SS -> MS	ALERTING	
14	MS		Depending on the PIXIT, an alerting indication is given.
15	SS -> MS	ASSIGNMENT COMMAND	
16	MS -> SS	ASSIGNMENT COMPLETE	
17	SS -> MS	CONNECT	
18	MS -> SS	CONNECT ACKNOWLEDGE	
19	MS		The appropriate bearer channel is through connected in both directions.

Specific Message Contents:

None.

26.9.4 Structured procedures / MS terminated call / early assignment

26.9.4.1 Conformance requirements

1) The MS shall acknowledge the SETUP message with a CALL CONFIRMED message, if compatibility checking was successful, the MS is not busy, and the user does not refuse the call.

2, 3) Upon receipt of the ASSIGNMENT COMMAND message the MS continues a mobile terminating call establishment with early establishment of the traffic channel

   a) by replying to the ASSIGNMENT COMMAND with an ASSIGNMENT COMPLETE message, and

   b) if the MS supports immediate connect, by continuing the call establishment by through-connecting the traffic channel in both directions, or if the MS does not support immediate connect, by sending an ALERTING message

4) An MS indicates acceptance of a MT call by sending CONNECT.

5)

   For speech calls:

   The mobile station shall attach the user connection at latest when sending the connect message, except if there is no compatible radio resource available at this time. In this case the attachment shall be delayed until such a resource becomes available.

   For data calls:

   The mobile station shall attach the user connection when receiving the CONNECT ACKNOWLEDGE message from the network.

6) The MS initiates call clearing of an active call by sending a DISCONNECT message.

7) The MS in this phase of call release, upon receipt of a RELEASE message, shall return a RELEASE COMPLETE message.

8) Subsequently the MS, upon receipt of a CHANNEL RELEASE message, shall disconnect the main signalling link.

References

Conformance requirement 1:   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.2.2.3.1.

Conformance requirements 2, 3:   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.2.3.2,
                                     3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.3.1.

Conformance requirement 4:   3GPP TS 04.08 / 3GPP TS 24.008 subclause 5.2.2.5.

Conformance requirement 5:   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.2.6 and 5.2.2.9.

Conformance requirements 6, 7, 8:   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.4.

26.9.4.2   Test purpose

1) To verify that the MS in MM state "idle, updated" and in RR idle mode with a TMSI assigned, after being paged by the network on the correct paging subchannel, after initiating the immediate assignment procedure by sending the CHANNEL REQUEST message, after receipt of an IMMEDIATE ASSIGNMENT message allocating an SDCCH, after having sent a PAGING RESPONSE message on the allocated SDCCH, after having performed successful authentication and cipher mode setting procedures, after receipt of a SETUP message not containing a signal information element, returns a CALL CONFIRMED message.

2) To verify that subsequently, the SS sending an ASSIGNMENT COMMAND message, the MS successfully continues a mobile terminating call establishment with early assignment of traffic channel:

   a) by replying to the ASSIGNMENT COMMAND with an ASSIGNMENT COMPLETE message, and

   b) by continuing the call establishment by either:

      - sending a CONNECT messages and through connecting the TCH in both directions; or

      - sending an ALERTING message.

3) To verify that if after sending a CALL PROCEEDING message, the MS sends an ALERTING message during MTC establishment with early assignment, it generates an alerting indication.

4) To verify that if an ALERTING had been sent, subsequently, when the user accepts the call (possibly internal action as declared in PIXIT statement), the MS returns a CONNECT message.

5) To verify that the MS:

   - if the call is a speech call: after sending the CONNECT message has through connected the TCH in both directions (this is checked by verifying that after transmission of the first L2 frame containing the (complete) CONNECT message, the MS is sending appropriate speech or data frames whenever it does not have to transmit or acknowledge an I frame on layer 2 of the FACCH.)

   - if the call is a data call: after receipt of a subsequent CONNECT ACKNOWLEDGE message through connects the TCH in both directions (this is checked by verifying that there is a point in time after transmission of the first L2 frame containing the (complete) CONNECT ACKNOWLEDGE message, where the MS is sending appropriate speech or data frames whenever it does not have to transmit or acknowledge an I frame on layer 2 of the FACCH.)

6) To verify that subsequently, the MS can initiate call clearing by sending a DISCONNECT message.

7) To verify that the MS in this phase of call release, upon receipt of a RELEASE message, returns a RELEASE COMPLETE message.

8) To verify that subsequently the MS, upon receipt of a CHANNEL RELEASE message, disconnects the main signalling link.

These test purposes are tested for all rates supported by the MS (full rate/half rate).

26.9.4.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS statements:

- Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1).

- Speech supported for Half rate version 1 (GSM HR) (TSPC_AddInfo_Half_rate_version_1)

- Immediate connect supported for all circuit switched basic services. (TSPC_AddInfo_ImmConn)

PIXIT statements:

- Way to indicate alerting.

- Way to make the MS accept an incoming call after alerting.

Foreseen Final State of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Test procedure

The following test is performed for all rates (full rate/half rate) supported by the MS:

A teleservice is selected that is supported by the MS; if the MS supports speech version 1, the selected teleservice is speech. If necessary, the MS is configured for that teleservice.

The MS is paged and the resulting call is established. Having reached the active state, the MS is made to clear the call.

Maximum Duration of Test

1 minute.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Sent on the correct paging subchannel.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SETUP	Message does not contain the signal IE.
11	MS -> SS	CALL CONFIRMED	
			If the MS supports immediate connect then branch A applies. If the MS does not support immediate connect then branch B applies
A12	MS -> SS	CONNECT	sent on the old channel
A13	SS -> MS	ASSIGNMENT COMMAND	
A14	MS -> SS	ASSIGNMENT COMPLETE	
B12	SS -> MS	ASSIGNMENT COMMAND	
B13	MS -> SS	ASSIGNMENT COMPLETE	sent on the new channel
B14	MS -> SS	ALERTING	
B15	MS		An alerting indication as defined in a PIXIT statement is given by the MS
B16	MS		The MS is made to accept the call in the way described in a PIXIT statement
B17	MS -> SS	CONNECT	
18	MS		If the call is a speech call, the TCH shall be through connected in both directions.
19	SS -> MS	CONNECT ACKNOWLEDGE	
20	MS		If the call is a data call, the TCH shall be through connected in both directions.
21	MS		The MS is made to release the call.
22	MS -> SS	DISCONNECT	
23	SS -> MS	RELEASE	
24	MS -> SS	RELEASE COMPLETE	
25	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

None.

26.9.5 Structured procedures / MS terminated call / late assignment

26.9.5.1 Conformance requirement

TP1, TP2: The MS shall acknowledge the SETUP message with a CALL CONFIRMED message, if compatibility checking was successful, the MS is not busy, and the user does not refuse the call. The MS on acceptance of the call sends a CONNECT, otherwise user alerting is initiated.

TP3: The MS indicates acceptance of a call by sending a CONNECT message.

TP4: ASSIGNMENT COMMAND is answered by ASSIGNMENT COMPLETE.

TP5: For speech calls:

The mobile station shall attach the user connection at latest when sending the connect message, except if there is no compatible radio resource available at this time. In this case the attachment shall be delayed until such a resource becomes available.

For data calls:

The mobile station shall attach the user connection when receiving the CONNECT ACKNOWLEDGE message from the network.

Requirement reference:

Conformance requirements 1, 2, 3: 3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.2.3.1, 5.2.2.3.2 and 5.2.2.5.

Conformance requirement 4: 3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.3.1.

Conformance requirement 5: 3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.2.2.9.

26.9.5.2 Test purpose

1) To verify that the MS in "Idle, Updated" state with a TMSI assigned, after being paged by the network on the correct paging subchannel, after initiating the immediate assignment procedure by sending the CHANNEL REQUEST message, after receipt of an IMMEDIATE ASSIGNMENT message allocating an SDCCH, after having established the main signalling link, after having sent a PAGING RESPONSE message, after having performed successful authentication and cipher mode setting procedures, after receipt of a SETUP message containing a signal information element, returns a CALL CONFIRMED message followed by:

   - an ALERTING message;

   - or a CONNECT message.

2) To verify that in the situation of test purpose 1, if the MS sends an ALERTING message, the MS generates an alerting indication in the way described in a PIXIT statement.

3) To verify that subsequently the MS, if it had not yet sent a CONNECT message, upon acceptance of the call, sends a CONNECT message.

4) To verify that subsequently after receipt of an ASSIGNMENT COMMAND, the MS sends an ASSIGNMENT COMPLETE message.

5) To verify that subsequently the MS:

   - if the call is a speech call: after sending the ASSIGNMENT COMPLETE message has through connected the TCH in both directions (this is checked by verifying that after transmission of the first L2 frame containing the (complete) ASSIGNMENT COMPLETE message, the MS is sending appropriate speech or data frames whenever it does not have to transmit or acknowledge an I frame on layer 2 of the FACCH.)

   - if the call is a data call: after receipt of a subsequent CONNECT ACKNOWLEDGE message through connects the TCH in both directions (this is checked by verifying that there is a point in time after transmission of the first L2 frame containing the (complete) CONNECT ACKNOWLEDGE message, where the MS is sending appropriate speech or data frames whenever it does not have to transmit or acknowledge an I frame on layer 2 of the FACCH.)

These test purposes are tested for all rates supported by the MS (full rate/half rate).

26.9.5.3 Method of test

Initial Conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS statements:

   - Speech supported for Full rate version 1 (GSM FR) (TSPC_AddInfo_Full_rate_version_1).

   - Speech supported for Half rate version 1 (GSM HR) (TSPC_AddInfo_Half_rate_version_1)

   - Immediate connect supported for all circuit switched basic services. (TSPC_AddInfo_ImmConn)

PIXIT statements:

- Way to indicate alerting.

- Way to make the MS accept an incoming call after alerting.

Foreseen Final State of the MS

CC state U10-call active.

Test procedure

The following test is performed for all rates (full rate/half rate) supported by the MS:

- A teleservice is selected that is supported by the MS; if the MS supports speech version 1, the selected teleservice is speech. If necessary, the MS is configured for that teleservice.

- The MS is paged and a MT call is established with late assignment (after CONNECT).

Maximum Duration of Test

40 s.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Sent on the correct paging subchannel.
2	MS -> SS	CHANNEL REQUEST	Establishment cause indicates "answer to paging".
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SETUP	Message contains the signal IE.
11	MS -> SS	CALL CONFIRMED	
A12	MS -> SS	CONNECT	
B12	MS -> SS	ALERTING	
B13	MS		An alerting indication as defined in an PIXIT statement is given by the MS.
B14	MS		The MS is made to accept the call in the way described in a PIXIT statement.
B15	MS -> SS	CONNECT	
16	SS -> MS	ASSIGNMENT COMMAND	
17	MS -> SS	ASSIGNMENT COMPLETE	
18	MS		If the call is a speech call, the TCH shall be through connected in both directions.
19	SS -> MS	CONNECT ACKNOWLEDGE	
20	MS		If the call is a data call, the MS shall through connect the TCH in both directions.

Specific Message Contents:

None.

26.9.6 Structured procedures / emergency call

Emergency call establishment can be initiated by an MS whether location updating has been successful or not and whether a SIM is inserted into the MS or not; but only if the MS is equipped for speech.

If the procedures tested in this subclause are not correctly implemented in the MS, establishment, maintenance and clearing of connections might fail in the essential case of emergency calls.

26.9.6.1 Structured procedures / emergency call / idle updated

26.9.6.1.1 Structured procedures / emergency call / idle updated / preferred channel rate

26.9.6.1.1.1 Conformance requirement

1) For R97/98 MS: The MS in the "idle, updated" state, as after a successful location update, after the number 112 (for GSM 900 and 1800 MS), or 911 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in USA and Canada), or 08 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in Mexico) has been entered by user, shall send a CHANNEL REQUEST message with correct establishment cause ("emergency call").

   For R99 MS: When a SIM/USIM containing stored emergency numbers is present, those numbers are identified as emergency numbers. As an optional requirement, the ME shall also identify 112 and 911 as emergency numbers irrespective of whether these are stored in the SIM/USIM. Any other emergency numbers stored in the ME shall be ignored.
   When no emergency numbers are stored within the SIM the following numbers shall be stored in the ME for use as emergency numbers: 112, and 911.
   When no emergency numbers are stored within the USIM the following numbers shall be stored in the ME for use as emergency numbers: 112, and 911.

2) After assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct CKSN and TMSI, with CM Service Type "emergency call establishment".

3) Authentication and cipher mode setting shall be performed successfully.

4) After cipher mode setting acceptance by the network, the MS shall send an EMERGENCY SETUP message.

5), 6) The emergency call shall be correctly established. The assignment procedure shall be correctly performed.

7) After receipt of a CONNECT ACKNOWLEDGE message during correct establishment of the emergency call the TCH shall be through connected in both directions if an appropriate TCH is available.

8) The call shall be cleared correctly.

Requirement Reference:

For conformance requirement 1 and 2:

   3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.3.1.1,
   3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.1 and 4.5.1.5,
   3GPP TS 02.30 clause 4,
   3GPP TS 22.101 clauses 8.

For conformance requirement 3:

   3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.7,
   3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.3.2.

For conformance requirement 4:

   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.2.1.1.

For conformance requirement 5 and 6:

   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.1.1,
   3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3.

For conformance requirement 7:

   3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.1.6 and 5.1.3.

For conformance requirement 8:

   3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.4.

26.9.6.1.1.2 Test purpose

1) To verify that an R97/R98 MS supporting speech in the MM state "idle, updated", when made to call the number 112 (for GSM 900 and 1800 MS), or 911 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in USA and Canada), or 08 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in Mexico), sends a CHANNEL REQUEST message with establishment cause "emergency call".
   To verify that an R99 MS supporting speech (or a R97/98 MS using the R99 Emergency Numbers) in the MM state "idle, updated", when made to call the number 112 or 911, sends a CHANNEL REQUEST message with establishment cause "emergency call".

2) To verify that after assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel is a CM SERVICE REQUEST message specifying the correct CKSN and TMSI, with CM Service Type "emergency call establishment".

3) To verify that authentication and cipher mode setting are performed successfully.

4) To verify that after cipher mode setting acceptance by the SS, the MS sends an EMERGENCY SETUP message.

5) To verify that subsequently, the SS having sent a CALL PROCEEDING message and then an ALERT message and having initiated the assignment procedure of an appropriate speech traffic channel, which, if the MS supports both TCH/FS and TCH/HS, is at the preferred rate, the MS performs correctly that assignment procedure.

6) To verify subsequent correct performance of a connect procedure.

7) To verify that subsequently the MS has through connected the TCH in both directions.

8) To verify that the call is cleared correctly.

26.9.6.1.1.3 Method of test

Initial Conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS statements:

   - Speech supported for Half rate version 1 (GSM HR) (TSPC_AddInfo_Half_rate_version_1)

   - Use of R99 Emergency numbers (TSPC_R99_Emerg)

PIXIT statements:

   - .

Foreseen Final State of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Test procedure

The MS is made to initiate an emergency call. The call is established with late assignment. Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

1 minute.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The appropriate emergency call number is entered.
3	MS -> SS	CHANNEL REQUEST	Establishment cause is emergency call establishment.
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment".
6	SS -> MS	AUTHENTICATION REQUEST	
7	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
8	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
9	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS		SS starts ciphering.
11	MS -> SS	EMERGENCY SETUP	If half rate speech version 1 is supported, the message must contain one bearer capability IE indicating in the radio channel requirement field "dual rate/half rate preferred" or "dual rate/full rate preferred". If half rate speech version 1 is not supported, the message must either contain no bearer capability IE or contain one bearer capability IE indicating in the radio channel requirement field "full rate channel".
12	SS -> MS	CALL PROCEEDING	
13	SS -> MS	ALERTING	
14	SS -> MS	ASSIGNMENT COMMAND	The rate of the channel is that one indicated by the EMERGENCY SETUP message, if that message did not offer a choice, and the rate is the preferred one else.
15	MS -> SS	ASSIGNMENT COMPLETE	
16	SS -> MS	CONNECT	
17	MS -> SS	CONNECT ACKNOWLEDGE	
18	MS		The TCH is through connected in both directions.
19	SS -> MS	DISCONNECT	
20	MS -> SS	RELEASE	
21	SS -> MS	RELEASE COMPLETE	
23	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Note: According to the conformance requirements there is no need to execute the test case by dialling the number 08 for an R99 MS (or a R97/98 MS using the R99 Emergency numbers)

Specific Message Contents:

None.

26.9.6.1.2 Structured procedures / emergency call / idle updated, non-preferred channel rate

This test is identical to the test in subclause 26.9.6.1.1 except that in step 14 the assigned TCH has the non-preferred rate.

26.9.6.1.3 Structured procedures / emergency call / idle updated / EAB active

26.9.6.1.3.1 Conformance requirement

The preliminary access barring check shall indicate network access is barred if all of the following conditions are satisfied:

- the establishment cause for the request received from the MM sublayer is not "emergency call".

- the SYSTEM INFORMATION TYPE 21 message is broadcast in the cell and includes EAB information;

- the mobile station is a member of a subcategory of mobile stations targeted by the EAB information;

- the EAB Authorization Mask sent in the EAB information indicates the mobile station's access class is not authorized;

- the mobile station is not a member of any of the authorized special access classes (i.e. an Access Class in the range 11-15) permitted by the network;

An MS configured for NAS signalling low priority indicates this by including the Device properties IE in the appropriate NAS message and setting the low priority indicator to "MS is configured to NAS signalling low priority" except for the following cases in which the MS shall set the low priority indicator to "MS is not configured for NAS signalling low priority":

- the MS is performing an attach for emergency bearer services;

- the MS has a PDN connection for emergency bearer services established and is performing mobility management procedures, or is establishing a PDN connection for emergency bearer services;

- the MS is accessing the network with access class 11 – 15; or

- the MS is responding to paging.

Reference:

3GPP TS 44.018 subclause 3.3.1.4, 3GPP TS 24.008 subclause 1.8

26.9.6.1.3.2   Test purpose

To verify that the MS, configured for Extended Access class Barring can initiate an emergency call when EAB is being broadcast

To verify that the Low Access Priority indicator is set in the Service Request message

26.9.6.1.3.3   Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

The SYSTEM INFORMATION TYPE 3 message indicates that the SYSTEM INFORMATION TYPE 21 is sent on the BCCH by setting the SYSTEM INFORMATION 21 Indicator in the SI3 Rest Octet IE.

The SYSTEM INFORMATION TYPE 21 is sent on the BCCH. The SI 21 Rest Octets information element is configured with: EAB Authorization Mask set to "xxxxxxxxx1" and EAB Subcategory set to "00".

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.¨

The MS is configured for "Extended Access Barring"

The MS belong to access class 0

Specific PICS statements:

-

PIXIT statements:

-

Foreseen Final State of the MS

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Test procedure

The SS waits until all system information messages, including SYSTEM INFORMATION TYPE 21, is sent. The SI 21 Rest Octets information element is configured with: EAB Authorization Mask set to "xxxxxxxxx1" and EAB Subcategory set to "00" in SYSTEM INFORMATION TYPE 21.

The MS is made to initiate an emergency call. The call is established with late assignment. Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

1 minute.

Expected Sequence

Step	Direction	Message	Comments
1			The SS waits until it has sent all system information messages
1	MS		The appropriate emergency call number is entered.
3	MS -> SS	CHANNEL REQUEST	Establishment cause is emergency call establishment.
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment". The Device properties IE indicates "NAS signalling low priority"
6	SS -> MS	AUTHENTICATION REQUEST	
7	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
8	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
9	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS		SS starts ciphering.
11	MS -> SS	EMERGENCY SETUP	
12	SS -> MS	CALL PROCEEDING	
13	SS -> MS	ALERTING	
14	SS -> MS	ASSIGNMENT COMMAND	
15	MS -> SS	ASSIGNMENT COMPLETE	
16	SS -> MS	CONNECT	
17	MS -> SS	CONNECT ACKNOWLEDGE	
18	MS		The TCH is through connected in both directions.
19	SS -> MS	DISCONNECT	
20	MS -> SS	RELEASE	
21	SS -> MS	RELEASE COMPLETE	
23	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

SYSTEM INFORMATION TYPE 3 broadcast in the cell:

Same as default content except

Information Element	Value/remark
SI 3 Rest Octets	
SYSTEM INFORMATION 21 Indicator	H (SYSTEM INFORMATION TYPE 21 message is available)
SI21_POSITION	0 (SYSTEM INFORMATION TYPE 21 message is sent on BCCH Norm)

SYSTEM INFORMATION TYPE 21 broadcast by Cell A initially and in steps 11 and 20:

Same as default content except

Information Element	Value/remark
SI 21 Rest Octets	
EAB Authorization Mask	'xxxxxxxx1' (MSs configured for EAB and a member of Access Class 0 are barred)
EAB Subcategory	'00' (applicable to all mobile stations configured for EAB)

26.9.6.2 Structured procedures / emergency call / idle, no IMSI

26.9.6.2.1 Structured procedures / emergency call / idle, no IMSI / accept case

26.9.6.2.1.1 Conformance requirement

1) The MS in the "idle, updated" state, as after a successful location update, after the number 112 (for GSM 900 and 1800 MS), or 911 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in USA and Canada), or 08 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in Mexico) has been entered by user, shall send a CHANNEL REQUEST message with correct establishment cause ("emergency call").

2) After assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct IMEI and a non-available CKSN, with CM Service Type "emergency call establishment".

3) After cipher mode setting acceptance by the network, the MS shall send an EMERGENCY SETUP message.

4),5) The emergency call shall be correctly established. The assignment procedure shall be correctly performed.

6) After receipt of a CONNECT ACKNOWLEDGE message during correct establishment of the emergency call the TCH shall be through connected in both directions if an appropriate TCH is available.

7) The call shall be cleared correctly.

Requirement Reference:

For conformance requirement 1 and 2:

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.3.1.1,
3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.1 and 4.5.1.5,
3GPP TS 02.30 clause 4.

For conformance requirement 3:

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.2.1.1.

For conformance requirements 4 and 5:

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.2.1.1,
3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.3.

For conformance requirement 6:

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.1.6 and 5.1.3.

For conformance requirement 7:

3GPP TS 04.08 / 3GPP TS 24.008, subclause 5.4.

26.9.6.2.1.2 Test purpose

1) To verify that the MS in the "idle, no IMSI" state (no SIM inserted) when made to call the number 112 (for GSM 900 and 1800 MS), or 911 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in USA and Canada), or 08 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in Mexico), sends a CHANNEL REQUEST message with establishment cause "emergency call".

2) To verify that after assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel is a CM SERVICE REQUEST message in which the cipher key sequence number IE indicates "no key is available", the CM service type IE indicates "emergency number establishment", and the mobile identity IE specifies the IMEI of the MS.

3) To verify that after receipt of a CM SERVICE ACCEPT message from the SS, the MS sends an EMERGENCY SETUP message.

4) To verify that subsequently, the SS having sent a CALL PROCEEDING message and then an ALERT message and having initiated the assignment procedure of an appropriate speech traffic channel, which, if the MS

supports both TCH/FS and TCH/HS, is at the preferred rate, the MS performs correctly that assignment procedure.

5) To verify subsequent correct performance of a connect procedure.

6) To verify that subsequently the MS has through connected the TCH in both directions.

7) To verify that the call is cleared correctly.

26.9.6.2.1.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, no IMSI", no SIM inserted.

Specific PICS statements:

- .

PIXIT statements:

- .

Foreseen Final State of the MS

The MS is in MM-state "idle, no IMSI", no SIM inserted.

Test procedure

The MS is made to initiate an emergency call. The call is established without authentication, without ciphering, with late assignment. Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

1 minute.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The appropriate emergency call number is entered.
3	MS -> SS	CHANNEL REQUEST	Establishment cause is "emergency call".
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment". The mobile identity IE specifies the IMEI of the MS. The cipher key sequence number IE indicates "no key is available".
4	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	EMERGENCY SETUP	
12	SS -> MS	CALL PROCEEDING	
13	SS -> MS	ALERTING	
14	SS -> MS	ASSIGNMENT COMMAND	The rate of the channel is one indicated by the EMERGENCY SETUP message.
15	MS -> SS	ASSIGNMENT COMPLETE	
16	SS -> MS	CONNECT	
17	MS -> SS	CONNECT ACKNOWLEDGE	
18	MS		The TCH is through connected in both directions.
19	SS -> MS	DISCONNECT	
20	MS -> SS	RELEASE	
21	SS -> MS	RELEASE COMPLETE	
23	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

None.

26.9.6.2.2 Structured procedures / emergency call / idle, no IMSI / reject case

26.9.6.2.2.1 Conformance requirement

1) The MS in the "idle, no IMSI" state (no SIM inserted), after the number 112 (for GSM 900 and 1800 MS), or 911 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in USA and Canada), or 08 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in Mexico) has been entered, shall send a CHANNEL REQUEST message with correct establishment cause ("emergency call").

2) After assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct IMEI and a non-available CKSN, with CM Service Type "emergency call establishment".

3) In the situation at the end of test purpose 2, when the MS receives a CM SERVICE REJECT message, it shall abandon the emergency call.

Requirement Reference:

For conformance requirement 1 and 2:

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.3.1.1,
3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.1 and 4.5.1.5,
3GPP TS 02.30 clause 4.

For conformance requirement 3:

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.7,
3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.5.1.1.

26.9.6.2.2.2 Test purpose

1) To verify that the MS in the "idle, no IMSI" state (no SIM inserted) when made to call the number 112, (for GSM 900 and 1800 MS), or 911 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in USA and Canada), or 08 (for GSM 710, GSM 750, T-GSM 810, GSM 850 and PCS 1 900 MS in Mexico) sends a CHANNEL REQUEST message with establishment cause "emergency call".

2) To verify that after assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel is a CM SERVICE REQUEST message in which the cipher key sequence number IE indicates "no key is available", the CM service type IE indicates "emergency call establishment", and the mobile identity IE specifies the IMEI of the MS.

3) To verify that after receipt of a CM SERVICE REJECT message from the SS, the MS abandons the emergency call establishment.

26.9.6.2.2.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, no IMSI", no SIM inserted.

Specific PICS statements:

- .

PIXIT statements:

- .

Foreseen Final State of the MS

The MS is in MM-state "idle, no IMSI", no SIM inserted.

Test procedure

The MS is made to initiate an emergency call. The call is established without authentication, without ciphering, with early assignment. The SS responds to the CM SERVICE REQUEST from the MS with a CM SERVICE REJECT message specifying in the reject cause IE the reject cause value "IMEI not accepted". The SS then verifies for during 5 s that the MS does not send a layer 3 message. Then the call is cleared by the SS. The SS verifies during 20 s after disconnection of the main signalling link that the MS does not initiate an RR connection establishment.

Maximum Duration of Test

1 minute.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The appropriate call number is entered.
3	MS -> SS	CHANNEL REQUEST	Establishment cause is "emergency call".
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment". The mobile identity IE specifies the IMEI of the MS. The cipher key sequence number IE indicates "no key is available".
4	SS -> MS	CM SERVICE REJECT	the reject cause IE specifies reject cause value #5, "IMEI not accepted".
5	SS		During 5 s, the SS verifies that the MS does not send L3 messages.
6	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
7	SS		During 20 s, the SS verifies that the MS does not initiate an RR connection establishment.

Specific Message Contents:

-

26.9.6a   Structured Calls /eCall

eCall establishment can be initiated by a MS whether location updating has been successful or not, but only if the MS supports eCall capability and has a valid USIM provisioned for the eCall service.

If the procedures tested in this clause are not correctly implemented in the MS, establishment, maintenance or clearing of connections might fail in the essential case of eCall.

Note: eCall functionality has to be tested with Test USIM as defined in Annex 4a.

26.9.6a.1   eCall with USIM

26.9.6a.1.1   Void

26.9.6a.1.2   Test eCall using eCall capable MS with 'eCall only' subscription on USIM

26.9.6a.1.2.1   Conformance Requirement

The eCall inactivity procedure is applicable only to an eCall only mobile station (as determined by information configured in USIM).

[..]

While in eCALL INACTIVE state, the mobile station maintains awareness of a potential serving cell in a potential serving network but initiates no MM signalling with the network and ignores any paging requests.

The mobile station shall leave eCALL INACTIVE state only when one of the following events occur:

[..]

- if there is a CM request for a call to an HPLMN designated non-emergency MSISDN for the purpose of accessing test and terminal reconfiguration services: the mobile station attempts normal location updating. Once this is complete, further MM and CM procedures are used to establish the non-emergency call.

.

Reference(s)

3GPP TS 24.008 subclauses 4.4.7

26.9.6a.1.2.2   Test purpose

1. Verify that the eCall only capable MS is capable of making a test eCall.

26.9.6a.1.2.3   Method of test

Initial conditions

The eCall only capable MS is equipped with eCall enabled USIM.

System Simulator

1 cell, default parameters, Ciphering Off

T3212 set to 12 Minutes. ATT flag set to 1 (IMSI ATTACH/DETACH shall be performed in the cell)

Mobile Station

The MS is equipped with a Test USIM containing default values except for those listed below.

USIM field	Contents
EF$_{UST}$	Service n°2 Fixed Dialling Numbers (FDN) and Service n°89 eCall Data available
EF$_{FDN}$	Display two FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)
EF$_{EST}$	Enabled Services Table

Specific PICS statement(s)

-

Specific PIXIT Statement(s)

-

Test procedure

a. MS is powered on. SS monitors to verify that MS does not attempt to register for a period of 120 seconds.

b. MS is made to initiate a Test eCall in accordance with manufacturer's instructions. SS checks that MS performs registration before starting Test eCall.

c. Having reached the active state, the call is cleared by the SS. SS monitors to verify that MS remains registered and send a periodic LAU message as T3212 timer is set to 12 minutes.

Maximum Duration of Test

20 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is switched on.
2	SS		The SS verifies for 120 sec that the MS does not send RACH or any other message.
3	MS		MS is made to initiate a Test eCall (The first number stored in the EF_{FDN} field)
4	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to Location updating.
5	SS->MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	LOCATION UPDATING REQUEST	"Location Updating Type" = Normal location updating/IMSI Attach.
7	SS->MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	LOCATION UPDATING ACCEPT	
10	MS -> SS	TMSI REALLOCATION COMPLETE	
11	SS -> MS	CHANNEL RELEASE	
12	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to "originating call"
13	SS->MS	IMMEDIATE ASSIGNMENT	
14	MS -> SS	CM SERVICE REQUEST	
15	SS -> MS	CM SERVICE ACCEPT	
16	MS -> SS	SETUP	Verify called number is the test eCall number. (The first number stored in the EF_{FDN} field)
17	SS -> MS	CALL PROCEEDING	
18	SS -> MS	ALERTING	
19	MS		Depending on the PIXIT, an alerting indication is given.
20	SS -> MS	ASSIGNMENT COMMAND	
21	MS -> SS	ASSIGNMENT COMPLETE	
22	SS -> MS	CONNECT	
23	MS -> SS	CONNECT ACKNOWLEDGE	
24	MS		Traffic channel is kept active for at least 5 seconds.
25	SS -> MS	DISCONNECT	
26	MS -> SS	RELEASE	
27	SS -> MS	RELEASE COMPLETE	
28	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
29	SS		SS verifies that MS sends periodic Location Update Request after 12 minutes (5% margin is allowed).

Specific Message Contents

None

26.9.6a.1.3 Manually initiated eCall using eCall capable MS with 'eCall only' subscription on USIM

26.9.6a.1.3.1 Conformance Requirement

1. When in state MM IDLE and service state eCALL INACTIVE, the mobile station shall:

- not perform periodic updating;

- not perform IMSI detach;

- reject any requests from CM entities for MM connections except for emergency calls and calls to a non-emergency MSISDN for test and terminal reconfiguration services;

- not perform normal location updating; and

- not respond to paging.

2. An eCall only mobile station (as determined by information configured in USIM), shall start timer T3242 if the return to MM IDLE state is subsequent to an emergency services call and shall start timer T3243 if the return to MM IDLE state is subsequent to a call to a non-emergency MSISDN for test and terminal reconfiguration services, as described in subclause 4.4.7

Reference(s)

3GPP TS 24.008 subclauses 4.2.2.9, 4.2.3

26.9.6a.1.3.2 Test purpose

Verify that the eCall capable mobile equipped with USIM subscription restricted to eCall only

1. Able to make eCall

2. Registers to the NW as an eCall is initiated.

26.9.6a.1.3.3 Method of test

Initial conditions

The eCall capable MS is equipped with USIM subscription restricted to eCall only.

System Simulator

1 cell, default parameters, Ciphering Off

ATT flag set to 1 (IMSI ATTACH/DETACH shall be performed in the cell)

Mobile Station

The MS is equipped with a Test USIM containing default values except for those listed below.

USIM field	Contents
EF$_{UST}$	Service n°2 Fixed Dialling Numbers (FDNDN) and Service n°89 eCall Data available
EF$_{FDN}$	Display two FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)
EF$_{EST}$	Enabled Services Table

Specific PICS statement(s)

-

Specific PIXIT statement(s)

-

Test procedure

a) MS is powered on. SS monitors to verify that MS does not attempt to register for a period of 120 seconds.

b) MS is made to initiate an eCall in accordance with manufacturer's instructions. SS checks that MS performs registration before starting an eCall.

c) Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

5 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is switched on.
2	SS		The SS verifies for 120 sec that the MS does not send RACH or any other message.
3	MS		MS is made to initiate a manual eCall
4	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to Location updating.
5	SS->MS	IMMEDIATE ASSIGNMENT	
6	MS ->SS	LOCATION UPDATING REQUEST	"Location Updating Type" = Normal location updating/IMSI Attach.
7	SS->MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
9	SS -> MS	LOCATION UPDATING ACCEPT	
10	MS -> SS	TMSI REALLOCATION COMPLETE	
11	SS -> MS	CHANNEL RELEASE	
12	MS -> SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause is emergency call establishment"
13	SS -> MS	IMMEDIATE ASSIGNMENT	
14	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment".
15	SS -> MS	CM SERVICE ACCEPT	
16	MS -> SS	EMERGENCY SETUP	SS verifies that optional IE "Service category" should be present and bit 6 should be set to 1 and bit 7 should be set to 0.
17	SS -> MS	CALL PROCEEDING	
18	SS -> MS	ALERTING	
19	SS -> MS	ASSIGNMENT COMMAND	
20	MS -> SS	ASSIGNMENT COMPLETE	
21	SS -> MS	CONNECT	
22	MS -> SS	CONNECT ACKNOWLEDGE	
23	MS		Traffic channel is kept active for at least 5 seconds.
24	SS -> MS	DISCONNECT	
25	MS -> SS	RELEASE	
26	SS -> MS	RELEASE COMPLETE	
27	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

None

26.9.6a.1.4 Manually initiated eCall using eCall capable MS with eCall capable USIM

26.9.6a.1.4.1 Conformance Requirement

1. eCall and Normal call support

Requirement: Service n° 89 and Service n° 4 are "available".

Request: The ME performs the reading procedure with EFSDN.

If eCall and normal calls are supported, then the last two entries of EFSDN shall contain the eCall test number and the eCall reconfiguration number respectively. A terminal in eCall and normal mode performs the SDN related procedures.

2. TBD

Table 10.5.135d/3GPP TS 24.008: Service Category information element

Emergency Service Category Value (octet 3)
The meaning of the Emergency Category Value is derived from the following settings (see 3GPP TS 22.101 [8] clause 10):
Bit 1 Police
Bit 2 Ambulance
Bit 3 Fire Brigade
Bit 4 Marine Guard
Bit 5 Mountain Rescue
Bit 6 manually initiated eCall
Bit 7 automatically initiated eCall
Bit 8 is spare and set to "0"

Mobile station may set one or more bits to "1"
If more than one bit is set to "1", routing to a combined Emergency centre (e.g. ambulance and fire brigade in Japan) is required. If the MSC can not match the received service category to any of the emergency centres, it shall route the call to an operator defined default emergency centre.

If no bit is set to "1", the MSC shall route the Emergency call to an operator defined default emergency centre.
A mobile station initiating an eCall shall set either bit 6 or bit 7 to "1". The network may use the information indicated in bit 6 and bit 7 to route the manually or automatically initiated eCall to an operator defined emergency call centre.

Reference(s)

TS 31.102 clause 5.3.40.2, TS 24.008 subclauses 10.5.4.33

26.9.6a.1.4.2 Test purpose

Verify that the eCall capable mobile equipped with eCall and non eCall subscription on USIM

1. Performs LAU when Switched on

2. Able to make eCall.

26.9.6a.1.4.3 Method of test

Initial conditions

The eCall capable MS is equipped with eCall and non eCall subscription on USIM.

System Simulator

1 cell, default parameters, ciphering off

ATT flag set to 1 (IMSI ATTACH/DETACH shall be performed in the cell)

Mobile Station

The MS is equipped with a Test USIM containing default values except for those listed below.

USIM field	Contents
EF$_{UST}$	Service n°4 Service Dialling Numbers (SDN) and Service n°89 eCall Data available
EF$_{SDN}$	Display two SDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)
EF$_{EST}$	Enabled Services Table

Specific PICS statement(s)

-

Specific PIXIT statement(s)

-

Test procedure

a) MS is powered on.

b) SS checks that MS successfully performs LAU.

c) MS is made to initiate an eCall in accordance with manufacturer's instructions.

d) Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

5 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is switched on.
2	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to Location updating within 60 sec.
3	SS->MS	IMMEDIATE ASSIGNMENT	
4	MS ->SS	LOCATION UPDATING REQUEST	"Location Updating Type" = Normal Location Updating/IMSI attach.
5	SS->MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	LOCATION UPDATING ACCEPT	
8	MS -> SS	TMSI REALLOCATION COMPLETE	
9	SS -> MS	CHANNEL RELEASE	
10	MS		MS is made to initiate a manual eCall
11	MS -> SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause is emergency call establishment"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment".
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	EMERGENCY SETUP	SS verifies that optional IE "Service category" should be present and bit 6 should be set to 1 and bit 7 should be set to 0.
16	SS -> MS	CALL PROCEEDING	
17	SS -> MS	ALERTING	
18	SS -> MS	ASSIGNMENT COMMAND	
19	MS -> SS	ASSIGNMENT COMPLETE	
20	SS -> MS	CONNECT	
21	MS -> SS	CONNECT ACKNOWLEDGE	
22	MS		Traffic channel is kept active for at least 5 seconds.
23	SS -> MS	DISCONNECT	
24	MS -> SS	RELEASE	
25	SS -> MS	RELEASE COMPLETE	
26	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

None

26.9.6a.1.5 eCall Inactivity State after T3242 expires

26.9.6a.1.5.1 Conformance Requirement

1. When in state MM IDLE and service state eCALL INACTIVE, the mobile station shall:

- not perform periodic updating;

- not perform IMSI detach;

- reject any requests from CM entities for MM connections except for emergency calls and calls to a non-emergency MSISDN for test and terminal reconfiguration services;

- not perform normal location updating; and

- not respond to paging.

2. An eCall only mobile station (as determined by information configured in USIM), shall start timer T3242 if the return to MM IDLE state is subsequent to an emergency services call and shall start timer T3243 if the return to MM IDLE state is subsequent to a call to a non-emergency MSISDN for test and terminal reconfiguration services, as described in subclause 4.4.7.

3. The mobile station shall leave eCALL INACTIVE state only when one of the following events occur:

- if the SIM or USIM is removed, the mobile station enters the NO IMSI state;

- if coverage is lost, the mobile station enters PLMN SEARCH state;

- if the mobile station is deactivated (e.g. powered off) by the user: the mobile station enters the NULL state;

- if there is a CM request for an emergency services call: the MS uses the MM and CM procedures to establish the emergency call; or

- if there is a CM request for a call to an HPLMN designated non-emergency MSISDN for the purpose of accessing test and terminal reconfiguration services: the mobile station attempts normal location updating. Once this is complete, further MM and CM procedures are used to establish the non-emergency call.

Reference(s)

3GPP TS 24.008 subclauses 4.2.2.9, 4.2.3, 4.4.7

26.9.6a.1.5.2   Test purpose

Verify that the eCall capable mobile equipped with USIM subscription restricted to eCall only

1. Able to make eCall

2. Registers to the NW as an eCall is initiated.

3. Remains registered on the network for a duration of T3242 following completion of an eCall.

4. Detaches from network upon expiry of T3242.

5. Comes out of the eCall Inactive state when eCall is initiated (MS should register back to NW and then initiate eCall)

26.9.6a.1.5.3   Method of test

Initial conditions

The eCall capable MS is equipped with USIM subscription restricted to eCall only.

System Simulator

1 cell, default parameters, ciphering off

T3212 set to 252 Minutes. ATT flag set to 1 (IMSI ATTACH/DETACH shall be performed in the cell)

Mobile Station

The MS is equipped with a Test USIM containing default values except for those listed below.

USIM field	Contents
EF$_{UST}$	Service n°2 Fixed Dialling Numbers (FDN) and Service n°89 eCall Data available
EF$_{FDN}$	Display two FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)
EF$_{EST}$	Enabled Services Table

Specific PICS statement(s)

-

Specific PIXIT statement(s)

-

Test procedure

a) MS is powered on. SS monitors to verify that MS does not attempt to register for a period of 120 seconds.

b) MS is made to initiate an eCall in accordance with manufacturer's instructions. SS checks that MS performs registration before starting an eCall.

c) Having reached the active state, the call is cleared by the SS. SS monitors to verify that MS remains registered for the duration of T3242 and send LAU messages every 252 mins (as T3212 timer is set to 252 minutes).

d) Upon expiry of timer T3242 the MS shall perform IMSI detach.

e) MS is made to initiate an eCall. SS checks that MS performs registration before starting an eCall.

f) Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

12 hours 20 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is switched on.
2	SS		The SS verifies for 120 sec that the MS does not send RACH or any other message.
3	MS		MS is made to initiate a manual eCall
4	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to Location updating.
5	SS->MS	IMMEDIATE ASSIGNMENT	
6	MS ->SS	LOCATION UPDATING REQUEST	"Location Updating Type" = Normal location updating/IMSI Attach.
7	SS->MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	LOCATION UPDATING ACCEPT	
10	MS -> SS	TMSI REALLOCATION COMPLETE	
11	SS -> MS	CHANNEL RELEASE	
12	MS -> SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause is emergency call establishment"
13	SS -> MS	IMMEDIATE ASSIGNMENT	
14	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment".
15	SS -> MS	CM SERVICE REQUEST	
16	MS -> SS	EMERGENCY SETUP	SS verifies that optional IE "Service category" should be present and bit 6 should be set to 1 and bit 7 should be set to 0.
17	SS -> MS	CALL PROCEEDING	
18	SS -> MS	ALERTING	
19	SS -> MS	ASSIGNMENT COMMAND	
20	MS -> SS	ASSIGNMENT COMPLETE	
21	SS -> MS	CONNECT	
22	MS -> SS	CONNECT ACKNOWLEDGE	
23	MS		Traffic channel is kept active for at least 5 seconds.
24	SS -> MS	DISCONNECT	
25	MS -> SS	RELEASE	
26	SS -> MS	RELEASE COMPLETE	
27	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
28	SS		For next 12 hours 10 mins SS verifies that 1. MS sends Location Update Request periodically every 252 minutes(5% margin is allowed). 2. MS performs IMSI detach after timer T3242 expires (12 hours) 1% margin is allowed.
29	MS		MS is made to initiate a manual eCall
30	SS		MS should perform LAU.
31	MS -> SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause is emergency call establishment"
32	SS -> MS	IMMEDIATE ASSIGNMENT	
33	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment".
34	SS -> MS	CM SERVICE ACCEPT	
35	MS -> SS	EMERGENCY SETUP	SS verifies that optional IE "Service category" should be present and bit 6 should be set to 1 and bit 7 should be set to 0.
36	SS -> MS	CALL PROCEEDING	
37	SS -> MS	ALERTING	
38	SS -> MS	ASSIGNMENT COMMAND	
39	MS -> SS	ASSIGNMENT COMPLETE	
40	SS -> MS	CONNECT	
41	MS -> SS	CONNECT ACKNOWLEDGE	
42	MS		The TCH is connected in both directions.

43	SS		Traffic channel is kept active for at least 5 seconds.
44	SS -> MS	DISCONNECT	
45	MS -> SS	RELEASE	
46	SS -> MS	RELEASE COMPLETE	
47	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

None

26.9.6a.1.6 Automatically initiated eCall

26.9.6a.1.6.1 Conformance Requirement

[..]

Table 10.5.135d/3GPP TS 24.008: Service Category information element

Emergency Service Category Value (octet 3)
The meaning of the Emergency Category Value is derived from the following settings (see 3GPP TS 22.101 [8] clause 10):
Bit 1   Police
Bit 2   Ambulance
Bit 3   Fire Brigade
Bit 4   Marine Guard
Bit 5   Mountain Rescue
Bit 6   manually initiated eCall
Bit 7   automatically initiated eCall
Bit 8   is spare and set to "0"

Mobile station may set one or more bits to "1"
If more than one bit is set to "1", routing to a combined Emergency centre (e.g. ambulance and fire brigade in Japan) is required. If the MSC can not match the received service category to any of the emergency centres, it shall route the call to an operator defined default emergency centre.

If no bit is set to "1", the MSC shall route the Emergency call to an operator defined default emergency centre.
A mobile station initiating an eCall shall set either bit 6 or bit 7 to "1". The network may use the information indicated in bit 6 and bit 7 to route the manually or automatically initiated eCall to an operator defined emergency call centre.

Reference(s)

3GPP TS 24.008 subclauses 10.5.4.33

26.9.6a.1.6.2 Test purpose

Verify that the eCall capable mobile equipped with eCall and non eCall subscription on USIM

1. Performs LAU when Switched on

2. Able to make an Automatic eCall.

3. MS provides appropriate Service Category information to the network when Automatic eCall is initiated.(Bit 7 should be set to 1 and Bit 6 should be set to 0).

26.9.6a.1.6.3 Method of test

Initial conditions

The eCall capable MS is equipped with eCall and non eCall subscription on USIM.

System Simulator

1 cell, default parameters, ciphering off

ATT flag set to 1 (IMSI ATTACH/DETACH shall be performed in the cell)

Mobile Station

The MS is equipped with a Test USIM containing default values except for those listed below

USIM field	Contents
EF$_{UST}$	Service n°4 Service Dialling Numbers (SDN) and Service n°89 eCall Data available
EF$_{SDN}$	Display two SDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)
EF$_{EST}$	Enabled Services Table

Specific PICS statement(s)

-

Specific PIXIT statement(s)

-

Test procedure

a) MS is powered on.

b) SS checks that MS successfully performs LAU.

c) MS is made to initiate an automatic eCall in accordance with manufacturer's instructions. SS verifies that MS provides appropriate Service Category information to the network. (Bit 7 should be set to 1 and Bit 6 should be set to 0).

d) Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

5 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is switched on.
2	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to Location updating within 60 sec.
3	SS->MS	IMMEDIATE ASSIGNMENT	
4	MS ->SS	LOCATION UPDATING REQUEST	"Location Updating Type" = Normal Location Updating/IMSI attach.
5	SS->MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	LOCATION UPDATING ACCEPT	
8	MS -> SS	TMSI REALLOCATION COMPLETE	
9	SS -> MS	CHANNEL RELEASE	
10	MS		MS is made to initiate an Automatic eCall
11	MS -> SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause is emergency call establishment"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment".
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	EMERGENCY SETUP	SS verifies that optional IE "Service category" should be present and bit 6 should be set to 0 and bit 7 should be set to 1.
16	SS -> MS	CALL PROCEEDING	
17	SS -> MS	ALERTING	
18	SS -> MS	ASSIGNMENT COMMAND	
19	MS -> SS	ASSIGNMENT COMPLETE	
20	SS -> MS	CONNECT	
21	MS -> SS	CONNECT ACKNOWLEDGE	
22	MS		Traffic channel is kept active for at least 5 seconds.
23	SS -> MS	DISCONNECT	
24	MS -> SS	RELEASE	
25	SS -> MS	RELEASE COMPLETE	
26	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

None

26.9.6a.1.7 Reconfiguration eCall using eCall capable MS with 'eCall only' subscription on USIM

26.9.6a.1.7.1 Conformance Requirement

The eCall inactivity procedure is applicable only to an eCall only mobile station (as determined by information configured in USIM).

[..]

While in eCALL INACTIVE state, the mobile station maintains awareness of a potential serving cell in a potential serving network but initiates no MM signalling with the network and ignores any paging requests.

The mobile station shall leave eCALL INACTIVE state only when one of the following events occur:

[..]

- if there is a CM request for a call to an HPLMN designated non-emergency MSISDN for the purpose of accessing test and terminal reconfiguration services: the mobile station attempts normal location updating. Once this is complete, further MM and CM procedures are used to establish the non-emergency call.

Reference(s)

3GPP TS 24.008 subclauses 4.4.7

26.9.6a.1.7.2 Test purpose

1. Verify that the eCall capable MS is capable of making a reconfiguration eCall.

26.9.6a.1.7.3 Method of test

Initial conditions

The eCall capable MS is equipped with eCall only enabled USIM.

System Simulator

1 cell, default parameters, Ciphering Off

Mobile Station

The MS is equipped with a Test USIM containing default values except for those listed below.

USIM field	Contents
EF$_{UST}$	Service n°2 Fixed Dialling Numbers (FDN) and Service n°89 eCall Data available
EF$_{FDN}$	Display two FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)
EF$_{EST}$	Enabled Services Table

Specific PICS statement(s)

-

Specific PIXIT Statement(s)

-

Test procedure

a. MS is powered on. SS monitors to verify that MS does not attempt to register for a period of 120 seconds.

b. MS is made to initiate a reconfiguration eCall in accordance with manufacturer's instructions. SS checks that MS performs registration before starting reconfiguration eCall.

c. Having reached the active state, the call is cleared by the SS.

Maximum Duration of Test

5 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is switched on.
2	SS		The SS verifies for 120 sec that the MS does not send RACH or any other message.
3	MS		MS is made to initiate a reconfiguration eCall (The second number stored in the EF$_{FDN}$ field)
4	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to Location updating.
5	SS->MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	LOCATION UPDATING REQUEST	"Location Updating Type" = Normal location updating/IMSI Attach.

7	SS->MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	LOCATION UPDATING ACCEPT	
10	MS -> SS	TMSI REALLOCATION COMPLETE	
11	SS -> MS	CHANNEL RELEASE	
12	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to "originating call"
13	SS->MS	IMMEDIATE ASSIGNMENT	
14	MS -> SS	CM SERVICE REQUEST	
15	SS->MS	CM SERVICE ACCEPT	
16	MS -> SS	SETUP	Verify called number is the reconfiguration eCall number. (The second number stored in the EF$_{FDN}$ field)
17	SS -> MS	CALL PROCEEDING	
18	SS -> MS	ALERTING	
19	MS		Depending on the PIXIT, an alerting indication is given.
20	SS -> MS	ASSIGNMENT COMMAND	
21	MS -> SS	ASSIGNMENT COMPLETE	
22	SS -> MS	CONNECT	
23	MS -> SS	CONNECT ACKNOWLEDGE	
24	MS		Traffic channel is kept active for at least 5 seconds.
25	SS -> MS	DISCONNECT	
26	MS -> SS	RELEASE	
27	SS -> MS	RELEASE COMPLETE	
28	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

None

26.9.6a.1.8 eCall Inactivity State after T3243 expires

26.9.6a.1.8.1 Conformance Requirement

1. When in state MM IDLE and service state eCALL INACTIVE, the mobile station shall:

- not perform periodic updating;

- not perform IMSI detach;

- reject any requests from CM entities for MM connections except for emergency calls and calls to a non-emergency MSISDN for test and terminal reconfiguration services;

- not perform normal location updating; and

- not respond to paging.

2. An eCall only mobile station (as determined by information configured in USIM), shall start timer T3242 if the return to MM IDLE state is subsequent to an emergency services call and shall start timer T3243 if the return to MM IDLE state is subsequent to a call to a non-emergency MSISDN for test and terminal reconfiguration services, as described in subclause 4.4.7.

3. The mobile station shall leave eCALL INACTIVE state only when one of the following events occur:

- if the SIM or USIM is removed, the mobile station enters the NO IMSI state;

- if coverage is lost, the mobile station enters PLMN SEARCH state;

- if the mobile station is deactivated (e.g. powered off) by the user: the mobile station enters the NULL state;

- if there is a CM request for an emergency services call: the MS uses the MM and CM procedures to establish the emergency call; or

- if there is a CM request for a call to an HPLMN designated non-emergency MSISDN for the purpose of accessing test and terminal reconfiguration services: the mobile station attempts normal location updating. Once this is complete, further MM and CM procedures are used to establish the non-emergency call.

Reference(s)

   3GPP TS 24.008 subclauses 4.2.2.9, 4.2.3, 4.4.7

26.9.6a.1.8.2   Test purpose

Verify that the eCall capable mobile equipped with USIM subscription restricted to eCall only

1. Able to make a test eCall.

2. Registers to the NW as a test eCall is initiated.

3. Remains registered on the network for a duration of T3243 following completion of a test eCall.

4. Detaches from network upon expiry of T3243.

5. Comes out of the eCall Inactive state when a test eCall is initiated (MS should register back to NW and then initiate test eCall).

26.9.6a.1.8.3   Method of test

Initial conditions

   The eCall capable MS is equipped with USIM subscription restricted to eCall only.

   System Simulator

   1 cell, default parameters, ciphering off

   T3212 set to 252 Minutes. ATT flag set to 1 (IMSI ATTACH/DETACH shall be performed in the cell)

   Mobile Station

   The MS is equipped with a Test USIM containing default values except for those listed below.

USIM field	Contents
EF$_{UST}$	Service n°2 Fixed Dialling Numbers (FDN) and Service n°89 eCall Data available
EF$_{FDN}$	Display two FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)
EF$_{EST}$	Enabled Services Table

Specific PICS statement(s)

   -

Specific PIXIT statement(s)

-

Test procedure

 a) MS is powered on. SS monitors to verify that MS does not attempt to register for a period of 120 seconds.

 b) MS is made to initiate a Test eCall in accordance with manufacturer's instructions. SS checks that MS performs registration before starting an Test eCall.

 c) Having reached the active state, the call is cleared by the SS. SS monitors to verify that MS remains registered for the duration of T3243 and send LAU messages every 252 mins (as T3212 timer is set to 252 minutes).

 d) Upon expiry of timer T3243 the MS shall perform IMSI detach.

Maximum Duration of Test

12 hours 20 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is switched on.
2	SS		The SS verifies for 120 sec that the MS does not send RACH or any other message.
3	MS		MS is made to initiate a Test eCall (The first number stored in the EF$_{FDN}$ field)
4	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to Location updating.
5	SS->MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	LOCATION UPDATING REQUEST	"Location Updating Type" = Normal location updating/IMSI Attach.
7	SS->MS	AUTHENTICATION REQUEST	
8	MS -> SS	AUTHENTICATION RESPONSE	
9	SS -> MS	LOCATION UPDATING ACCEPT	
10	MS -> SS	TMSI REALLOCATION COMPLETE	
11	SS -> MS	CHANNEL RELEASE	
12	MS->SS	CHANNEL REQUEST	The SS verifies that the MS sends RACH Request with "Establishment cause" set to "originating call"
13	SS->MS	IMMEDIATE ASSIGNMENT	
14	MS -> SS	CM SERVICE REQUEST	
15	SS -> MS	CM SERVICE ACCEPT	
16	MS -> SS	SETUP	Verify called number is the Test eCall number. (The first number stored in the EF$_{FDN}$ field)
17	SS -> MS	CALL PROCEEDING	
18	SS -> MS	ALERTING	
19	MS		Depending on the PIXIT, an alerting indication is given.
20	SS -> MS	ASSIGNMENT COMMAND	
21	MS -> SS	ASSIGNMENT COMPLETE	
22	SS -> MS	CONNECT	

23	MS -> SS	CONNECT ACKNOWLEDGE	
24	MS		Traffic channel is kept active for at least 5 seconds.
25	SS -> MS	DISCONNECT	
26	MS -> SS	RELEASE	
27	SS -> MS	RELEASE COMPLETE	
28	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
29	SS		SS verifies that MS sends periodic Location Update Request every 252 minutes (5% margin is allowed).
30	SS	IMSI DETACH INDICATION	SS verifies that MS performs IMSI detach after T3243 expires. (After 12 hours of completing step 28). 1% margin is allowed

Specific Message Contents

None

26.9.7 Directed Retry / Mobile Originated Call

26.9.7.1 Conformance requirements

The MS shall correctly apply the Directed Retry procedure from SDCCH/8 (with frequency hopping) or SDCCH/4 to TCH/F or TCH/H with or without frequency hopping in the non-synchronized case during call establishment. The call control entity of the Mobile Station in the "mobile originating call proceeding" state shall, upon receipt of a CONNECT message, attach the appropriate user connection to the radio path and return a CONNECT ACKNOWLEDGE message to the SS.

References

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.4,
3GPP TS 04.08 / 3GPP TS 24.008 subclauses 5.2.1.6. and 9.1.15.

3GPP TS 04.13, subclause 5.2.6.2.

26.9.7.2 Test purpose

To test that, when the MS is ordered to perform a non-synchronized handover after the CALL PROCEED message, it continuously sends access bursts on the main DCCH (and optionally on the SACCH) until it receives a PHYSICAL INFORMATION message from the SS. To test that the MS correctly takes the values of the Timing Advance information element in the PHYSICAL INFORMATION message into account. To test that the MS activates the new channel correctly and transmits the HANDOVER COMPLETE message without undue delay. To test that the call control entity of the Mobile Station in the "mobile originating call proceeding" state, upon receipt of a CONNECT message, attaches the appropriate user connection to the radio path and returns a CONNECT ACKNOWLEDGE message to the SS.

26.9.7.3 Method of test

Initial Conditions

System Simulator:

2 cells A and B with same LAI, default parameters, except:

Cell A has:

BCCH ARFCN = See the table below.

Cell Allocation = (See the table below.

PLMN colour code, NCC = as defaults.

BS colour code, BCC = as defaults.

PLMN_PERM = 00001010.

Cell B has:

BCCH ARFCN = See the table below.

Cell Allocation = See the table below.

PLMN colour code, NCC = 3.

BS colour code, BCC = 0.

Band	Cell A		Cell B		Both Cells
	BCCH ARFCN	Cell Allocation	BCCH ARFCN	Cell Allocation	Format
GSM 450	263	259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291	274	260, 262, 264, 266, 268, 270, 272, 274, 276, 279, 281, 283, 285, 287, 289, 291	Range 128
GSM 480	310	306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338	321	307, 309, 311, 313, 315, 317, 319, 321, 323, 326, 328, 330, 332, 334, 336, 338	Range 128
GSM 710	457	447, 454, 457, 463, 471, 479, 482 ,483 ,489, 496, 498, 500, 501, 502, 503, 506, 508	477	451, 455, 459, 461, 467, 468, 475, 477, 497, 498, 500, 501, 502, 503, 506, 508	Range 128
GSM 750	457	447, 454, 457, 463, 471, 479, 482 ,483 ,489, 496, 498, 500, 501, 502, 503, 506, 508	477	451, 455, 459, 461, 467, 468, 475, 477, 497, 498, 500, 501, 502, 503, 506, 508	Range 128
T-GSM 810	457	447, 454, 457, 463, 471, 479, 482 ,483 ,489, 496, 498, 500, 501, 502, 503, 506, 508	477	451, 455, 459, 461, 467, 468, 475, 477, 497, 498, 500, 501, 502, 503, 506, 508	Range 128
GSM 850	147	137, 144, 147, 153, 161, 169, 172, 173, 179, 186, 193, 200, 201, 202, 203, 235, 241	167	141, 145, 149, 151, 157, 158, 165, 167, 187, 193, 200, 201, 202, 203, 235, 241	Range 128
GSM 900	20	10, 17, 20, 26, 34, 42, 45, 46, 52, 59, 66, 73, 74, 75, 76, 108, 114	40	14, 18, 22, 24, 30, 31, 38, 40, 60, 66, 73, 74, 75, 76, 108, 114	Bitmap 0
DCS 1 800	747	734, 741, 747, 754, 759, 762, 766, 767, 773, 775, 779, 782, 791, 798, 829, 832, 844	764	739, 743, 746, 749, 756, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844	Range 512
PCS 1 900	647	634, 641, 647, 654, 659, 662, 666, 667, 673, 675, 679, 682, 691, 698, 729, 732, 744	664	639, 643, 646, 649, 656, 658, 661, 664, 671, 679, 682, 691, 698, 729, 732, 744	Range 512

The timebase of Cells A and B shall be such that the edges of their timeslots are not coincident at the antenna connector.

For execution counter M = 1 a combined CCH/SDCCH is used.

For execution counter M = 2 a non-combined SDCCH is used.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated and camped on cell A.

Specific PICS statements:

- Speech supported for Half rate version 1 (GSM HR) (TSPC_AddInfo_Half_rate_version_1)

PIXIT statements:

- Way to indicate mobile originated alerting.

Foreseen Final State of the MS

"Idle, updated" with TMSI allocated and camped on cell B.

Test Procedure

This procedure is repeated for execution counter M = 1..2.

A teleservice is selected that is supported by the MS; if the MS supports speech, the selected teleservice is speech. If necessary, the MS is configured for that teleservice.

The MS is made to initiate a call on Cell A. After the SS has sent the CALL PROCEEDING message the SS sends a HANDOVER COMMAND message, ordering the MS to switch to cell B. The MS shall then begin to send access bursts on the new DCCH (and optionally on the SACCH) to cell B. The SS observes the access bursts and after receiving n (n being arbitrarily chosen between values according to table 26.6-2 of subclause 26.6.5) access bursts, the SS sends one PHYSICAL INFORMATION message with an arbitrarily chosen Timing Advance. The MS shall activate the channel in sending and receiving mode. The MS shall establish a signalling link. The MS shall be ready to transmit a HANDOVER COMPLETE message before x ms after the end of the PHYSICAL INFORMATION message, but not before a UA frame has been sent by the SS. After the successful handover procedure the SS sends the ALERTING message. The correct alerting indication shall be given to the user (only applicable if the MS supports this feature). The SS sends the CONNECT message indicating that the call has been answered. The appropriate bearer channel shall be through connected in both directions. The MS shall send then the CONNECT ACKNOWLEDGE message as the response on the CONNECT message. Having reached the active state, the call is cleared by the SS.

The term "ready to transmit" is defined in 3GPP TS 04.13. The value of "x" depends upon the target channel and is specified in the specific message contents section.

Maximum Duration of Test

2 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

The sequence is performed for execution counter M = 1..2 (unless a particular TCH is not supported).

Step	Direction	Message	Comments
1	--------	--------	A MO call is initiated on cell A.
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "originating call and the network does not set the NECI bit to 1".
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	CM SERVICE REQUEST	CM Service Type = Mobile Originating Call Establishment.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	MS -> SS	SETUP	
11	SS -> MS	CALL PROCEEDING	
12	SS -> MS	HANDOVER COMMAND	See specific message contents.
13	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH (and optionally on the SACCH) until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND.
14	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS message. Timing Advance is arbitrarily chosen.
15	MS -> SS	SABM	Sent without information field.
16	SS -> MS	UA	
17	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step 14.
18	SS -> MS	ALERTING	
19	MS		Depending on the PIXIT, an alerting indication is given.
20	SS -> MS	CONNECT	
21	MS -> SS	CONNECT ACKNOWLEDGE	
22	MS		The appropriate bearer channel is through connected in both directions.
23	SS -> MS	DISCONNECT	
24	MS -> SS	RELEASE	
25	SS -> MS	RELEASE COMPLETE	
26	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents For Mobiles Supporting Speech

M = 1:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents.	

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	3
- Base Station Colour Code	0
- BCCH Carrier Number	See the table below
Channel Description	
- Channel Type	TCH/F + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Chosen arbitrarily but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Frequency List IE.
- HSN	Zero (this gives cyclic hopping).
Synchronization Indication IE is not included	
Frequency list after time	
- Frequency List	Encode frequencies as per the table below.
Channel Mode IE	Speech (full rate version 1 or half rate version 1).

Step 17: "**x**" = 500.

HANDOVER COMMAND			
Band	**Frequency Short List**		**BCCH Carrier Number**
	Format	**ARFCNs**	**ARFCN**
GSM 450	Range 128	260, 262, 264, 266, 268, 270, 272, 276, 279, 281, 283, 285, 287, 289, 291	274
GSM 480	Range 128	307, 309, 311, 313, 315, 317, 319, 323, 326, 328, 330, 332, 334, 336, 338	321
GSM 710	Range 128	451, 455, 459, 461, 467, 468, 475, 497, 498, 500, 501, 502, 503, 506, 508	477
GSM 750	Range 128	451, 455, 459, 461, 467, 468, 475, 497, 498, 500, 501, 502, 503, 506, 508	477
T-GSM 810	Range 128	451, 455, 459, 461, 467, 468, 475, 497, 498, 500, 501, 502, 503, 506, 508	477
GSM 850	Range 128	141, 145, 149, 151, 157, 158, 165, 187, 193, 200, 201, 202, 203, 235, 241	167
GSM 900	Range 128	14, 18, 22, 24, 30, 31, 38, 60, 66, 73, 74, 75, 76, 108, 114	40
DCS 1 800	Range 128	746, 779	764
PCS 1 900	Range 128	646, 679	664

M = 2:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	See the table below.
Channel Description	
- Channel Type	SDCCH/8
- TDMA offset	As default message contents.
- Timeslot number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Mobile Allocation.
- HSN	Zero (this gives cyclic hopping).
Mobile Allocation	
- Length	3 octets.
- Contents	See the table below.

IMMEDIATE ASSIGNMENT		
Band	**Mobile Allocation**	**L2 pseudo length**
GSM 450	281, 283, 285	14 octets (11 + contents of the MA)
GSM 480	328, 330, 332	14 octets (11 + contents of the MA)
GSM 710	500, 501, 502	14 octets (11 + contents of the MA)
GSM 750	500, 501, 502	14 octets (11 + contents of the MA)
T-GSM 810	500, 501, 502	14 octets (11 + contents of the MA)
GSM 850	200, 201, 202	14 octets (11 + contents of the MA)
GSM 900	73, 74, 75	14 octets (11 + contents of the MA)
DCS 1 800	Indicates all of the CA of cell A except ARFCNs 747 and 767.	
PCS 1 900	Indicates all of the CA of cell A except ARFCNs 647 and 667	

HANDOVER COMMAND

As default message contents, except:	
Cell Description	
- Network Colour Code	3
- Base Station Colour Code	0
- BCCH Carrier Number	See the table below
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Chosen arbitrarily but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Mobile Allocation.
- HSN	Chosen arbitrarily from the set (1, 2.. 63).
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Cell Channel Description	Encode frequencies as per the table below
Mobile Allocation after time	indicates channels as per the table below only
Channel Mode IE	speech (full rate version 1 or half rate version 1).

Step 17: "**x**" = 750.

HANDOVER COMMAND					
Band	**BCCH Carrier Number**	**Cell Channel Description**			**Mobile Allocation after time**
	ARFCN	**Format**	**ARFCNs**		
GSM 450	274	Range 128	274, 279, 281, 283, 285, 287, 289, 291		281, 283, 285
GSM 480	321	Range 128	321, 326, 328, 330, 332, 334, 336, 338		328, 330, 332
GSM 710	477	Range 128	477, 498, 500, 501, 502, 503, 506, 508		500, 501, 502
GSM 750	477	Range 128	477, 498, 500, 501, 502, 503, 506, 508		500, 501, 502
T-GSM 810	477	Range 128	477, 498, 500, 501, 502, 503, 506, 508		500, 501, 502
GSM 850	167	Range 128	167, 193, 200, 201, 202, 203, 235, 241		200, 201, 202
GSM 900	40	Bitmap 0	40, 66, 73, 74, 75, 76, 108, 114		73, 74, 75
DCS 1 800	764	Range 512	761, 764, 771, 779, 782, 791, 798, 829, 832		791, 798, 829
PCS 1 900	664	Range 512	661, 664, 671, 679, 682, 691, 698, 629, 632		679, 682, 691

Specific Message Contents For Mobiles not Supporting Speech

The message contents shall be the same as for a Mobile Station supporting speech, except for:

For M = 1 (TCH/F):

HANDOVER COMMAND

Information Element	value/remarks
Mode of first channel	Arbitrary from those supported (12, 6, 3.6 kbps).

For M = 2 (TCH/H):

HANDOVER COMMAND

Information Element	value/remarks
Mode of first channel	Arbitrary from those supported (6, 3.6 kbps).

26.9.8 Directed Retry / Mobile Terminated Call

This test is applicable to all MS which support at least one MT circuit switched basic service.

26.9.8.1 Conformance requirements

The MS shall correctly apply the Directed Retry procedure from SDCCH/8 (with frequency hopping) or SDCCH/4 to TCH/F or TCH/H with or without frequency hopping in the non-synchronized case during call establishment. The call control entity of the Mobile Station in the "call delivered" state shall, if the MS supports immediate connect, continue the call establishment by through-connecting the traffic channel in both directions, or if the MS does not support immediate connect, send an ALERTING message. The MS indicates acceptance of a MT call by sending CONNECT.

For speech calls the mobile station shall attach the user connection at latest when sending the CONNECT message, except if there is no compatible radio resource available at this time. In this case the attachment shall be delayed until such a resource becomes available.

For Data Calls the mobile station shall attach the user connection when receiving the CONNECT ACKNOWLEDGE message from the network.

References

> 3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.4,
> 3GPP TS 04.08 / 3GPP TS 24.008, subclauses 5.2.2.5, 5.2.2.6, 5.2.2.9 and 9.1.15.
>
> 3GPP TS 04.13, subclause 5.2.6.2.

26.9.8.2 Test purpose

To test that when the MS is ordered to perform a non-synchronized handover after the CALL CONFIRM message, it continuously sends access bursts on the main DCCH (and optionally on the SACCH) until it receives a PHYSICAL INFORMATION message from the SS. To test that the MS correctly takes the values of the Timing Advance information element in the PHYSICAL INFORMATION message into account. To test that the MS activates the new channel correctly and transmits the HANDOVER COMPLETE message without undue delay. To test that the call control entity of the Mobile Station in the "call delivered" state, if the MS supports immediate connect, continues the call establishment by through-connecting the traffic channel in both directions, or if the MS does not support immediate connect, sends an ALERTING message. To test that the MS indicates acceptance of a MT call by sending CONNECT.

To test that for speech calls the mobile station attaches the user connection at latest when sending the CONNECT message, except if there is no compatible radio resource available at this time. To test that in this case the attachment is delayed until such a resource becomes available.

To test that for Data Calls the mobile station attaches the user connection when receiving the CONNECT ACKNOWLEDGE message from the network.

26.9.8.3 Method of test

Initial Conditions

System Simulator:

2 cells A and B with same LAI, default parameters, except:

Cell A has:

BCCH ARFCN = See the table below.

Cell Allocation = See the table below.

PLMN colour code, NCC = as defaults.

BS colour code, BCC = as defaults.

PLMN_PERM = 00001010.

Cell B has:

BCCH ARFCN = See the table below.

Cell Allocation = See the table below.

PLMN colour code, NCC = 3.

BS colour code, BCC = 0.

Band	Cell A		Cell B		Both Cells
	BCCH ARFCN	**Cell Allocation**	**BCCH ARFCN**	**Cell Allocation**	**Format**
GSM 450	263	259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291	274	260, 262, 264, 266, 268, 270, 272, 274, 276, 279, 281, 283, 285, 287, 289, 291	Range 128
GSM 480	310	306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338	321	307, 309, 311, 313, 315, 317, 319, 321, 323, 326, 328, 330, 332, 334, 336, 338	Range 128
GSM 710	457	447, 454, 457, 463, 471, 479, 482 ,483 ,489, 496, 498, 500, 501, 502, 503, 506, 508	477	451, 455, 459, 461, 467, 468, 475, 477, 497, 498, 500, 501, 502, 503, 506, 508	Range 128
GSM 750	457	447, 454, 457, 463, 471, 479, 482 ,483 ,489, 496, 498, 500, 501, 502, 503, 506, 508	477	451, 455, 459, 461, 467, 468, 475, 477, 497, 498, 500, 501, 502, 503, 506, 508	Range 128
T-GSM 810	457	447, 454, 457, 463, 471, 479, 482 ,483 ,489, 496, 498, 500, 501, 502, 503, 506, 508	477	451, 455, 459, 461, 467, 468, 475, 477, 497, 498, 500, 501, 502, 503, 506, 508	Range 128
GSM 850	147	137, 144, 147, 153, 161, 169, 172, 173, 179, 186, 193, 200, 201, 202, 203, 235, 241	167	141, 145, 149, 151, 157, 158, 165, 167, 187, 193, 200, 201, 202, 203, 235, 241	Range 128
GSM 900	20	10, 17, 20, 26, 34, 42, 45, 46, 52, 59, 66, 73, 74, 75, 76, 108, 114	40	14, 18, 22, 24, 30, 31, 38, 40, 60, 66, 73, 74, 75, 76, 108, 114	Bitmap 0
DCS 1 800	747	734, 741, 747, 754, 759, 762, 766, 767, 773, 775, 779, 782, 791, 798, 829, 832, 844	764	739, 743, 746, 749, 756, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844	Range 512
PCS 1 900	647	634, 641, 647, 654, 659, 662, 666, 667, 673, 675, 679, 682, 691, 698, 729, 732, 744	664	639, 643, 646, 649, 656, 658, 661, 664, 671, 679, 682, 691, 698, 729, 732, 744	Range 512

The timebase of Cells A and B shall be such that the edges of their timeslots are not coincident at the antenna connector.

For execution counter M = 1 a combined CCH/SDCCH is used.

For execution counter M = 2 a non-combined SDCCH is used.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated and camped on cell A.

Specific PICS statements:

- Speech supported for Half rate version 1 (GSM HR) (TSPC_AddInfo_Half_rate_version_1)

- Immediate connect supported for all circuit switched basic services. (TSPC_AddInfo_ImmConn)

PIXIT statements:

- Way to indicate alerting.

- Way to make the MS accept an incoming call after alerting.

Foreseen Final State of the MS

"Idle, updated" with TMSI allocated and camped on cell B.

Test Procedure

This procedure is repeated for execution counter M = 1..2.

A teleservice is selected that is supported by the MS; if the MS supports speech, the selected teleservice is speech. If necessary, the MS is configured for that teleservice.

The MS is paged on Cell A. The MS responds to the PAGING REQUEST message and establishes a mobile terminated call on Cell A. If the MS supports immediate connect, it continues the call establishment by through-connecting the traffic channel in both directions, or if the MS does not support immediate connect, it sends an ALERTING message. The MS indicates acceptance of a MT call by sending CONNECT.

After the MS has sent the CALL CONFIRMED message (if the MS supports immediate connect then the MS sends the CONNECT message after the CALL CONFIRMED message on the old channel) the SS sends a HANDOVER COMMAND message, ordering the MS to switch to cell B. The MS shall then begin to send access bursts on the new DCCH (and optionally on the SACCH) to cell B. The SS observes the access bursts and after receiving n (n being arbitrarily chosen between values according to table 26.6-2 of subclause 26.6.5) access bursts, the SS sends one PHYSICAL INFORMATION message with an arbitrarily chosen Timing Advance. The MS shall activate the channel in sending and receiving mode. The MS shall establish a signalling link. The MS shall be ready to transmit a HANDOVER COMPLETE message before x ms after the end of the PHYSICAL INFORMATION message, but not before a UA frame has been sent by the SS. After the successful handover procedure the MS sends the ALERTING message (if the MS runs the immediate connect procedure then the MS does not send an ALERTING message). The correct alerting indication shall be given to the user (only applicable if the MS supports the feature or if the MS is not using the immediate connect procedure). After the MS sent the CONNECT message the appropriate bearer channel shall be through connected in both directions. The SS sends then the CONNECT ACKNOWLEDGE message as the response on the CONNECT message. Having reached the active state, the call is cleared by the SS.

The term "ready to transmit" is defined in 3GPP TS 04.13. The value of "x" depends upon the target channel and is specified in the specific message contents section.

Maximum Duration of Test

2 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

The sequence is performed for execution counter M = 1..2 (unless a particular TCH is not supported).

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Sent on the correct paging subchannel on cell A.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SETUP	
11	MS -> SS	CALL CONFIRMED	
			If the MS supports immediate connect then branch A applies. If the MS does not support immediate connect then branch B applies
A12	MS -> SS	CONNECT	sent on the old channel
A13	SS -> MS	HANDOVER COMMAND	See specific message contents.
A14	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH (and optionally on the SACCH) until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND. If the HANDOVER COMMAND includes a starting time IE then the first HANDOVER ACCESS message shall be transmitted in the indicated frame (unless the indicated frame is not used by that channel, in which case the next frame used by that channel shall be used).
A15	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS message. Timing Advance is arbitrarily chosen.
A16	MS -> SS	SABM	Sent without information field.
A17	SS -> MS	UA	
A18	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step A15.
B12	SS -> MS	HANDOVER COMMAND	See specific message contents.
B13	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH (and optionally on the SACCH) until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND. If the HANDOVER COMMAND includes a starting time IE then the first HANDOVER ACCESS message shall be transmitted in the indicated frame (unless the indicated frame is not used by that channel, in which case the next frame used by that channel shall be used).
B14	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS message. Timing Advance is arbitrarily chosen.
B15	MS -> SS	SABM	Sent without information field.
B16	SS -> MS	UA	
B17	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step B14.
B18	MS -> SS	ALERTING	
B19	MS		Gives an alerting indication as defined in a PIXIT statement is given by the MS
B20	MS		The MS is made to accept the call in the way described in a PIXIT statement
B21	MS -> SS	CONNECT	
22	MS		If the call is a speech call, the TCH shall be through connected in both directions.
23	SS -> MS	CONNECT ACKNOWLEDGE	
24	MS		If the call is a data call, the TCH shall be through connected in both directions.
25	SS -> MS	DISCONNECT	
26	MS -> SS	RELEASE	
27	SS -> MS	RELEASE COMPLETE	

| 28 | SS -> MS | CHANNEL RELEASE | The main signalling link is released. |

Specific Message Contents For Mobiles Supporting Speech

M = 1:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents.	

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	3
- Base Station Colour Code	0
- BCCH Carrier Number	See the table below
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	Zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of Cell B, but not the BCCH carrier of Cell B.
Synchronization Indication IE not included.	
Mode of First Channel	Speech (full rate version 1 or half rate version 1).

Band	BCCH Carrier Number
GSM 450	274
GSM 480	321
GSM 710	477
GSM 750	477
T-GSM 810	477
GSM 850	167
GSM 900	40
DCS 1 800	764
PCS 1 900	664

Step A18 / B17: "**x**" = 500.

M = 2:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	See the table below
Channel Description	
- Channel Type	SDCCH/8
- TDMA offset	As default message contents.
- Timeslot number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Mobile Allocation.
- HSN	Chosen arbitrarily from the set (1,2,..63).
Mobile Allocation	
- Length	3 octets.
- Contents	Indicates only three frequencies, as per the table below

IMMEDIATE ASSIGNMENT		
Band	**Mobile Allocation**	**L2 pseudo length**
GSM 450	281, 283, 285	14 octets (11 + contents of the MA)
GSM 480	328, 330, 332	14 octets (11 + contents of the MA)
GSM 710	500, 501, 502	14 octets (11 + contents of the MA)
GSM 750	500, 501, 502	14 octets (11 + contents of the MA)
T-GSM 810	500, 501, 502	14 octets (11 + contents of the MA)
GSM 850	200, 201, 202	14 octets (11 + contents of the MA)
GSM 900	73, 74, 75	14 octets (11 + contents of the MA)
DCS 1 800	773, 775, 779	
PCS 1 900	673, 675, 679	

HANDOVER COMMAND

Information Element	**value/remarks**
As default message contents, except:	
Cell Description	
- Network Colour Code	3
- Base Station Colour Code	0
- BCCH Carrier Number	See the table below
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Chosen arbitrarily, but not Zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Frequency List IE.
- HSN	Zero (this gives cyclic hopping).
Frequency List after time	
- Frequency List	Encode the frequencies as per the table below.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Mode of First Channel	Speech (full rate version 1 or half rate version 1).
Starting Time	Indicates the frame number of cell B. that will occur approximately 1,1 seconds (238 frames have elapsed) after the HANDOVER COMMAND is sent by cell A.

HANDOVER COMMAND			
Band	**BCCH Carrier Number**	**Cell Channel Description**	
	ARFCN	**Format**	**ARFCNs**
GSM 450	274	Range 128	260, 262, 264, 266, 276, 279, 281, 283, 285, 287, 289, 291
GSM 480	321	Range 128	307, 309, 311, 313, 323, 326, 328, 330, 332, 334, 336, 338
GSM 710	477	Range 128	451, 455, 459, 461, 497, 498, 500, 501, 502, 503, 506, 508
GSM 750	477	Range 128	451, 455, 459, 461, 497, 498, 500, 501, 502, 503, 506, 508
T-GSM 810	477	Range 128	451, 455, 459, 461, 497, 498, 500, 501, 502, 503, 506, 508
GSM 850	167	Range 128	141, 145, 149, 151, 187, 193, 200, 201, 202, 203, 235, 241
GSM 900	40	Bitmap 0	14, 18, 22, 24, 60, 66, 73, 74, 75, 76, 108, 114
DCS 1 800	764	Range 512	749, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844
PCS 1 900	664	Range 512	649, 658, 661, 664, 671, 679, 682, 691, 698, 729, 732, 744

Step A18 / B17: "**x**" = 750.

Specific Message Contents For Mobiles not Supporting Speech

The message contents shall be the same as for a Mobile Station supporting speech, except for:

For M = 1 (TCH/F):

HANDOVER COMMAND

Information Element	value/remarks
Mode of first channel	Arbitrary from those supported (12, 6, 3.6 kbps).

For M = 2 (TCH/H):

HANDOVER COMMAND

Information Element	value/remarks
Mode of first channel	Arbitrary from those supported (6, 3.6 kbps).

26.9.9 Default contents of messages

ALERTING (mobile station to network direction)

Information element	Value/remark
Facility	Not checked
User-user	Not checked
SS version	Not checked

ALERTING (network to mobile station direction)

Information element	Value/remark
Facility	Omitted
Progress indicator	Omitted
User-user	Omitted

ASSIGNMENT COMMAND

Information element	Value/remark
Description of the first channel	describes non-hopping Bm+ACCHs or Lm+ACCHs as appropriate for the test
Power Command	As in subclause 26.1.1
Frequency list	Omitted
Cell channel description	Omitted
Mode of the first channel	appropriate for one bearer capability chosen for the test
Description of the second channel	Omitted
Mode of the second channel	Omitted
Mobile allocation	Omitted
Starting time	Omitted
Cipher mode setting	Omitted

ASSIGNMENT COMPLETE

Information element	Value/remark
RR cause	normal event

AUTHENTICATION REQUEST

Information element	Value/remark
Ciphering key sequence number	Arbitrary
Spare half octet	(spare bits)
Authentication parameter RAND	Arbitrary

AUTHENTICATION RESPONSE

Information element	Value/remark
Authentication parameter SRES	Correct for given SRES

CALL CONFIRMED

Information element	Value/remark
Repeat indicator	Omitted
Bearer capability 1	The *bearer capability 1* information element shall be included if and only if at least one of the following cases holds: - the mobile station wishes another bearer capability than that given by the *bearer capability 1* information element of the incoming SETUP message; - the *bearer capability 1* information element received in the SETUP message is accepted and the "radio channel requirement" of the Mobile Station is other than "full rate support only mobile station". - the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the Mobile Station supports other speech versions than GSM full rate version 1/ half rate version 1.
Bearer capability 2	Omitted
Cause	Omitted
CC Capabilities	may be present

CALL PROCEEDING

Information element	Value/remark
Repeat Indicator	Omitted
Bearer Capability 1	Omitted if the SETUP message did not specify in the bearer capability 1 IE a connection element value "both, transparent preferred" or "both, non- transparent preferred". Otherwise included; in that case the connection element specifies the value that is appropriate for the selected teleservice (either value "transparent" or value "non transparent (RLP)"), all other parameters are same as in the bearer capability 1 IE of the received SETUP message.
Bearer Capability 2	Omitted
Facility	Omitted
Progress indicator	Omitted

CHANNEL RELEASE

Information element	Value/remark
RR cause	Normal event

CHANNEL REQUEST

Information element	Value/remark
Establishment cause	Answer to paging (100)
Random reference	Arbitrary value of 5 bits length

CIPHERING MODE COMMAND

Information element	Value/remark
Cipher mode setting	
algorithm identifier	indicates a supported algorithm
SC	Start ciphering
Cipher response	
CR	IMEI must not be included

CIPHERING MODE COMPLETE

Information element	Value/remark
Mobile equipment identity	Omitted

CM SERVICE ACCEPT

Information element	Value/remark
none but message head	

CM SERVICE REQUEST

Information element	Value/remark
CM service type	Mobile originating call establishment or packet mode connection establishment
Ciphering key sequence number	CKSN of the MS
Mobile station classmark 2	Not checked
Mobile identity	TMSI of MS

CONNECT (network to mobile station direction)

Information element	Value/remark
Facility	Omitted
Progress indicator	Omitted
Connected number	Omitted
Connected subaddress	Omitted
User-user	Omitted

CONNECT (mobile station to network direction)

Information element	Value/remark
Facility	Not checked
Connected subaddress	Not checked
User-user	Not checked
SS version	Not checked

CONNECT ACKNOWLEDGE

Information element	Value/remark
none but message head	

DISCONNECT (network to mobile station direction)

Information element	Value/remark
Cause	
Coding standard	GSM
Location	User
Cause value	Normal clearing
Facility	Omitted
Progress indicator	Omitted
User-user	Omitted

DISCONNECT (mobile station to network direction)

Information element	Value/remark
Cause	
Coding standard	GSM
Location	User
Cause value	Normal clearing
Facility	Not checked
User-user	Not checked
SS version	Not checked

EMERGENCY SETUP

Information element	Value/remark
Bearer Capability	May be present or omitted. If present, it shall indicate speech, the appropriate speech version(s) and have the appropriate value of radio channel requirement field

IMMEDIATE ASSIGNMENT

Information element	Value/remark
Page mode	Normal paging
Channel description	describes a valid SDCCH+SACCH in non-hopping mode
Request reference	
Random access information	As received from MS
N51, N32, N26	Corresponding to frame number of the CHANNEL REQUEST
Timing advance	Arbitrary
Mobile allocation	Empty (L=0)
Starting time	Omitted

PAGING REQUEST TYPE 1

Information element	Value/remark
L2 pseudo length	L2 pseudo length of the message
Page Mode	Normal Paging
Channels needed for Mobiles 1 and 2	
channel (first)	any channel
channel (second)	any channel
Mobile identity 1	TMSI of MS under test
Mobile identity 2	Omitted
P1 rest octets	(spare octets)

PAGING RESPONSE

Information element	Value/remark
Ciphering key sequence number	Value assigned to MS in the initial conditions
Spare half octet	(spare bits)
Mobile station classmark 2	Not checked
Mobile identity	specifies TMSI of MS

RELEASE (network to mobile station direction)

Information element	Value/remark
Cause	Omitted
Second cause	Omitted
Facility	Omitted
User-user	Omitted

RELEASE (mobile station to network direction)

Information element	Value/remark
Cause	Not checked
Second cause	Not checked
Facility	Not checked
User-user	Not checked
SS version	Not checked

RELEASE COMPLETE (network to mobile station direction)

Information element	Value/remark
Cause	Omitted
Facility	Omitted
User-user	Omitted

RELEASE COMPLETE (mobile station to network direction)

Information element	Value/remark
Cause	Not checked
Facility	Not checked
User-user	Not checked
SS version	Not checked

SETUP (MS to SS)

Information element	Value/remark
BC Repeat indicator	Omitted
Bearer capability 1	Appropriate for the teleservice selected for the test
Bearer capability 2	Omitted
Facility	Not checked
Calling party subaddress	Not checked
Called party BCD number	As entered
Called party subaddress	Omitted
LLC repeat indicator	Omitted
Low layer compatibility I	Appropriate for teleservice selected for the test
Low layer compatibility II	Omitted
HLC repeat indicator	Omitted
High layer compatibility i	Appropriate for teleservice selected for the test
High layer compatibility ii	Omitted
User-user	Not checked
SS version	Not checked
CLIR suppression	Not checked
CC Capabilities	may be present

SETUP (SS to MS)

Information element	Value/remark
BC repeat indicator	Omitted
Bearer capability 1	Appropriate for teleservice selected for the test
Bearer capability 2	Omitted
Facility	Omitted
Progress indicator	Omitted
Signal	Omitted
Calling party BCD number	Omitted
Calling party subaddress	Omitted
Called party BCD number	Omitted
Called party subaddress	Omitted
LLC repeat indicator	Omitted
Low layer compatibility I	Appropriate for teleservice selected for the test
Low layer compatibility II	Omitted
HLC repeat indicator	Omitted
High layer compatibility i	Appropriate for the teleservice selected for the test
High layer compatibility ii	Omitted
User-user	Omitted