26.6 Test of the elementary procedures for radio resource management

NOTE: For SS implementor: if tests are concatenated, it is important that unused fields in IMMEDIATE ASSIGNMENT REJECT messages do not use Request References that relate to CHANNEL REQUEST messages recently transmitted by the MS.

26.6.1 Immediate assignment

The immediate assignment procedure is used by the network to establish a dedicated control channel for the MS and network to communicate the detail of the service requested. If the Mobile Station does not implement the procedure correctly, radio resources can be wasted as the Mobile Station might use the wrong channels.

26.6.1.1 Immediate assignment / SDCCH or TCH assignment

26.6.1.1.1 Conformance requirement

1. Following a PAGING REQUEST message, the MS shall correctly set up an RR connection on the SDCCH/8 described in the IMMEDIATE ASSIGNMENT message.

2. Following a PAGING REQUEST message, the MS shall correctly set up an RR connection on the TCH/FACCH described in the IMMEDIATE ASSIGNMENT message.

Reference(s)

GSM 04.08 section 3.3.1.2.1.

26.6.1.1.2 Test purpose

To verify that the MS can correctly set up a dedicated SDCCH control channel and that the MS can correctly set up a dedicated TCH/FACCH control channel.

26.6.1.1.3 Method of test

Initial Conditions

System Simulator:
1 cell, except that CCCH_CONF is set to "1 basic physical channel used for CCCH not combined with SDCCHs".

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statement(s)

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Support rate(s) of TCH: TCH/F and/or TCH/H.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST message the SS assigns an SDCCH. The MS shall go to the correct channel and send a PAGING RESPONSE message. Then the SS initiates RR-release by sending a CHANNEL RELEASE message.

If TCH/F is supported by the MS, the test is repeated with the SS assigning a TCH/F.

If TCH/H is supported by the MS, the test is repeated with the SS assigning a TCH/H.

Maximum Duration of Test

6 seconds per value of the execution timer.

Expected Sequence

This sequence is performed for execution counter, K = 1, 2, 3 (unless the TCH is not supported).

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Channel Type: see below
4	MS -> SS	PAGING RESPONSE	Shall be sent on the correct channel
5	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

IMMEDIATE ASSIGNMENT

K=1, SDCCH test: Channel Type = SDCCH/8
K=2, TCH/F test: Channel Type = Bm + ACCHs
K=3, TCH/H test: Channel Type = Lm + ACCHs, subchannel arbitrarily chosen

26.6.1.2 Immediate assignment / extended assignment

NOTE 2: In these tests the SS must send the immediate assignment messages in due time to allow for the MS to receive them and send a PAGING RESPONSE rather than another random access. This applies to the whole of section 26.

26.6.1.2.1 Conformance requirements

1. The MS shall go to the allocated SDCCH/4 and send a PAGING RESPONSE message containing its identity and its classmark.

2. The MS shall go to the allocated SDCCH/8 and send a PAGING RESPONSE message containing its identity and its classmark.

3. The MS shall correctly identify its own assignment in either the Request Reference 1 or the Request Reference 2 information element in an extended assignment message.

4. The MS shall only react to an Immediate Assignment which references one of the last 3 CHANNEL REQUEST messages from the MS.

References

GSM 04.08 section 3.3.

26.6.1.2.2 Test purpose

To verify that the MS goes to the allocated SDCCH/4 and sends a PAGING RESPONSE message containing its identity and its classmark.

To verify that the MS goes to the allocated SDCCH/8 and sends a PAGING RESPONSE message containing its identity and its classmark.

To verify that the MS can correctly identify its own assignment in either the Request Reference 1 or the Request Reference 2 information element in an extended assignment message.

To verify that the MS only reacts to an Immediate Assignment which references one of the last 3 CHANNEL REQUEST messages from the MS.

26.6.1.2.3 Method of test

Initial Conditions

System Simulator:
1 cell, Max-retrans is set to 7.

Mobile Station:
The MS is in the "idle, updated" state. with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with a TMSI allocated.

Test Procedure

In the first part of the test, the SS pages the MS, which shall react by sending CHANNEL REQUEST messages. Immediately after reception of the n-th CHANNEL REQUEST message (n being arbitrarily chosen by the SS from the set {1, 2 ... 8}) the SS sends an IMMEDIATE ASSIGNMENT EXTENDED message, which references one of the last 3 CHANNEL REQUEST messages from the MS. The MS shall then go to the correct channel and send a PAGING RESPONSE message. The SS will then release the channel.

In the second part of the test, the SS again pages the MS, which shall react by sending CHANNEL REQUEST messages. Immediately after reception of the k-th CHANNEL REQUEST message (k being arbitrarily chosen by the SS from the set {4, 5 ... 8}) the SS sends an IMMEDIATE ASSIGNMENT EXTENDED message which, instead of referencing one of the last 3 CHANNEL REQUEST messages from the MS, references an earlier CHANNEL REQUEST message. The MS shall then ignore the IMMEDIATE ASSIGNMENT EXTENDED message and continue to send CHANNEL REQUEST messages until the Max-Retrans value has been reached. Then a period of 7 seconds shall elapse in order to allow the MS to perform cell reselection (this allows for the time between the last CHANNEL REQUEST message and the beginning of cell reselection).

In the third part of the test, the CCCH_CONF of the SS is set to non-combined and the SS pages the MS, which shall react by sending CHANNEL REQUEST messages. Immediately after reception of the r-th CHANNEL REQUEST message (r being arbitrarily chosen by the SS from the set {4, 5 ... 8}) the SS sends an IMMEDIATE ASSIGNMENT EXTENDED message which, in the second request reference, references one of the last 3 CHANNEL REQUEST messages from the MS. The associated Channel Description allocates SDCCH(S) (S being arbitrarily chosen by the SS from the set {0,1 ... 7}). The MS shall then go to the correct channel and send a PAGING RESPONSE message. The SS will then release the channel.

Maximum Duration of Test

90 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	n CHANNEL REQUESTs (n being arbitrarily chosen from {1.... 8} are sent, all with Establ. Cause = "Answer to paging".
3	MS -> SS	CHANNEL REQUEST	
4	SS -> MS	IMMEDIATE ASSIGNMENT EXTENDED	see note 3.
5	MS -> SS	PAGING RESPONSE	
6	SS -> MS	CHANNEL RELEASE	
7	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
8	SS -> MS	PAGING REQUEST TYPE 1	
9	MS -> SS	CHANNEL REQUEST	k CHANNEL REQUESTs (k being arbitrarily chosen from the set {4, 5, 8}) are sent all with Establ. Cause = "Answer to paging".
10	MS -> SS	CHANNEL REQUEST	
11	SS -> MS	IMMEDIATE ASSIGNMENT EXTENDED	see note 4.
12	MS -> SS	CHANNEL REQUEST	8-k CHANNEL REQUESTs are sent, all with Establ. Cause = "Answer to paging".
13	MS -> SS	CHANNEL REQUEST	
14	SS		The SS verifies that the MS does not transmit any Layer 2 frames for at least 3 seconds.
15	SS		The SS sets CCCH_CONF to non-combined.
16	SS		The SS waits 40 seconds to allow the MS to perform cell reselection and to read the BCCH information.
17	SS -> MS	PAGING REQUEST TYPE 1	
18	MS -> SS	CHANNEL REQUEST	r CHANNEL REQUESTs (r being arbitrarily chosenfrom {4, 5... 8} are sent, all with Establ. Cause = "Answer to paging".
19	MS -> SS	CHANNEL REQUEST	
20	SS -> MS	IMMEDIATE ASSIGNMENT EXTENDED	see note 5.
21	MS -> SS	PAGING RESPONSE	
22	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

NOTE 3: The first Request Reference is the one which pertains to the i-th CHANNEL REQUEST sent by the MS, where i is an integer in the set {max (1,n-2) ... n}, its value being arbitrarily chosen by the SS. The second Request Reference shall be different from any Request Reference the MS has generated in this test.

NOTE 4: The first Request Reference is the one which pertains to the i-th CHANNEL REQUEST sent by the MS, where i is an integer in the set {1 ... k-3}, its value being arbitrarily chosen by the SS. The second Request Reference shall be different from any Request Reference the MS has generated in this test.

NOTE 5: The second Request Reference is the one which pertains to the i-th CHANNEL REQUEST sent by the MS, where i is an integer in the set {r-2, r-1, r}, its value being arbitrarily chosen by the SS. The first Request Reference shall be different from any Request Reference the MS has generated in this test.

26.6.1.3 Immediate assignment / assignment rejection

26.6.1.3.1 Conformance requirements

1. The MS shall respond to the Paging Request message by sending a Channel Request message with establishment cause set to "Answer to Paging". After the reception of IMMEDIATE ASSIGNMENT REJECT, the MS shall not transmit during the time indicated in the "Wait Indication" field of the IMMEDIATE ASSIGNMENT REJECT message, and then it shall answer to the new paging requests.

2. After an assignment rejection, the MS shall perform a cell reselection (idle mode operation) and the MS shall not transmit unless a different cell is selected.

References

GSM 04.08, section 3.3.1.3 and GSM 04.13 section 5.2.2.

26.6.1.3.2 Test purpose

To verify that the MS can accept an IMMEDIATE ASSIGNMENT REJECT.

To verify that the MS can respond to paging after an IMMEDIATE ASSIGNMENT REJECT is received on a different cell.

26.6.1.3.3 Method of test

Initial Conditions

System Simulator:
2 cells with the same LAI, Max-Retrans is 7.

Mobile Station:
The MS is camped on cell A and is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The MS is camped on cell B and is in the "idle, updated" state, with a TMSI allocated.

Test Procedure

The SS pages the MS, which shall react by sending CHANNEL REQUESTs. Immediately after reception of the n-th CHANNEL REQUEST (n being an integer from the set {1, 2 ... 8}, arbitrarily chosen by the SS) the SS sends an IMMEDIATE ASSIGNMENT REJECT message, which references one of the last 3 CHANNEL REQUESTs from the MS, and with the Wait Indication set to x seconds (x being an integer from the set {5, 6 ... 255}, arbitrarily chosen by the SS). The SS continues to send paging messages for that mobile station in every block of the mobile station's paging subgroup for x+2 seconds. The MS shall not answer to the PAGING REQUEST TYPE 1 messages sent before x seconds have elapsed. The MS may respond to any one of the PAGING REQUEST TYPE 1 messages sent after x seconds have elapsed, but at the latest it shall respond to the first PAGING REQUEST TYPE 1 sent after x+1 seconds have elapsed.

The SS responds to this CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message with the Wait Indication set to 255 seconds.

Immediately afterwards the SS changes the power levels so the MS selects cell B. After 20 seconds have elapsed the SS pages the MS in cell B and the MS shall answer to this page. In order to avoid another cell reselection the SS then sends another IMMEDIATE ASSIGNMENT REJECT.

Maximum Duration of Test

5 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	n CHANNEL REQUESTs (n being arbitrarily chosen from the set {1, 2 ... 8}) are sent, all with
.	.	.	
.	.	.	
1+n	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging"
2+n	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	1st, 3rd and 4th Request References are different to all n Request References received from the MS under test. 2nd Request Reference: see note 6. 2nd Wait Indication = x seconds (x being arbitrarily chosen from the set {5 ,6 ... 255}.
3+n	SS -> MS	PAGING REQUEST TYPE 1	The SS repeatedly pages the MS (on its paging subchannel) until a CHANNEL REQUEST message is received from the MS.
.	.	.	
.	.	.	
k	SS -> MS	PAGING REQUEST TYPE 1	(note 7).
k+1	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging". The MS may respond to any one of the PAGING REQUEST TYPE 1 messages sent after x seconds expire, but at the latest the MS shall respond to the first PAGING REQUEST TYPE 1 message sent after x+1 seconds expire.
k+2	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	1st, 2nd and 4th Request References are different to all n Request References received from the MS. The 3rd Request Reference pertains to the last CHANNEL REQUEST sent by the MS. The 3rd Wait Indication is 255 seconds.
k+3	--------	----------	Raise power level of cell B, lower power level of cell A until the MS selects cell B.
k+4	SS -> MS	PAGING REQUEST TYPE 1	Sent once, 20 seconds after the change of levels.
k+5	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
k+6	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

NOTE 6: The Request Reference is the one which pertains to the i-th CHANNEL REQUEST sent by the MS, where i is an integer from the set {max(1,n-2) ... n}, its value being arbitrarily chosen by the SS.

NOTE 7: the value of k is not important in this test.

Specific Message Contents

None.

26.6.1.4 Immediate assignment / ignore assignment

26.6.1.4.1 Conformance requirements

1. An MS waiting for a response from the network, following the sending of a CHANNEL REQUEST, shall ignore an IMMEDIATE ASSIGNMENT message with a request reference containing a wrong frame number.

2. An MS is waiting for an assignment of its own, shall ignore an IMMEDIATE ASSIGNMENT message with a request reference containing a wrong random access information.

References

GSM 04.08 section 3.3.1.2.1.

26.6.1.4.2 Test purpose

To verify that the MS ignores an assignment for another MS while it is waiting for an assignment of its own.

26.6.1.4.3 Method of test

Initial Conditions

System Simulator:
1 cell.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS pages the MS, which reacts with CHANNEL REQUESTs. The SS responds to the first CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT containing a wrong Request Reference (in the first run of the test the frame number is wrong, in the repetition it is the random access info that is wrong). It is verified for 2 seconds that the MS does not start signalling on the SDCCH. The MS shall ignore the assignment and send another CHANNEL REQUEST message. In order to avoid cell reselection the SS now answers with a correct IMMEDIATE ASSIGNMENT REJECT and repeats the test once.

Maximum Duration of Test

12 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	SS -> MS	IMMEDIATE ASSIGNMENT	Frame number in Request Reference is 2 too high. The MS shall not start signalling on the assigned SDCCH. This is verified for a period of 2 seconds.
4	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
6	SS		SS waits for 6 seconds.
7	SS -> MS	PAGING REQUEST TYPE 1	
8	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
9	SS -> MS	IMMEDIATE ASSIGNMENT	Random access info in Request Reference is wrong. The MS shall not start signalling on the assigned SDCCH. This is verified for a period of 2 seconds.
10	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
11	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Specific Message Contents

None.

26.6.1.5 Immediate assignment after immediate assignment reject

26.6.1.5.1 Conformance requirement

Following an IMMEDIATE ASSIGNMENT REJECT message, the MS shall listen for IMMEDIATE ASSIGNMENTS until T3126 expires.

Reference

GSM 04.08 section 3.3.1.3.2.

26.6.1.5.2 Test purpose

To verify that the MS correctly responds to an IMMEDIATE ASSIGNMENT message sent after an IMMEDIATE ASSIGNMENT REJECT message.

26.6.1.5.3 Method of test

Initial conditions

System Simulator:
1 cell;
CCCH_CONF is set to "1 basic physical channel used for CCCH not combined with SDCCHs";
Max retrans is set to 7;
TX-integer is set to 7;

Mobile Station:
The MS is in "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen final state of the MS

"idle, updated", with TMSI allocated.

Test Procedure

The SS pages the MS, which shall react by sending CHANNEL REQUESTs. Immediately after reception of the third CHANNEL REQUEST the SS sends an IMMEDIATE ASSIGNMENT REJECT message which references the first CHANNEL REQUEST from the MS and has the Wait Indication IE set to 6 seconds.

Between 0,75 seconds and 1,25 seconds after sending the IMMEDIATE ASSIGNMENT REJECT message the SS sends an IMMEDIATE ASSIGNMENT message referencing the second CHANNEL REQUEST message, and assigning an SDCCH. The MS shall go to the correct channel and send a PAGING RESPONSE message. Then the SS initiates RR-release by sending a CHANNEL RELEASE message.

Maximum duration of test

10 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	first request.
3	MS -> SS	CHANNEL REQUEST	second request.
4	MS -> SS	CHANNEL REQUEST	third request.
5	SS -> MS	IMMEDIATE ASSIGNMENT REJ	references the first request from MS, Wait Indication IE set to 6 seconds.
6	SS -> MS	IMMEDIATE ASSIGNMENT	references the second request from the MS Channel type set to SDCCH/8 message sent between 0,75 s and 1,25 s after the completion of step 5.
7	MS -> SS	PAGING RESPONSE	shall be sent on the correct channel.
8	SS -> MS	CHANNEL RELEASE	

Specific message contents

None.

26.6.2 Test of paging

The Paging procedure is used by the network to cause the Mobile Station to establish a radio connection. Normally the Mobile Station listens to its paging subchannel, but this can be modified by the use of different page modes. The correct implementation of the paging procedure in the Mobile Station is essential for the basic establishment of a connection.

26.6.2.1 Normal paging

26.6.2.1.1 Paging / normal / type 1

26.6.2.1.1.1 Conformance requirements

1. The MS shall respond correctly to various PAGING REQUEST TYPE 1 messages, when the page mode is set to normal paging, in the following cases:
   - 1.1 The MS is addressed with its IMSI in the first Mobile Identity field. The optional Mobile Identity field is not present.
   - 1.2. The MS is addressed with its TMSI in the first Mobile Identity field. The optional Mobile Identity field specifies an IMSI different from that of the MS.
   - 1.3. The first Mobile Identity field specifies a TMSI different from that of the MS. The optional Mobile Identity field addresses the MS by its IMSI.
   - 1.4 The first Mobile Identity field specifies a TMSI different from that of the MS. The optional Mobile Identity field contains the correct TMSI of the MS.

2. An MS shall ignore PAGING REQUEST TYPE 1 messages with incorrect information, when the page mode is set to normal paging, in the following case:
   - 2.1 The MS is addressed with its TMSI in the first Mobile Identity field, but the type of identity in this field is set to "No Identity". The optional Mobile Identity field is not present.

References

GSM 04.08 section 3.3.2, GSM 05.02 section 6.5.

26.6.2.1.1.2 Test purpose

To test that the MS is able to determine its CCCH group and paging group correctly and that the MS responds correctly to various PAGING REQUEST TYPE 1 messages when the page mode is set to normal paging. All valid ways of addressing the MS are tested. It is tested that the MS responds with the same type of identity that is used in the PAGING REQUEST TYPE 1 message. It is tested that the MS ignores fill paging.

26.6.2.1.1.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 2, a legal combination of CCCH_CONF, BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily by the SS.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS pages the MS 5 times with different PAGING REQUEST TYPE 1 messages on the paging subchannel which corresponds to the MS's IMSI.

In the first 4 cases, where the MS is addressed by its IMSI or its TMSI, the MS shall answer to the paging by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST by assigning a channel, and the MS shall then send a correct PAGING RESPONSE. The SS then releases the channel.

In the last case, it is tested that the MS does not answer to paging that does not address it.

Maximum Duration of Test

2 min.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains IMSI of MS, 2nd Mobile Ident not present.
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
4	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 3.
5	MS -> SS	PAGING RESPONSE	Mobile Ident: IMSI.
6	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
7	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains TMSI of MS, 2nd Mobile Ident contains IMSI of another MS.
8	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
9	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
10	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 9.
11	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
12	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
13	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains TMSI of another MS, 2nd Mobile Ident contains IMSI of MS.
14	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
15	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
16	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 15.
17	MS -> SS	PAGING RESPONSE	Mobile Ident: IMSI.
18	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
19	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains TMSI of another MS, 2nd Mobile Ident contains TMSI of MS.
20	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
21	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
22	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 21.
23	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
24	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
25	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains TMSI of MS but with type of identity set to "no identity", second Mobile Ident not present.
26	--------	--------	During 1 second, the SS checks that the MS does not produce any Layer 3 messages.

Specific Message Contents

None.

26.6.2.1.2 Paging / normal / type 2

26.6.2.1.2.1 Conformance requirements

1. The MS shall respond correctly (by sending CHANNEL REQUEST messages with an Establishment Cause set to "Answer to Paging") to various PAGING REQUEST TYPE 2 messages, when the page mode is set to normal paging, in the following cases:
   - 1.1 The MS is addressed in the first TMSI field.
   - 1.2 The MS is addressed in the second TMSI field.
   - 1.3 The MS is addressed in the optional Mobile Identity field with its TMSI.
   - 1.4 The MS is addressed in the optional Mobile Identity field with its IMSI.

2. The MS shall ignore PAGING REQUEST TYPE 2 messages with incorrect information, when the page mode is set to normal paging, in the following case:
   - 2.1 The MS is addressed in the optional Mobile Identity field with its TMSI, but the type of identity in this field is set to "No Identity".

References

GSM 04.08 section 3.3.2.

26.6.2.1.2.2 Test purpose

To test that the MS is able to determine its CCCH group and paging group correctly and that the MS responds correctly to various PAGING REQUEST TYPE 2 messages when the page mode is set to normal paging. All valid ways of addressing the MS are tested. It is tested that the MS responds with the same type of identity that is used in the PAGING REQUEST TYPE 2 message. It is tested that the MS ignores a PAGING REQUEST TYPE 2 message that does not address it.

26.6.2.1.2.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 2, a legal combination of CCCH_CONF, BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily by the SS.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS pages the MS 5 times with different PAGING REQUEST TYPE 2 messages on the paging subchannel which corresponds to the MS's IMSI.

In the first 4 cases, where the MS is addressed by its IMSI or by its TMSI, the MS shall answer to the paging by sending CHANNEL REQUESTs. The SS responds to the second request by assigning a channel, and the MS shall then send a correct PAGING RESPONSE. The SS then releases the channel.

In the last case, it is tested that the MS does not answer to paging that does not address it.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 2	1st TMSI addresses MS, 2nd TMSI addresses another MS, Mobile Identity IE not present.
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
4	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 3.
5	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
6	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
7	SS -> MS	PAGING REQUEST TYPE 2	1st TMSI addresses another MS, 2nd TMSI addresses MS, Mobile Identity IE not present.
8	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
9	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
10	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 9.
11	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
12	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
13	SS -> MS	PAGING REQUEST TYPE 2	1st TMSI addresses another MS, 2nd TMSI addresses another MS, Mobile Identity IE contains TMSI of MS.
14	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
15	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging"
16	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 15
17	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
18	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection
19	SS -> MS	PAGING REQUEST TYPE 2	1st TMSI addresses another MS, 2nd TMSI addresses another MS, Mobile Identity IE contains IMSI of MS.
20	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging"
21	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging"
22	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 21
23	MS -> SS	PAGING RESPONSE	Mobile Ident: IMSI.
24	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection
25	SS -> MS	PAGING REQUEST TYPE 2	1st TMSI addresses another MS, 2nd TMSI addresses another MS, Mobile Identity IE contains TMSI of MS but with type of identity set to "no identity".
26	--------	--------	During 1 second, the SS checks that the MS does not produce any Layer 3 messages.

Specific Message Contents

None.

26.6.2.1.3 Paging / normal / type 3

26.6.2.1.3.1 Conformance requirements

An MS shall respond correctly to various PAGING REQUEST TYPE 3 messages, when the page mode is set to normal paging. The MS shall send CHANNEL REQUEST messages, with an Establishment Cause set to "Answer to Paging", until the network answers. The number of CHANNEL REQUEST messages shall be limited by the parameter Max-retrans. After the assignment procedure, the MS shall send a PAGING RESPONSE message on the channel assigned by the network.

References

GSM 04.08 section 3.3.2.

26.6.2.1.3.2 Test purpose

To test that the MS is able to determine its CCCH group and paging group correctly and that the MS responds correctly to various PAGING REQUEST TYPE 3 messages when the page mode is set to normal paging. All valid ways of addressing the MS are tested.

26.6.2.1.3.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 2, a legal combination of CCCH_CONF, BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily by the SS.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS pages the MS 4 times with different PAGING REQUEST TYPE 3 messages on the paging subchannel which corresponds to the MS's IMSI.

In all the cases the MS shall answer to the paging by sending CHANNEL REQUESTs. The SS responds to the second request by assigning a channel, and the MS shall then send a correct PAGING RESPONSE. The SS then releases the channel.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 3	1st TMSI addresses MS; 2nd, 3rd and 4th TMSIs address other MSs.
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
4	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 3.
5	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
6	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
7	SS -> MS	PAGING REQUEST TYPE 3	2nd TMSI addresses MS; 1st, 3rd and 4th TMSIs address other MSs.
8	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
9	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
10	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 9.
11	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
12	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
13	SS -> MS	PAGING REQUEST TYPE 3	3rd TMSI addresses MS; 1st, 2nd and 4th TMSIs address other MSs.
14	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
15	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
16	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 15.
17	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
18	SS -> MS	CHANNEL RELEASE	
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
19	SS -> MS	PAGING REQUEST TYPE 3	4th TMSI addresses MS; 1st, 2nd and 3rd TMSIs address other MSs.
20	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
21	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
22	SS -> MS	IMMEDIATE ASSIGNMENT	Request Reference = pertaining to the message received in step 21.
23	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
24	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.2.2 Paging / extended

26.6.2.2.1 Conformance requirements

1. The MS shall operate in the extended page mode when this is ordered by the network in a PAGING REQUEST TYPE 1 message not addressing the MS but on the paging subchannel which corresponds to the MS's identity.

2. The MS shall operate in the extended page mode when this is ordered by the network in a PAGING REQUEST TYPE 2 message not addressing the MS but on the paging subchannel which corresponds to the MS's identity.

3. The MS shall operate in the extended page mode when this is ordered by the network in a PAGING REQUEST TYPE 3 message not addressing the MS but on the paging subchannel which corresponds to the MS's identity.

4. The MS shall operate in the extended page mode when this is ordered by the network in an IMMEDIATE ASSIGNMENT message on the paging subchannel which corresponds to the MS's identity.

5. The MS shall operate in the extended page mode when this is ordered by the network in an IMMEDIATE ASSIGNMENT EXTENDED message on the paging subchannel which corresponds to the MS's identity.

References

GSM 04.08 section 3.3.2.1; GSM 05.02, section 6.5.

26.6.2.2.2 Test purpose

To test that the MS is operating in the extended page mode when this is ordered by the SS in either a PAGING REQUEST message or an IMMEDIATE ASSIGNMENT message.

26.6.2.2.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 2, a legal combination of CCCH_CONF, BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily by the SS.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS sends a PAGING REQUEST TYPE 1 message not addressing the MS under test but on the paging subchannel which corresponds to the MS's identity. The page mode is set to "extended paging". In the next but one paging subblock on the same CCCH the SS sends a PAGING REQUEST TYPE 1 message specifying an arbitrarily chosen page mode and addressing the MS by its TMSI. The MS shall respond to the last page by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message.

The SS then sends an IMMEDIATE ASSIGNMENT on the paging subchannel which corresponds to the MS's identity. The random reference is different to those used by the Mobile Station in the last two CHANNEL REQUEST messages. (Phase 2 requires a Mobile Station to react on an IMMEDIATE ASSIGNMENT after a rejection.) The page mode is again set to "extended paging". In the next but one paging subblock on the same CCCH the SS sends a PAGING REQUEST TYPE 2 message specifying an arbitrarily chosen page mode and addressing the MS by its TMSI. The MS shall respond with CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message.

The SS then sends an IMMEDIATE ASSIGNMENT EXTENDED on the paging subchannel which corresponds to the MS's identity. The random references are different to those used by the Mobile Station in the last three CHANNEL REQUEST messages. The page mode is again set to "extended paging". In the next but one paging subblock on the same CCCH the SS sends a PAGING REQUEST TYPE 3 message specifying an arbitrarily chosen page mode and addressing the MS by its TMSI. The MS shall respond with CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message.

The SS then sends a PAGING REQUEST TYPE 3 message not addressing the MS under test but on the paging subchannel which corresponds to the MS's identity. The page mode is set to "extended paging". In the next but one paging subblock on the same CCCH the SS sends a PAGING REQUEST TYPE 2 message specifying an arbitrarily chosen page mode and addressing the MS by its IMSI. The MS shall respond to the last page by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message.

The SS then sends a PAGING REQUEST TYPE 2 message not addressing the MS under test but on the paging subchannel which corresponds to the MS's identity. The page mode is set to "extended paging". In the next but one paging subblock on the same CCCH the SS sends a PAGING REQUEST TYPE 1 message specifying an arbitrarily chosen page mode and addressing the MS by its IMSI. The MS shall respond to the last page by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message.

Maximum Duration of Test

10 sec.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Mobile Ident: IMSI of another MS, page mode = "extended paging".
2	SS -> MS	PAGING REQUEST TYPE 1	Sent in the next but one paging subblock. Page mode is arbitrarily chosen Mobile Ident: TMSI of the MS.
3	MS -> SS	CHANNEL REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 5 seconds. page mode = normal.
6	SS		SS waits for 5 seconds.
	SS -> MS	IMMEDIATE ASSIGNMENT	Sent in the paging subblock of MS under test. Page mode = "extended paging", Request reference chosen arbitrarily by the SS, but different from all references used earlier in this test sequence.
8	SS -> MS	PAGING REQUEST TYPE 1	Sent in the next but one paging subblock. Page mode is arbitrarily chosen. Mobile Ident: TMSI of the MS.
9	MS -> SS	CHANNEL REQUEST	
10	MS -> SS	CHANNEL REQUEST	
11	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 5 seconds. page mode = normal.
12	SS	--	SS waits for 5 seconds.
13	SS -> MS	IMMEDIATE ASSIGNMENT EXT	Sent in the paging subblock of MS under test. Page mode = "extended paging", Request references chosen arbitrarily by the SS, but different from all references used earlier in this test sequence.
14	SS -> MS	PAGING REQUEST TYPE 3	Sent in the next but one paging subblock. Page mode is arbitrarily chosen. Mobile Ident: TMSI of the MS.
15	MS -> SS	CHANNEL REQUEST	
16	MS -> SS	CHANNEL REQUEST	
17	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 5 seconds page mode = normal.
18	SS	--	SS waits for 5 seconds.
19	SS -> MS	PAGING REQUEST TYPE 3	Sent in the paging subblock of MS under test. Page mode = "extended paging".
20	SS -> MS	PAGING REQUEST TYPE 2	Sent in the next but one paging subblock. Page mode is arbitrarily chosen. Mobile Ident: IMSI of the MS.
21	MS -> SS	CHANNEL REQUEST	
22	MS -> SS	CHANNEL REQUEST	
23	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 5 seconds page mode = normal.
24	SS	--	SS waits for 5 seconds
25	SS -> MS	PAGING REQUEST TYPE 2	Sent in the paging subblock of MS under test. Page mode = "extended paging".
26	SS -> MS	PAGING REQUEST TYPE 1	Sent in the next but one paging subblock. Page mode is arbitrarily chosen. Mobile Ident: IMSI of the MS.
27	MS -> SS	CHANNEL REQUEST	
28	MS -> SS	CHANNEL REQUEST	
29	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 5 seconds.

Specific Message Contents

None.

26.6.2.3 Paging / reorganization

26.6.2.3.1 Paging / reorganization / procedure 1

26.6.2.3.1.1 Conformance requirements

1. An MS, after reception of a message with page mode set to "paging reorganization", shall answer to paging messages (with page mode set to "normal paging") sent on its old CCCH in paging blocks which do not belong to the MS's paging sub-channel.

2. When the network changes the paging group of the MS by modifying BCCH parameters (to CCCH_CONF set to "1 basic physical channel used for CCCH combined with SDCCH", and BS_AG_BLKS_RES set to "2 blocks reserved for access grant"), the MS shall calculate its new paging group and answer to paging messages on its new paging subchannel.

3. When the network changes the paging group of the MS by modifying BCCH parameters (to CCCH_CONF set to "2 basic physical channels used for CCCH, not combined with SDCCHs" and BS_AG_BLKS_RES set to "2 blocks reserved for access grant"), the MS shall calculate its new paging group and answer to paging messages on its new paging subchannel.

References

GSM 04.08 section 3.3.2.1; GSM 05.02, section 6.5.

26.6.2.3.1.2 Test purpose

To test that the MS correctly determines its new paging subchannel when the CCCH structure is changed from non-combined to combined and when the number of CCCHs is changed.

26.6.2.3.1.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 2, CCCH_CONF set to "1 basic physical channel used for CCCH, not combined with SDCCHs", a legal combination of BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily by the SS, with the exception that BS_PA_MFRMS shall not be set to 9.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated. The IMSI of the MS is from a defined/default range that ensures its paging channel changes when the broadcast parameters are changed.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS sends an IMMEDIATE ASSIGNMENT EXTENDED message on the MS's paging subchannel, with the page mode element set to "paging reorganization" and Request References that do not pertain to the MS. Before the MS's original paging subchannel re-occurs, the SS pages it on the CCCH corresponding to the Mobile Station's IMSI with a PAGING REQUEST TYPE 2 message (page mode = normal paging) containing the MS's TMSI in some paging block which does not belong to the Mobile Station's paging subchannel. The MS shall respond by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT (in order to avoid a cell reselection) on an arbitrarily selected paging subchannel.

Then the SS starts sending messages (PAGING REQUEST TYPE 1 or PAGING REQUEST TYPE 2 or PAGING REQUEST TYPE 3 or IMMEDIATE ASSIGNMENT or IMMEDIATE ASSIGNMENT EXTENDED or IMMEDIATE ASSIGNMENT REJECT) with page mode set to "paging reorganization" on all paging subchannels.

After 5 seconds (to ensure T3126 expires) the SS pages the MS with its TMSI on an arbitrarily selected paging subchannel (on the CCCH corresponding to the Mobile Station's IMSI). The MS shall respond by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT (in order to avoid a cell reselection).

The SS changes the paging parameters.

Then the SS sets the page mode to "normal paging".

The SS then waits for the duration of five 51-TDMA multiframes (4 to allow the MS to read all the system information type 1, 2, 3, and 4 messages on the BCCH, and one to calculate the new paging group). Not before 5 seconds after the last IMMEDIATE ASSIGNMENT REJECT message addressing the MS (to ensure T3126 expires), the MS is paged with a PAGING REQUEST TYPE 1 on its new paging subchannel. The MS shall respond by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT (in order to avoid a cell reselection) and then waits 5 seconds (to ensure T3126 expires).

Then the MS is paged with a PAGING REQUEST TYPE 2 on its new paging subchannel. The MS shall respond by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT (in order to avoid a cell reselection).

Maximum Duration of Test

60 sec.

Expected Sequence

This sequence is performed for execution counter, K =1, 2.

Step	Direction	Message	Comments
1	SS -> MS	IMMEDIATE ASSIGNMENT EXTENDED	Sent on the MS's paging channel. Page mode set to "paging reorganization". Request Reference not pertaining to the MS.
2	SS -> MS	PAGING REQUEST TYPE 2	Sent before the MS's original paging subchannel re-occurs, but later than the next paging block of that CCCH.
3	MS -> SS	CHANNEL REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 0 seconds.
6	--------	--------	All L3 messages sent on any paging subchannel are paging fill frames specify "paging re organization.
7	SS -> MS	PAGING REQUEST TYPE 2	Sent on an arbitrarily selected paging subchannel Page mode "paging reorganization" Not sent before 5 seconds after step 5.
8	MS -> SS	CHANNEL REQUEST	
9	MS -> SS	CHANNEL REQUEST	
10	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 0 seconds.
11			Change of paging parameters in SYS INFO 3 as described below for K=1, 2.
12			The SS waits until it has sent all system information messages (page mode is still paging reorganization).
13	--------	--------	All L3 messages sent on any paging subchannel specify "normal paging.
14	--------	--------	Wait 3 seconds.
15	SS -> MS	PAGING REQUEST TYPE 1	Sent on the new paging subchannel of the MS. Not sent before 5 seconds after step 10.
16	MS -> SS	CHANNEL REQUEST	
17	MS -> SS	CHANNEL REQUEST	
18	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 0 seconds.
19	SS -> MS	PAGING REQUEST TYPE 2	Sent on the new paging subchannel of the MS. Not sent before 5 seconds after step 18.
20	MS -> SS	CHANNEL REQUEST	
21	MS -> SS	CHANNEL REQUEST	
22	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Specific Message Contents

For execution counter K:

K=1:

SYSTEM INFORMATION TYPE 3 shall have the Control Channel Description IE changed to:

CCCH_CONF	"1 basic physical channel used for CCCH, combined with SDCCHs"
BS_AG_BLKS_RES	2
BS_PA_MFRMS	9

K=2:

SYSTEM INFORMATION TYPE 3 shall have the Control Channel Description IE changed to:

CCCH_CONF	"2 basic physical channel used for CCCH, not combined with SDCCHs"
BS_AG_BLKS_RES	2
BS_PA_MFRMS	9

26.6.2.3.2 Paging / reorganization / procedure 2

26.6.2.3.2.1 Conformance requirement

An MS, after reception of a message with page mode set to "paging reorganization", shall answer to paging messages (with page mode set to "normal paging") sent in a former Access Grant block.

References

GSM 04.08 section 3.3.2.1.

26.6.2.3.2.2 Test purpose

To test that the MS is operating in the "paging reorganization" page mode when this is ordered by the SS and the MS is paged in its former access grant channel.

26.6.2.3.2.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 1, with the constraint that BS_AG_BLKS_RES > 0, a legal combination of CCCH_CONF, BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily by the SS.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated. The IMSI of the MS is from a defined\default range that ensures its paging channel changes when the broadcast parameters are changed.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS sends an IMMEDIATE ASSIGNMENT EXTENDED on the MS's paging subchannel, with the page mode element set to "paging reorganization". The MS is then paged immediately in a former Access Grant block with a PAGING REQUEST TYPE 2 message. The MS shall respond by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT (in order to avoid a cell reselection).

Maximum Duration of Test

5 sec.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	IMMEDIATE ASSIGNMENT EXTENDED	Page mode set to "paging reorganization"
2	SS -> MS	PAGING REQUEST TYPE 2	Sent in a former access grant block.
3	MS -> SS	CHANNEL REQUEST	
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Specific Message Contents

None.

26.6.2.4 Paging / same as before

26.6.2.4.1 Conformance requirements

An MS, after first receiving a message on its paging subchannel with page mode set to "extended paging" and then the next message on its paging subchannel with page mode set to "same as before", shall remember the page mode from the previous message and answer to paging messages in the next but one paging sub block.

References

GSM 04.08 section 3.3.2.1; GSM 05.02, section 6.5.

26.6.2.4.2 Test purpose

To test that the MS remembers the page mode from the previous paging request message.

26.6.2.4.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 2, a legal combination of CCCH_CONF, BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily by the SS.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS sends an IMMEDIATE ASSIGNMENT REJECT on the MS's paging subchannel, with the page mode element set to "extended paging". In the next but one subblock on the same CCCH, nothing addresses the MS. When the MS's specific paging subchannel reoccurs, a PAGING REQUEST TYPE 3 is sent, not addressing the MS under test and with page mode set to "same as before". In the next but one subblock on the same CCCH the SS sends a PAGING REQUEST TYPE 1 message specifying paging reorganization and addressing the MS. The MS shall respond by sending CHANNEL REQUESTs. The SS responds to the second CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT (in order to avoid a cell reselection).

Maximum Duration of Test

10 sec.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Page mode set to "extended paging".
2	SS -> MS	XXXX	In the next but one subblock nothing addresses the MS.
3	SS -> MS	PAGING REQUEST TYPE 3	This is sent in the next paging subblock on the MS's specific paging subchannel. The page mode is set to "same as before", and the MS under test is not addressed.
4	SS -> MS	PAGING REQUEST TYPE 1	The MS is addressed in this "next but one subblock". Page mode set to "paging reorganization".
5	MS -> SS	CHANNEL REQUEST	
6	MS -> SS	CHANNEL REQUEST	
7	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Specific Message Contents

None.

26.6.2.5 Paging / multislot CCCH

26.6.2.5.1 Conformance requirements

The MS shall respond correctly to a PAGING REQUEST TYPE 1 message, when the page mode is set to normal paging, when a multislot CCCH is used and the MS is addressed with its IMSI in the first Mobile Identity field, the optional Mobile Identity field being not present.

References

GSM 04.08 section 3.3.2, GSM 05.02 section 6.5.

26.6.2.5.2 Test purpose

1) To test that the MS is able to determine its CCCH group and paging group correctly in the case of a CCCH configuration on more than one timeslot when it is paged on a timeslot other than 0. The MS is addressed with a PAGING REQUEST TYPE 1 message when the page mode is set to normal paging. The MS is paged with its IMSI in the 1st Mobile Identity field, the optional Mobile Identity field being not present, is the only way of addressing tested.

2) To test that in such conditions the MS answers to the paging message on the timeslot on which the paging message was sent.

26.6.2.5.3 Method of test

Initial Conditions

System Simulator:

1 cell, a legal combination of CCCH_CONF, BS_AG_BLKS_RES and BS_PA_MFRMS is chosen arbitrarily under the following constraint:

CCCH_CONF is in the set:

- 2 basic physical channels used for CCCH, not combined with SDCCHs
- 3 basic physical channels used for CCCH, not combined with SDCCHs
- 4 basic physical channels used for CCCH, not combined with SDCCHs

Mobile Station:

The IMSI last 3 digits are so that the CCCH_GROUP of the MS under test is other than 0. According to section 6.5.2 of recommendation GSM 05.02, this means that:

(IMSI mod 1000) mod (BS_CC_CHANS X N) is greater or equal to N, where N = BS_PA_MFRMS X (9 - BS_AG_BLKS_RES).

The MS is in the "idle, updated" state.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle updated".

Test Procedure

The SS pages the MS once with a PAGING REQUEST TYPE 1 message on the timeslot and paging subchannel which correspond to the MS's IMSI.

The MS shall send the CHANNEL REQUEST on the same timeslot as the paging message.

The SS sends an IMMEDIATE ASSIGNMENT on the same timeslot as the paging message.

Maximum Duration of Test

10 s.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains IMSI of MS, 2nd Mobile Ident not present.
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging". on the same timeslot as the paging message.
3	SS -> MS	IMMEDIATE ASSIGNMENT	on the same timeslot as the paging message.
4	MS -> SS	PAGING RESPONSE	Mobile Ident: IMSI.
5	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.3 Test of measurement report

When an RR-connection exists, the MS shall send measurement reports. These reports contain reception characteristics from serving and neighbouring cells. The measurement report procedure is described in section 3.4.1.2 of GSM 04.08.

NOTE 8: The capability to calculate RxLev and RxQual is tested in sections 15 and 16. In this test only the signalling aspect is verified.

26.6.3.1 Measurement / no neighbours

This test applies to both GSM 900 and DCS 1 800 mobile stations.

26.6.3.1.1 Conformance requirements

The MS shall continuously send MEASUREMENT REPORT messages on every SACCH block and the measurement valid indication shall be set to valid (0) within the second block at the latest.

References

GSM 04.08 section 3.4.1.2, GSM 05.08 section 8.4.

26.6.3.1.2 Test purpose

To test that, when the SS gives absolutely no information about neighbouring cells, the MS does not report on neighbouring cells.

26.6.3.1.3 Method of test

Initial Conditions

System Simulator:

8 cells with the following settings:

Transmitter	Level	NCC	BCC	ARFCN (GSM900)	ARFCN (DCS1800)	Cell Identity
Serving, S1	-60	1	3	002	514	0001H
Neighbour, N1	-85	1	5	008	530	0002H
Neighbour, N2	-80	1	7	014	602	0003H
Neighbour, N3	-75	1	1	020	665	0004H
Neighbour, N4	-55	1	3	026	762	0005H
Neighbour, N5	-50	1	5	032	686	0006H
Neighbour, N6	-45	1	7	038	549	0007H
Neighbour, N7	-40	1	1	044	810	0008H

With the exception of the Cell Allocation, the rest of the parameters for all eight cells are the same as the default settings and default SYSTEM INFORMATION TYPE 1 to 4 message contents for cell A. The Cell Allocation for the serving cell is the same as the default setting for cell A. The Cell Allocations for the neighbour cells need have only one entry, consisting of the ARFCN of that cell's BCCH.

Mobile Station:

The MS is in the active state of a call (U10).

Related PICS/PIXIT Statements

Support for state U10 of the Call Control protocol.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

This test procedure is performed twice.

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5 & 6 (on the second iteration of the test the SS also sends SYSTEM INFORMATION TYPE 5bis) on the SACCH. The BA is indicated as empty. The MS shall send MEASUREMENT REPORTs back to the SS, and it shall be indicated in these that no measurement results have been obtained.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed for execution counter, k = 1, 2.

Since when k = 1, SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 6 and MEASUREMENT REPORT (and when k = 2 an additional SYSTEM INFORMATION TYPE 5bis is included) are sent continuously, a table is not applicable in this test. The interval between 2 successive Layer 2 frames containing MEASUREMENT REPORTs shall not exceed one Layer 2 frame.

Specific Message Contents

GSM 900 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Neighbour Cells Description	
- Format Identifier	bit map 0
- BCCH Allocation Sequence number	1
- BCCH Allocation ARFCN	No channels belong to the BCCH allocation.
- EXT IND	k = 1. Information Element carries the complete BA. k = 2. Information Element carries only a part of the BA.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	Only channel 500 belongs to the BCCH allocation.

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA-used	1
DTX-used	DTX was not used
RXLEV_FULL_SERVING_CELL	See note 9
RXLEV_SUB_SERVING_CELL	See note 9
MEAS_VALID	See note 10
RXQUAL_FULL_SERVING_CELL	See note 9
RXQUAL_SUB_SERVING_CELL	See note 9
NO_NCELL_M	No neighbour cell measurement result, or Neighbour cell information not available for serving cell.
RXLEV_NCELL_1	00 0000
BCCH_FREQ_NCELL_1	0 0000
BSIC_NCELL_1	00 0000
. . .	. .
RXLEV_NCELL_6	00 0000
BCCH_FREQ_NCELL_6	0 0000
BSIC_NCELL_6	00 0000

GSM 900 end:

DCS 1 800 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 1. Information Element carries the complete BA. k = 2. Information Element carries only a part of the BA.
- W(i)	null.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	null.

SYSTEM INFORMATION TYPE 6:

Information Element	value/ remark
Protocol Discriminator	RR Management
Message Type	sys info 6
Cell Identity	default
LAI	default
Cell Options	
- Power Control Indicator	Power Control Indicator is set
- DTX Indicator	MS shall not use DTX
- Radio_Link_Timeout	default
PLMN permitted	only NCC 1 permitted

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See NOTE 1
RXLEV_SUB_SERVING_CELL	See NOTE 1
MEAS_VALID	See NOTE 2
RXQUAL_FULL_SERVING_CELL	See NOTE 1
RXQUAL_SUB_SERVING_CELL	See NOTE 1
NO_NCELL_M	No neighbour cell measurement result, or Neighbour cell information not available for serving cell.
RXLEV_NCELL_1	00 0000
BCCH_FREQ_NCELL_1	0 0000
BSIC_NCELL_1	00 0000
. . .	. .
. . .	. .
RXLEV_NCELL_6	00 0000
BCCH_FREQ_NCELL_6	0 0000
BSIC_NCELL_6	00 0000

DSC1800 end:

NOTE 1: The actual values are not checked.

NOTE 2: The Measurement Valid Indication shall be set to valid within the second SACCH block at the latest.

26.6.3.2 Measurement / all neighbours present

This test applies to both GSM 900 and DCS 1 800 mobile stations.

26.6.3.2.1 Conformance requirements

The MS shall continuously send MEASUREMENT REPORT messages on every SACCH blocks and the measurement valid indication shall be set to valid (0) within the second block at the latest. The MEASUREMENT REPORT message shall contain measurement results for the 6 strongest BCCH carriers with known and allowed NCC part of BSIC.

References

GSM 04.08 section 3.4.1.2, GSM 05.08 section 8.4.

26.6.3.2.2 Test purpose

To test that, when the SS gives information about neighbouring cells, the MS reports appropriate results.

26.6.3.2.3 Method of test

Initial Conditions

System Simulator:

8 cells with the following settings:

Transmitter	Level	NCC	BSCC	ARFCN (GSM900)	ARFCN (DCS1800)	Cell identity
Serving, S1	-60	1	3	002	514	0001H
Neighbour, N1	-85	1	5	008	530	0002H
Neighbour, N2	-80	1	7	014	602	0003H
Neighbour, N3	-75	1	1	020	665	0004H
Neighbour, N4	-55	1	3	026	762	0005H
Neighbour, N5	-50	1	5	032	686	0006H
Neighbour, N6	-45	1	7	038	549	0007H
Neighbour, N7	-40	1	1	044	810	0008H

With the exception of the Cell Allocation, the rest of the parameters for all eight cells are the same as the default settings and default SYSTEM INFORMATION TYPE 1 to 4 message contents for cell A. The Cell Allocation for the serving cell is the same as the default setting for cell A. The Cell Allocations for the neighbour cells need have only one entry, consisting of the ARFCN of that cell's BCCH.

Mobile Station:

The MS is in the active state of a call (U10).

Related PICS/PIXIT Statements

Support for state U10 of the Call Control protocol.
Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

This test procedure is performed twice.

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5 & 6 (on the second iteration of the test the SS also sends SYSTEM INFORMATION TYPE 5bis) on the SACCH. All 8 of the BCCHs "on air" are indicated in the BA. The MS shall send MEASUREMENT REPORTs back to the SS, and it shall be indicated within 20 seconds in these that measurement results for the 6 strongest carriers have been obtained.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed for execution counter, k = 1, 2.

Since when k = 1, SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 6 and MEASUREMENT REPORT (and when k = 2 an additional SYSTEM INFORMATION TYPE 5bis is included) are sent continuously, a table is not applicable in this test. The interval between 2 successive Layer 2 frames containing MEASUREMENT REPORTs shall not exceed one Layer 2 frame.

Specific Message Contents

GSM 900 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Neighbour Cells Description	
Format Identifier	bit map 0
BCCH Allocation Sequence	1
BCCH Allocation ARFCN	The channel numbers 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 28, 29, 30, 32, 34, 35, 36, 38, 40 and 44 belong to the BCCH allocation.
- EXT IND	k = 1. Information Element carries complete BA. k = 2. Information Element carries only a part of the BA.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	Channel 0 and 800 belong to the BCCH allocation.

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See NOTE 1
RXLEV_SUB_SERVING_CELL	See NOTE 1
MEAS_VALID	See NOTE 2
RXQUAL_FULL_SERVING_CELL	See NOTE 1
RXQUAL_SUB_SERVING_CELL	See NOTE 1
NO_NCELL_M	6 neighbour cell measurement results
RXLEV_NCELL_1	See NOTE 1
BCCH_FREQ_NCELL_1	Shall not correspond to N1 or N2
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See NOTE 1
BCCH_FREQ_NCELL_2	Shall not correspond to N1 or N2
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See NOTE 1
BCCH_FREQ_NCELL_3	Shall not correspond to N1 or N2
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See NOTE 1
BCCH_FREQ_NCELL_4	Shall not correspond to N1 or N2
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	See NOTE 1
BCCH_FREQ_NCELL_5	Shall not correspond to N1 or N2
BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
RXLEV_NCELL_6	See NOTE 1
BCCH_FREQ_NCELL_6	Shall not correspond to N1 or N2
BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

GSM 900 end:

DCS 1 800 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 1. Information Element carries complete BA. k = 2. Information Element carries only a part of the BA.
- W(i)	k = 1. Non null for ARFCN 514, 530, 549, 602, 665, 686, 762, 810. k = 2. Non null for ARFCN 549, 602, 665, 686, 810.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	k = 2. Non null ARFCN 20, 514, 530, 549, 762.

SYSTEM INFORMATION TYPE 6:

Information Element	value/ remark
Protocol Discriminator	RR Management
Message Type	sys info 6
Cell Identity	default
LAI	default
Cell Options	
- Power Control Indicator	Power Control Indicator is set
- DTX Indicator	MS shall not use DTX
- Radio_Link_Timeout	default
PLMN permitted	only NCC 1 permitted

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See NOTE 1
RXLEV_SUB_SERVING_CELL	See NOTE 1
MEAS_VALID	See NOTE 2
RXQUAL_FULL_SERVING_CELL	See NOTE 1
RXQUAL_SUB_SERVING_CELL	See NOTE 1
NO_NCELL_M	6 neighbour cell measurement results
RXLEV_NCELL_1	See NOTE 1
BCCH_FREQ_NCELL_1	Shall not correspond to N1 or N2
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See NOTE 1
BCCH_FREQ_NCELL_2	Shall not correspond to N1 or N2
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See NOTE 1
BCCH_FREQ_NCELL_3	Shall not correspond to N1 or N2
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See NOTE 1
BCCH_FREQ_NCELL_4	Shall not correspond to N1 or N2
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	See NOTE 1
BCCH_FREQ_NCELL_5	Shall not correspond to N1 or N2
BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
RXLEV_NCELL_6	See NOTE 1
BCCH_FREQ_NCELL_6	Shall not correspond to N1 or N2
BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

DCS 1 800 end:

NOTE 1: These actual values are not checked.

NOTE 2: The Measurement Valid Indication shall be set to valid within the second SACCH block at the latest.

26.6.3.3 Measurement / barred cells and non-permitted NCCs

This test applies to both GSM 900 and DCS 1 800 mobile stations.

26.6.3.3.1 Conformance requirements

The MS shall continuously send MEASUREMENT REPORTs on every SACCH blocks and the measurement valid indication shall be set to valid (0) within the second block at the latest. After

20 seconds the messages shall contain measurement results only for the 4 BCCH carriers on which the MS is allowed to report.

References

GSM 04.08 section 3.4.1.2, GSM 05.08 section 8.4.

26.6.3.3.2 Test purpose

To test that, when a combination of normal neighbours, barred cells and non-permitted NCCs is "on air", the MS reports only on normal neighbours.

26.6.3.3.3 Method of test

Initial Conditions

System Simulator:

8 cells with the following settings:

Transmitter	Level	NCC	BCC	ARFCN (GSM900)	ARFCN (DCS1800)	Cell identity
Serving, S1	-60	1	3	002	514	0001H
Neighbour, N1	-85	1	5	008	530	0002H
Neighbour, N2	-80	1	7	014	602	0003H
Neighbour, N3	-75	2	1	020	665	0004H
Neighbour, N4	-55	3	3	026	762	0005H
Neighbour, N5	-50	4	5	032	686	0006H
Neighbour, N6	-45	1	7	038	549	0007H
Neighbour, N7	-40	1	1	044	810	0008H

With the exception of the Cell Allocation, the rest of the parameters for all eight cells are the same as the default settings and default SYSTEM INFORMATION TYPE 1 to 4 message contents for cell A. The Cell Allocation for the serving cell is the same as the default setting for cell A. The Cell Allocations for the neighbour cells need have only one entry, consisting of the ARFCN of that cell's BCCH.

NOTE 1: The BA sent in SYSTEM INFORMATION TYPE 5 does not include N1, N4 and N5. N1 may be the case of a barred cell, N3 simulates the case where another operator is transmitting on the same frequency (e.g. in border areas), N4 & N5 simulate the case where other operators are transmitting on other frequencies.

Mobile Station:

The MS is in the active state of a call (U10).

Related PICS/PIXIT Statements

Support for state U10 of the Call Control protocol.
Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

This test procedure is performed twice.

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5 & 6 (on the second iteration of the test the SS also sends SYSTEM INFORMATION TYPE 5bis) on the SACCH. 5 of the 8 BCCHs "on air" are indicated in the BA. The MS shall send MEASUREMENT REPORTs back to the SS, and it shall be indicated in these that measurement results for the 4 strongest permitted carriers have been obtained (one of the carriers in the BA belongs to a non-permitted NCC).

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed for execution counter, k = 1, 2.

Since when k = 1 SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 6 and MEASUREMENT REPORT (and when k = 2 an additional SYSTEM INFORMATION TYPE 5bis is included) messages are sent continuously, a table is not applicable in this test. The interval between 2 successive Layer 2 frames containing MEASUREMENT REPORTs shall not exceed one Layer 2 frame.

Specific Message Contents

GSM 900 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Neighbour Cells Description	
Format Identifier	bit map 0
BCCH Allocation Sequence	1
BCCH Allocation ARFCN	only channel numbers 2, 14, 20, 38, and 44 belong to the BCCH allocation.
- EXT IND	k = 1. Information Element carries complete BA. k = 2. Information Element carries only a part of the BA.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	Channel 0 and 800 belong to the BCCH allocation.

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See note 2
RXLEV_SUB_SERVING_CELL	See note 2
MEAS_VALID	See note 3
RXQUAL_FULL_SERVING_CELL	See note 2
RXQUAL_SUB_SERVING_CELL	See note 2
NO_NCELL_M	4 neighbour cell measurement results
RXLEV_NCELL_1	See note 2
BCCH_FREQ_NCELL_1	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See note 2
BCCH_FREQ_NCELL_2	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See note 2
BCCH_FREQ_NCELL_3	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See note 2
BCCH_FREQ_NCELL_4	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	00 0000
BCCH_FREQ_NCELL_5	0 0000
BSIC_NCELL_5	00 0000
RXLEV_NCELL_6	00 0000
BCCH_FREQ_NCELL_6	0 0000
BSIC_NCELL_6	00 0000

GSM 900 end:

DCS 1 800 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 1. Information Element carries complete BA. k = 2. Information Element carries only a part of the BA.
- W(i)	k = 1. Non null for ARFCN 514, 549, 602, 665, 810. k = 2. Non null for ARFCN 549, 602, 810.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	k = 2. Non null ARFCN 514, 665.

SYSTEM INFORMATION TYPE 6:

Information Element	value/ remark
Protocol Discriminator	RR Management
Message Type	sys info 6
Cell Identity	default
LAI	default
Cell Options	
- Power Control Indicator	Power Control Indicator is set
- DTX Indicator	MS shall not use DTX
- Radio-Link-Time-out	default
PLMN permitted	only NCC 1 permitted

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See NOTE 2
RXLEV_SUB_SERVING_CELL	See NOTE 2
MEAS_VALID	See NOTE 3
RXQUAL_FULL_SERVING_CELL	See NOTE 2
RXQUAL_SUB_SERVING_CELL	See NOTE 2
NO_NCELL_M	4 neighbour cell measurement results
RXLEV_NCELL_1	See NOTE 2
BCCH_FREQ_NCELL_1	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See NOTE 2
BCCH_FREQ_NCELL_2	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See NOTE 2
BCCH_FREQ_NCELL_3	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See NOTE 2
BCCH_FREQ_NCELL_4	Corresponds to one of N7, N6, S1 or N2
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	00 00000
BCCH_FREQ_NCELL_5	0 0000
BSIC_NCELL_5	00 0000
RXLEV_NCELL_6	00 0000
BCCH_FREQ_NCELL_6	0 0000
BSIC_NCELL_6	00 0000

DCS 1 800 end:

NOTE 2: These actual values are not checked.

NOTE 3: The Measurement Valid Indication shall be set to valid within the second SACCH block at the latest.

26.6.3.4 Measurement / DTX

This test applies to both GSM 900 and DCS 1 800 mobile stations.

26.6.3.4.1 Conformance requirements

After the sending of the HANDOVER COMPLETE, the MS shall continuously send measurement reports in every SACCH blocks, the measurement valid indication shall be set to valid (0) within the second block at the latest. After 20 seconds the order of values in the MEASUREMENT REPORT message shall contain measurement results for the 6 strongest BCCH carriers among those monitored by the MS. Further, in a quiet environment, the DTX_USED field shall be set by the MS to "DTX used".

References

GSM 04.08 section 3.4.1.2, GSM 05.08 section 8.4.

26.6.3.4.2 Test purpose

To test that, in the case of the MS using DTX and the SS indicating that power control is in use, the MS reports appropriate results.

26.6.3.4.3 Method of test

Initial Conditions

System Simulator:

8 cells with the following settings:

Transmitter	Level	NCC	BCC	ARFCN (GSM900)	ARFCN (DCS1800)	Cell identity
Serving, S1	-60	1	3	002	514	0001H
Neighbour, N1	-85	1	5	008	530	0002H
Neighbour, N2	-80	1	7	014	602	0003H
Neighbour, N3	-75	1	1	020	665	0004H
Neighbour, N4	-55	1	3	026	762	0005H
Neighbour, N5	-50	1	5	032	686	0006H
Neighbour, N6	-45	1	7	038	549	0007H
Neighbour, N7	-40	1	1	044	810	0008H

In the serving cell, the DTX indicator is set to "MS shall use discontinuous transmission".

With the exception of the Cell Allocation, the rest of the parameters for all eight cells are the same as the default settings and default SYSTEM INFORMATION TYPE 1 to 4 message contents for cell A. The Cell Allocation for the serving cell is the same as the default setting for cell A. The Cell Allocations for the neighbour cells need have only one entry, consisting of the ARFCN of that cell's BCCH.

Mobile Station:

The MS is in the active state of a call (U10).

The MS has just completed a handover into the serving cell, S1.

Related PICS/PIXIT Statements

Support for state U10 of the Call Control protocol.
Support for transparent data services only: yes/no.
Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

This test procedure is performed twice.

With the MS having a call in progress on an arbitrary cell, the MS is handed over to cell S1. On cell S1, the SS sends SYSTEM INFORMATION TYPE 5 & 6 (on the second iteration of the test the SS also sends SYSTEM INFORMATION TYPE 5bis) on the SACCH with all 8 of the BCCHs "on air" indicated in the BA. Cell S1 also indicates that DTX shall be used. The MS shall send MEASUREMENT REPORTs back to the SS, and it shall be indicated in these that measurement results for the 6 strongest carriers have been obtained and that DTX has been used. (The MS is positioned in an environment free from acoustic noise.)

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed twice for execution counter, k = 1, 2.

Since when k = 1, SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 6 and MEASUREMENT REPORT (and when k = 2 an additional SYSTEM INFORMATION TYPE 5bis is included) messages are sent continuously, a table is not applicable in this test. The interval between 2 successive Layer 2 frames containing MEASUREMENT REPORTs shall not exceed one Layer 2 frame.

Specific Message Contents

GSM 900 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Neighbour Cells Description	
- Format Identifier	bit map 0
- BCCH Allocation Sequence	1
- BCCH Allocation ARFCN	only channel numbers 2, 8, 14, 20, 26, 32, 38, and 44 belong to the BCCH allocation.
- EXT IND	k = 1. Information Element carries the complete BA. k = 2. Information Element carries only a part of the BA.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	Only channel 500 belongs to the BCCH allocation.

SYSTEM INFORMATION TYPE 6:

Information Element	value/remark
Cell Options	
- Power Control Indicator	Power Control Indicator is set
- DTX Indicator	MS shall use DTX
- Radio_Link_Timeout	8

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
- BA_used	0
- DTX_used	DTX was used (NOTE 3)
- RXLEV_FULL_SERVING_CELL	See NOTE 1
- RXLEV_SUB_SERVING_CELL	See NOTE 1
- MEAS_VALID	See NOTE 2
- RXQUAL_FULL_SERVING_CELL	See NOTE 1
- RXQUAL_SUB_SERVING_CELL	See NOTE 1
- NO_NCELL_M	6 neighbour cell measurement results
- RXLEV_NCELL_1	See NOTE 1
- BCCH_FREQ_NCELL_1	Shall not correspond to N1 or N2
_ BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
- RXLEV_NCELL_2	See NOTE 1
- BCCH_FREQ_NCELL_2	Shall not correspond to N1 or N2
- BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
- RXLEV_NCELL_3	See NOTE 1
- BCCH_FREQ_NCELL_3	Shall not correspond to N1 or N2
- BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
- RXLEV_NCELL_4	See NOTE 1
- BCCH_FREQ_NCELL_4	Shall not correspond to N1 or N2
- BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
- RXLEV_NCELL_5	See NOTE 1
- BCCH_FREQ_NCELL_5	Shall not correspond to N1 or N2
- BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
- RXLEV_NCELL_6	See NOTE 1
- BCCH_FREQ_NCELL_6	Shall not correspond to N1 or N2
- BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

GSM 900 end:

DCS 1 800 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 1. Information Element carries complete BA. k = 2. Information Element carries only a part of the BA.
- W(i)	k = 1. Non null for ARFCN 514, 530, 549, 602 665, 686, 762, 810. k = 2. Non null for ARFCN 549, 602, 665, 686, 810.

SYSTEM INFORMATION TYPE 5bis (Sent only when k = 2):

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	1024 range
- EXT IND	k = 2. Information Element carries only a part of the BA.
- W(i)	k = 2. Non null ARFCN 514, 530, 762.

SYSTEM INFORMATION TYPE 6:

Information Element	value/ remark
Protocol Discriminator	RR Management
Message Type	sys info 6
Cell Identity	default
LAI	default
Cell Options	
- Power Control Indicator	Power Control Indicator is set
- DTX Indicator	MS shall use DTX
- Radio_Link_Timeout	default
PLMN permitted	only NCC 1 permitted

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was used (see NOTE 3)
RXLEV_FULL_SERVING_CELL	See NOTE 1
RXLEV_SUB_SERVING_CELL	See NOTE 1
MEAS_VALID	See NOTE 2
RXQUAL_FULL_SERVING_CELL	See NOTE 1
RXQUAL_SUB_SERVING_CELL	See NOTE 1
NO_NCELL_M	6 neighbour cell measurement results
RXLEV_NCELL_1	See NOTE 1
BCCH_FREQ_NCELL_1	Shall not correspond to N1 or N2
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See NOTE 1
BCCH_FREQ_NCELL_2	Shall not correspond to N1 or N2
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See NOTE 1
BCCH_FREQ_NCELL_3	Shall not correspond to N1 or N2
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See NOTE 1
BCCH_FREQ_NCELL_4	Shall not correspond to N1 or N2
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	See NOTE 1
BCCH_FREQ_NCELL_5	Shall not correspond to N1 or N2
BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
RXLEV_NCELL_6	See NOTE 1
BCCH_FREQ_NCELL_6	Shall not correspond to N1 or N2
BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

DCS 1 800 end:

NOTE 1: These actual values are not checked.

NOTE 2: The Measurement Valid Indication shall be set to valid within the second SACCH block after the HANDOVER COMPLETE message at the latest.

NOTE 3: For an MS that only supports transparent data services, the value of DTX_used shall not be checked.

26.6.3.5 Measurement / Frequency Formats

This test applies to both GSM 900 and DCS 1 800 mobiles stations.

26.6.3.5.1 Conformance Requirement

The MS shall continuously send MEASUREMENT REPORT messages on every SACCH blocks and the measurement valid indication shall be set to valid (0) within the second block at the latest. After 20 seconds the values in the MEASUREMENT REPORT message shall contain measurement results for the cells on which the mobile is allowed to report.

References

GSM 04.08 section 3.4.1.2, GSM 05.08 section 8.4.

26.6.3.5.2 Test Purpose

To test that, when the SS gives information about neighbouring cells, the MS reports appropriate results.

26.6.3.5.3 Method of test

Initial Conditions

System Simulator:

2 cells with the following settings:

Transmitter	Level	NCC	BCC	ARFCN (GSM900)	ARFCN (DCS1800)	Cell Identity
Serving, S1	-60	1	3	002	715	0001H
Neighbour, N1	-85	1	5	008	815	0002H

With the exception of the Cell Allocation, the rest of the parameters for both cells are the same as the default settings and default SYSTEM INFORMATION TYPE 1 to 4 message contents for cell A. The Cell Allocation for the serving cell is the same as the default setting for cell A. The Cell Allocations for the neighbour cells need have only one entry, consisting of the ARFCN of that cell's BCCH.

Mobile Station:

The MS is in the active state of a call (U10).

Related PICS/PIXIT Statements

Support for state U10 of the Call Control protocol.
Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

This test procedure is performed three times.

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5, 5bis & 6 on the SACCH. Both of the BCCHs "on air" are indicated in the BA. The MS shall send MEASUREMENT REPORTs back to the SS, and it shall be indicated in these that no measurement results have been obtained.

For each iteration of the test the frequency format of the BA list contained in the System Information 5 and 5bis message shall change according to the specific message contents.

Maximum Duration Of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed for execution counter, K = 1, 2, 3.

Since SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION 5bis, SYSTEM INFORMATION TYPE 6 and MEASUREMENT REPORT are sent continuously, a table is not applicable in this test. The interval between 2 successive Layer 2 frames containing MEASUREMENT REPORTs shall not exceed one Layer 2 frame.

Specific Message Contents

GSM 900 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Neighbour Cells Description	
Format Identifier	Bit Map 0.
BCCH Allocation Sequence	1
BCCH Allocation ARFCN	Channel numbers 2, 6 and 8 belong to the BCCH allocation.
- EXT IND	Information Element carries only a part of the BA.

SYSTEM INFORMATION TYPE 5bis:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
Format Identifier	K = 1. Range 1024 Format K = 2. Range 512 Format K = 3. Variable Bit Map.
- EXT IND	Information Element carries only a part of the BA.
- W(i)	K = 1. 500, 530, 595, 965, 1000, 715, 815, 0 K = 2. 530, 595, 965, 1000, 715, 815, 0 K = 3. 965, 1000, 0, 2, 6

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See note 1
RXLEV_SUB_SERVING_CELL	See note 1
MEAS_VALID	See note 2
RXQUAL_FULL_SERVING_CELL	See note 1
RXQUAL_SUB_SERVING_CELL	See note 1
NO_NCELL_M	2 neighbour cell measurement result
RXLEV_NCELL_1	See note 1
BCCH_FREQ_NCELL_1	Shall correspond to S1 or N1, i.e., it shall be 0 or 2.
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See note 1
BCCH_FREQ_NCELL_2	Shall correspond to S1 or N1, i.e. it shall be 0 or 2.
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	00 0000
BCCH_FREQ_NCELL_3	0 0000
BSIC_NCELL_3	00 0000
. . .	. .
. . .	. .
RXLEV_NCELL_6	00 0000
BCCH_FREQ_NCELL_6	0 0000
BSIC_NCELL_6	00 0000

GSM 900 end:

DCS 1 800 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	K = 1. Range 1 024 Format K = 2. Variable Bit Map K = 3. Range 128 Format
- EXT IND	Information Element carries only a part of the BA.
- W(i)	K = 1. Non null for 500, 530, 595, 715, 815, 965, 1 000, 0 K = 2. Non null for 965, 1 000, 0, 2, 6, 8 K = 3. Non null for 695, 715, 800

SYSTEM INFORMATION TYPE 5bis:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5bis.
Neighbour Cells Description	
- Format	K = 1. Bit Map 0. K = 2. Range 512 Format K = 3. Range 256 Format
- EXT IND	Information Element carries only a part of the BA.
- W(i) / BCCH Allocation	K = 1. Non null for 2, 6, 8 K = 2. Non null for 500, 530, 595, 715, 815, 965 K = 3. Non Null for 815, 965, 1000, 0, 2, 6

SYSTEM INFORMATION TYPE 6:

Information Element	value/ remark
Protocol Discriminator	RR Management
Message Type	sys info 6
Cell Identity	default
LAI	default
Cell Options	
- Power Control Indicator	Power Control Indicator is set
- DTX Indicator	MS shall not use DTX
- Radio_Link_Timeout	default
PLMN permitted	only NCC 1 permitted

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See note 1
RXLEV_SUB_SERVING_CELL	See note 1
MEAS_VALID	See note 2
RXQUAL_FULL_SERVING_CELL	See note 1
RXQUAL_SUB_SERVING_CELL	See note 1
NO_NCELL_M	2 neighbour cell measurement results
RXLEV_NCELL_1	See note 1
BCCH_FREQ_NCELL_1	K= 1. Shall correspond to S1 or N1, i.e., it shall be 6 or 7 K= 2. Shall correspond to S1 or N1, i.e., it shall be 6 or 7 K= 3. Shall correspond to S1 or N1, i.e., it shall be 3 or 5
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See note 1
BCCH_FREQ_NCELL_2	K= 1. Shall correspond to S1 or N1, i.e., it shall be 6 or 7 K= 2. Shall correspond to S1 or N1, i.e., it shall be 6 or 7 K= 3. Shall correspond to S1 or N1, i.e., it shall be 3 or 5
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	00 0000
BCCH_FREQ_NCELL_3	0 0000
BSIC_NCELL_3	00 0000
. . .	. .
. . .	. .
RXLEV_NCELL_6	00 0000
BCCH_FREQ_NCELL_6	0 0000
BSIC_NCELL_6	00 0000

NOTE 1: These actual values are not checked.

NOTE 2: The Measurement Valid Indication shall be set to valid within the second SACCH block at the latest.

26.6.3.6 Measurement / multiband environment

This test applies to both GSM 900 and DCS 1 800 mobile stations.

26.6.3.6.1 Conformance requirements

The MS shall continuously send MEASUREMENT REPORT messages on every SACCH blocks and the measurement valid indication shall be set to valid (0) within the second block at the latest. The MEASUREMENT REPORT message shall contain measurement results for up to the 6 strongest BCCH carriers among those with known and allowed NCC part of BSIC on which the mobile is asked to report.

References

GSM 04.08 section 3.4.1.2, GSM 05.08 section 8.4.

26.6.3.6.2 Test purpose

To test that, when the SS gives information about neighbouring cells using SYSTEM INFORMATION TYPE 2ter/5ter, the MS reports appropriate results.

26.6.3.6.3 Method of test

Initial Conditions

System Simulator:

8 cells with the following settings:

Transmitter	Level	NCC	BSCC	ARFCN (GSM900)	ARFCN (DCS1800)	Cell identity
Serving, S1	-60	1	3	002	514	0001H
Neighbour, N1	-85	1	5	008	530	0002H
Neighbour, N2	-80	1	7	014	602	0003H
Neighbour, N3	-75	1	1	020	665	0004H
Neighbour, N4	-55	1	3	026	762	0005H
Neighbour, N5	-50	1	5	032	686	0006H
Neighbour, N6	-45	1	7	038	549	0007H
Neighbour, N7	-40	1	1	044	810	0008H

With the exception of the Cell Allocation, the rest of the parameters for all eight cells are the same as the default settings and default SYSTEM INFORMATION TYPE 1, 2 and 4 message contents for cell A. The Cell Allocation for the serving cell is the same as the default setting for cell A. The Cell Allocations for the neighbour cells need have only one entry, consisting of the ARFCN of that cell's BCCH.

Mobile Station:

The MS is in the active state of a call (U10).

Related PICS/PIXIT Statements

Support for state U10 of the Call Control protocol.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

This test procedure is performed once.

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5, 5ter & 6 on the SACCH. All 8 of the BCCHs "on air" are indicated in the BA. The MS shall send MEASUREMENT REPORTs back to the SS, and it shall be indicated within 20 seconds in these that measurement results for the 6 strongest carriers, on which the mobile is asked to report, have been obtained.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Since SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 5ter, SYSTEM INFORMATION TYPE 6 and MEASUREMENT REPORT are sent continuously, a table is not applicable in this test. The

interval between 2 successive Layer 2 frames containing MEASUREMENT REPORTs shall not exceed one Layer 2 frame.

Specific Message Contents

GSM 900 begin:

SYSTEM INFORMATION TYPE 2ter:

Information Element	value/remark
Additional Multiband information	
- Multiband reporting	Minimum 2 cells reported from each band supported excluding the frequency band of the serving cell.
Extension of the BCCH Frequency list	
- Format identifier	Range 512
- BCCH Allocation Sequence	0
- BCCH Allocation ARFCN	ARFCN 514, 530, 549, 602, 665, 686, 762, 810
- EXT IND	Information Element carries the complete BA.

SYSTEM INFORMATION TYPE 3:

as default except:

Information Element	value/remark
SI 3 rest octets	
- SI 2ter indicator	System Information 2ter is available
- Early Classmark Sending Control	Early Sending is explicitly accepted

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Descriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format Identifier	Bit map 0
- BCCH Allocation Sequence	1
- BCCH Allocation ARFCN	ARFCN 2, 8, 14, 20, 26, 32, 38, 44
- EXT IND	Information Element carries the complete BA.

SYSTEM INFORMATION TYPE 5ter:

Information Element	value/remark
Protocol Descriminator	RR management
Message Type	Sys Info 5ter.
Additional Multiband information	
- Multiband reporting	Minimum 2 cells reported from each band supported excluding the frequency band of the serving cell.
Extension of the BCCH Frequency list	
- Format identifier	Range 512
- BCCH Allocation Sequence	0
- BCCH Allocation ARFCN	ARFCN 514, 530, 549, 602, 665, 686, 762, 810
- EXT IND	Information Element carries the complete BA.

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See note 1
RXLEV_SUB_SERVING_CELL	See note 1
MEAS_VALID	See note 3
RXQUAL_FULL_SERVING_CELL	See note 1
RXQUAL_SUB_SERVING_CELL	See note 1
NO_NCELL_M	6 neighbour cell measurement results
RXLEV_NCELL_1	See note 1
BCCH_FREQ_NCELL_1	See note 2
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See note 1
BCCH_FREQ_NCELL_2	See note 2
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See note 1
BCCH_FREQ_NCELL_3	See note 2
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See note 1
BCCH_FREQ_NCELL_4	See note 2
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	See note 1
BCCH_FREQ_NCELL_5	See note 2
BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
RXLEV_NCELL_6	See NOTE 1
BCCH_FREQ_NCELL_6	See NOTE 2
BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

NOTE 1: These actual values are not checked.

NOTE 2: report on ARFCNs 2, 20, 26, 32, 38 and 44

NOTE 3: The Measurement Valid Indication shall be set to valid within the second SACCH block at the latest.

GSM 900 end:

DCS 1 800 begin:

SYSTEM INFORMATION TYPE 2ter:

Information Element	value/remark
Additional Multiband information	
- Multiband reporting	Minimum 2 cells reported from each band supported excluding the frequency band of the serving cell.
Extension of the BCCH Frequency list	
- Format identifier	Range 1024
- BCCH Allocation Sequence	0
- BCCH Allocation ARFCN	ARFCN 2, 8, 14, 20, 26, 32, 38, 44
- EXT IND	Information Element carries the complete BA.

SYSTEM INFORMATION TYPE 3:

as default except:

Information Element	value/remark
SI 3 rest octets	
- SI 2ter indicator	System Information 2ter is available
- Early Sending Classmark Control	Early Sending is explicitly accepted

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Descriminator	RR management
Message Type	Sys Info 5
Neighbour Cells Description	
- Format Identifier	Range 512
- BCCH Allocation Sequence	1
- BCCH Allocation ARFCN	ARFCN 514, 530, 549, 602, 665, 686, 762, 810
- EXT IND	Information Element carries the complete BA.

SYSTEM INFORMATION TYPE 5ter:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5ter
Additional Multiband information	
- Multiband reporting	Minimum 2 cells reported from each band supported excluding the frequency band of the serving cell.
Extension of the BCCH Frequency list	
- Format identifier	Range 1024
- BCCH Allocation Sequence	0
- BCCH Allocation ARFCN	ARFCN 2, 8, 14, 20, 26, 32, 38, 44
- EXT IND	Information Element carries only a part of the BA.

MEASUREMENT REPORT:

Information Element	value/remark
Protocol Discriminator	RR Management
Transaction Identifier	0000
Message Type	MEASUREMENT REPORT
Measurement Results	
BA_used	1
DTX_used	DTX was not used
RXLEV_FULL_SERVING_CELL	See note 4
RXLEV_SUB_SERVING_CELL	See note 4
MEAS_VALID	See note 6
RXQUAL_FULL_SERVING_CELL	See note 4
RXQUAL_SUB_SERVING_CELL	See note 4
NO_NCELL_M	6 neighbour cell measurement results
RXLEV_NCELL_1	See note 4
BCCH_FREQ_NCELL_1	See note 5
BSIC_NCELL_1	Corresponds to that of BCCH_FREQ_NCELL_1
RXLEV_NCELL_2	See note 4
BCCH_FREQ_NCELL_2	See note 5
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See note 4
BCCH_FREQ_NCELL_3	See note 5
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See note 4
BCCH_FREQ_NCELL_4	See note 5
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	See note 4
BCCH_FREQ_NCELL_5	See note 5
BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
RXLEV_NCELL_6	See note 4
BCCH_FREQ_NCELL_6	See note 5
BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

NOTE 4: These actual values are not checked.

NOTE 5: report on ARFCNs 514, 549, 665, 686, 762, 810

NOTE 6: The Measurement Valid Indication shall be set to valid within the second SACCH block at the latest.

DCS 1 800 end:

26.6.4 Test of the channel assignment procedure

An intracell change of channel can be requested by upper layers in order to change the channel type, or it may be initiated by the RR-sublayer, e.g. for an intra cell handover. This change is performed using the channel assignment procedure. If the procedure is incorrectly implemented in the MS, the establishment and maintenance of connections is endangered. This applies for the successful case and for the assignment failure: the MS's correct return to the old channel after assignment failure is a necessary part of the GSM system design.

26.6.4.1 Dedicated assignment / successful case

This test is only applicable to an MS supporting a TCH.

26.6.4.1.1 Conformance requirements

1. 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 main signalling links).

2. MM-messages and CM-messages using SAPI=0 sent from the mobile station to the network can be duplicated by the data link layer in the following case:

   a channel change of dedicated channels is required (assignment or handover procedure) and the last layer 2 frame has not been acknowledged by the peer data link layer before the mobile station leaves the old channel.

   In this case, the mobile station does not know whether the network has received the message correctly. Therefore, the mobile station has to send the message again after the new dedicated channel is established.

3. An ASSIGNMENT COMMAND message may indicate a frequency change in progress, with a starting time and possibly alternative channel descriptions.

   In the case of the reception of an ASSIGNMENT COMMAND message which contains only the description of a channel to be used after the starting time, and if the starting time has not already elapsed, the mobile station shall wait up to the starting time before accessing the channel.

4. The MS shall establish the link with the power level specified in the ASSIGNMENT COMMAND message.

   The MS shall confirm the power control level that it is currently employing in the uplink SACCH L1 header. The indicated value shall be the power control level actually used by the mobile for the last burst of the previous SACCH period.

5. The MS shall apply the hopping frequencies specified in ASSIGNMENT COMMAND message in the Mobile Allocation IE or the Frequency List IE at the time of accessing the new channel using the last received Cell Allocation.

6. After receipt of the ASSIGNMENT COMMAND the MS shall perform the assignment and return an ASSIGNMENT COMPLETE without undue delay.

References

1, 3, 5. GSM 04.08, subclause 3.4.3.
2. GSM 04.08, subclause 3.1.4.3.
4. GSM 04.08, subclause 3.4.3; GSM 05.08, subclause 4.2.
6. GSM 04.13, subclause 5.2.4.

26.6.4.1.2 Test purpose

1. To verify that upon receipt of an ASSIGNMENT COMMAND, the MS switches to the channel defined in the ASSIGNMENT COMMAND, establishes the link and sends an ASSIGNMENT COMPLETE message. This is tested for an MS supporting TCH in the special cases of a transition.

   1.1 from non-hopping SDCCH to hopping TCH/F using a different timeslot;
   1.2 from hopping TCH/F to non-hopping TCH/F using a different timeslot;
   1.3 from non-hopping TCH/F to non-hopping TCH/F using a different timeslot;
   1.4 from non-hopping TCH/F to hopping TCH/H using a different timeslot; this test purpose is only applicable if the MS supports TCH/H;
   1.5 from hopping TCH/H to non-hopping TCH/H using a different timeslot; this test purpose is only applicable if the MS supports TCH/H;
   1.6 from non-hopping TCH/H to hopping TCH/F using a different timeslot; this test purpose is only applicable if the MS supports TCH/H.

2. To verify that an MS supporting TCH, having sent an MM- or CM message which was not acknowledged on L2 before the channel assignment procedure was initiated and before the MS has left the old channel, repeats that message after completion of the assignment procedure without incrementing N(SD). This is tested in the special case of MM message AUTHENTICATION RESPONSE.

3. To verify that, if an MS supporting TCH has received an ASSIGNMENT COMMAND message which contains only the description of a channel to be used after the starting time, and if the starting time has not already elapsed, the mobile station shall wait up to the starting time before accessing the channel.

4. To verify that an MS supporting TCH, having received an ASSIGNMENT COMMAND, having sent an SABM frame to establish the main signalling link on the assigned channel, reports the power level specified in the ASSIGNMENT COMMAND message, in the uplink SACCH L1 header of the SACCH message sent in the SACCH period following the transmission of the SABM frame.

5. To verify that an MS supporting TCH, having received an ASSIGNMENT COMMAND, is able in the case of frequency hopping to decode the Mobile Allocation and Frequency List IEs correctly and applies the specified frequencies using the correct Cell Allocation.

6. To verify that after receipt of the ASSIGNMENT COMMAND the MS returns an ASSIGNMENT COMPLETE without undue delay.

26.6.4.1.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters except:

GSM 900:
BCCH ARFCN =20.
Throughout the test, the CA broadcast in System Information 1 is (10, 17, 20, 26, 34, 42, 45, 46, 52, 59).
Note that the actual CA of the cell contains other frequencies.

DCS 1 800:
BCCH ARFCN =747.
Throughout the test, the CA broadcast in System Information 1 is (734, 741, 747, 754, 759, 766, 773, 775, 779, 782).
Note that the actual CA of the cell contains other frequencies.

Mobile Station:
The MS is in the "idle, updated" state with a TMSI allocated.

Related PICS/PIXIT Statements

- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- The supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS pages the MS and allocates an SDCCH. Then 2 different channels are assigned with ASSIGNMENT COMMANDs. Each time the MS shall switch to the assigned channel, establish the link and send an ASSIGNMENT COMPLETE message.

Then the SS sends a AUTHENTICATION REQUEST message. The MS shall answer with an AUTHENTICATION RESPONSE message, which is not acknowledged on L2 by the SS. Immediately after the AUTHENTICATION RESPONSE message is received, the SS sends an ASSIGNMENT COMMAND. The MS shall switch to the assigned channel, establish the link with the commanded power level and send as ASSIGNMENT COMPLETE message. Then MS shall repeat the AUTHENTICATION RESPONSE message, with the same N(SD) value.

Then the SS sends an ASSIGNMENT COMMAND, which includes a Starting Time IE. The MS shall react as specified above, but this shall be done at the time specified in Starting Time IE.

For an MS not supporting TCH/H, the SS initiates the channel release procedure and the test ends here. For an MS supporting TCH/H, the channel assignment procedure is performed another three times, with half rate channels involved, and again it is checked that the MS correctly completes the procedures, before the SS initiates the channel release procedure.

Maximum Duration of Test

30 s.

Expected Sequence

NOTE: TS GSM 04.08 appears to be unclear as to whether timer T3240 shall or shall not be started as a result of the AUTHENTICATION REQUEST message sent in step 10. To allow a variety of test equipment implementations, the IDENTITY REQUEST message is included in order to avoid an unexpected expiry of timer T3240 prior to the end of the expected sequence.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
6	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel after establishment of the main signalling link. This message shall be ready to be transmitted before 600 ms after the completion of step 5.
7	SS		The SS checks that the MS reports the requested power level in the layer 1 header of the SACCH message that is sent in the first SACCH multiframe following the SABM.
8	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
9	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel after establishment of the main signalling link. This message shall be ready to be transmitted before 600 ms after the completion of step 8.
10	SS -> MS	AUTHENTICATION REQUEST	
11	MS -> SS	AUTHENTICATION RESPONSE	This message is not L2 acknowledged by the SS.
12	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
13	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel after establishment of the main signalling link. This message shall be ready to be transmitted before 600 ms after the completion of step 12.
14	MS -> SS	AUTHENTICATION RESPONSE	N(SD) shall be the same as in step 10.
15	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
16	SS		The SS checks that there is no radio transmission on the new channel before the starting time.
17	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel after establishment of the main signalling link.
A			This test part is performed if the MS does not support TCH/H (see PICS/PIXIT).
A18	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
B			This test part is performed if the MS supports TCH/H (see PICS/PIXIT).
B18	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
B19	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel after establishment of the main signalling link. This message shall be ready to be transmitted before 600 ms after the completion of step 19.
B20	SS -> MS	IDENTITY REQUEST	
B21	MS -> SS	IDENTITY RESPONSE	
B22	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
B23	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel after establishment of the main signalling link. This message shall be ready to be transmitted before 600 ms after the completion of step 22.
B24	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
B25	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel after establishment of the main signalling link. This message shall be ready to be transmitted before 600 ms after the completion of step 24.
B26	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

GSM 900 begin:

Step 3

IMMEDIATE ASSIGNMENT:

As default message contents except	
Channel Description	
- Channel Type	SDCCH/8
TDMA offset	Chosen arbitrarily
- Timeslot Number	N, chosen arbitrarily
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	the ARFCN of the BCCH carrier

Step 5

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+1) mod 8
- 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 in the Mobile Allocation IE.
- HSN	Chosen arbitrarily from the set (1 to 63)
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Frequency list IE	Not included
Channel Mode	
- Mode	Signalling
Mobile Allocation	Indicates all of the CA (broadcast on the BCCH) except for the BCCH carrier.
Starting Time	Not included

Step 8

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+3) mod 8
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	the ARFCN of the BCCH carrier
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	A non-signalling mode arbitrarily selected from the full rate capabilities declared for the MS
Frequency list IE	Not Included
Cell Channel Description	Bit map zero encodes (45, 46, 52, 59, 66, 73, 74, 75, 76, 108, 114)
Mobile Allocation	Not included
Starting Time	Not included

Step 12

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+4) mod 8
- 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 in the Mobile Allocation IE.
- HSN	Chosen arbitrarily from the set (1 to 63)
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	Not included
Frequency list IE	Not included
Cell Channel Description	Not included (thus the CA from step 8 is used to decode the MA)
Mobile Allocation	Indicates frequencies (45, 46, 73, 74, 75, 76, 108, 114)
Starting Time	Not included

Step 15

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+5) mod 8
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	10
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	signalling
Frequency list IE	Not included
Cell Channel Description	Not included
Mobile Allocation	Not included
Starting Time	indicates (current frame number + 100 frames) mod 42 432

Step 19

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type	TCH/H
TDMA offset	Chosen arbitrarily
- Timeslot Number	(N+6) mod 8
- 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 in the Frequency List IE.
- HSN	0
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	A non-signalling mode arbitrarily selected from the half rate capabilities declared for the MS
Cell Channel Description	Not included
Frequency list IE	Uses bit map 0 to indicate (10, 34, 52, 73, 108, 114).
Mobile Allocation	Not included
Starting Time	Not included

Step 21

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type	TCH/H
TDMA offset	Chosen arbitrarily
- Timeslot Number	(N+7) mod 8
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	Chosen arbitrarily, but not the BCCH carrier
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	Not included
Frequency list IE	Not included
Cell Channel Description	Not included
Mobile Allocation	Not included
Starting Time	Not included

Step 23

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+1) mod 8
- 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 in the Mobile Allocation IE.
- HSN	Chosen arbitrarily from the set (1 to 63)
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Cell Channel Description	Uses bit map 0 to indicate (17, 20)
Frequency list IE	Not included
Mobile Allocation	Indicates ARFCN 17 only
Starting Time	Not included

GSM 900 end:

DCS 1 800 begin:

Step 3

IMMEDIATE ASSIGNMENT:

As default message contents except	
Channel Description	
- Channel Type	SDCCH/8
TDMA offset	Chosen arbitrarily
- Timeslot Number	N, chosen arbitrarily
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	the ARFCN of the BCCH carrier

Step 5

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+1) mod 8
- 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 in the Mobile Allocation IE.
- HSN	Chosen arbitrarily from the set (1 to 63)
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Frequency list IE	Not included
Channel Mode	
- Mode	Signalling
Mobile Allocation	Indicates all of the CA (broadcast on the BCCH) except for the BCCH carrier.
Starting Time	Not included

Step 8

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+3) mod 8
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	the ARFCN of the BCCH carrier
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	A non-signalling mode arbitrarily selected from the full rate capabilities declared for the MS
Frequency list IE	Not Included
Cell Channel Description	Use Range 128 to encode (773, 775, 779, 782, 791, 798, 829, 832, 844)
Mobile Allocation	Not included
Starting Time	Not included

Step 12

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+4) mod 8
- 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 in the Mobile Allocation IE.
- HSN	Chosen arbitrarily from the set (1 to 63)
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	Not included
Frequency list IE	Not included
Cell Channel Description	Not included (thus the CA from step 8 is used to decode the MA)
Mobile Allocation	Indicates frequencies (773, 775, 779, 829, 832, 844)
Starting Time	Not included

Step 15

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+5) mod 8
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	734
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	signalling
Frequency list IE	Not included
Cell Channel Description	Not included
Mobile Allocation	Not included
Starting Time	indicates (current frame number + 100 frames) mod 42 432

Step 19

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type	TCH/H
TDMA offset	Chosen arbitrarily
- Timeslot Number	(N+6) mod 8
- 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 in the Frequency List IE.
- HSN	0
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	A non-signalling mode arbitrarily selected from the half rate capabilities declared for the MS
Cell Channel Description	Not included
Frequency list IE	Uses Range 1024 to indicate (734, 741, 759, 766, 773, 832, 844)
Mobile Allocation	Not included
Starting Time	Not included

Step 21

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type	TCH/H
TDMA offset	Chosen arbitrarily
- Timeslot Number	(N+7) mod 8
- Training Sequence Code	Chosen arbitrarily
- Hopping	Single RF Channel
- ARFCN	Chosen arbitrarily, but not the BCCH carrier
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Channel Mode	Not included
Frequency list IE	Not included
Cell Channel Description	Not included
Mobile Allocation	Not included
Starting Time	Not included

Step 23

ASSIGNMENT COMMAND:

Channel Description	
- Channel Type and TDMA offset	TCH/F
- Timeslot Number	(N+1) mod 8
- 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 in the Mobile Allocation IE.
- HSN	Chosen arbitrarily from the set (1 to 63
Power Command	
- Power level	Chosen arbitrarily but with a changed value.
Cell Channel Description	Uses Variable Range Format to indicate (741, 747)
Frequency list IE	Not included
Mobile Allocation	Indicates ARFCN 741 only
Starting Time	Not included

DCS 1 800 end:

26.6.4.2 Dedicated assignment / failure

26.6.4.2.1 Dedicated assignment / failure / failure during active state

This test is only applicable to an MS supporting the call control protocol.

26.6.4.2.1.1 Conformance requirements

On the mobile station side, if a lower layer failure happens on the new channel before the ASSIGNMENT COMPLETE message has been sent, the mobile station deactivates the new channels, reactivates the old channels, reconnects the TCHs if any and triggers the establishment of the main signalling link. It then sends a ASSIGNMENT FAILURE message, cause "protocol error unspecified" on the main DCCH and resumes the normal operation, as if no assignment attempt had occurred. The operational parameters (e.g. ciphering mode) when returning on the old channel are those applied before the procedure.

References

GSM 04.08 section 3.4.3.3.

GSM 05.08 section 4.2.

GSM 05.05 section 4.1.1.

26.6.4.2.1.2 Test purpose

To test that, when the MS fails to seize the new channel, the MS reactivates the old channel, reporting use of the last power level used on the old channel.

This is tested in the special cases of a transition:

- from TCH/F to hopping TCH/F in state U10 if the MS supports TCH/F and call control;
- from TCH/H to hopping TCH/H in state U10 if the MS supports TCH/H and call control.

26.6.4.2.1.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters. The SS orders the MS to use a power level P. Where P is a power level within the range supported by the Type of MS.

Mobile Station:

The MS is in the active state (U10) of a mobile terminated call.

Related PICS/PIXIT Statements

- Support for TCH/F.
- Support for TCH/H.
- Support for state U10 of the Call Control protocol.
- Type of MS (P-GSM 900 or EGSM or DCS 1 800).

- Power Class of MS.

Foreseen Final State of the MS

The active state (U10) of a mobile terminated call.

Test Procedure

The MS is in the active state (U10) of a mobile terminated call. The SS sends an ASSIGNMENT COMMAND allocating a new TCH/F, but does not activate the new channel. It is checked that the MS triggers the establishment of the main signalling link on the old channel and then sends an ASSIGNMENT FAILURE.

Maximum Duration of Test

30 s.

Expected Sequence

The test is repeated for execution counter k = 1, 2 if the MS supports TCH/H.

Step	Direction	Message	Comments
1	SS -> MS	ASSIGNMENT COMMAND	Channel Type = TCH/F, if k = 1, Channel Type = TCH/H, if k = 2. Power level specified in power command is different to P, again where P is a power level within the range supported by the Type of MS. The MS attempts (and fails) to establish a signalling link on the new channel.
2			The MS re-establishes the signalling link on the old channel.
3	MS -> SS	ASSIGNMENT FAILURE	RR cause value = “protocol error unspecified".
4	SS		The SS checks that the MS reports power level P in the L1 header of the SACCH message that is sent in the first SACCH multiframe following the SABM.

Specific Message Contents

None.

26.6.4.2.2 Dedicated assignment / failure / general case

26.6.4.2.2.1 Conformance requirements

On the mobile station side, if a lower layer failure happens on the new channel before the ASSIGNMENT COMPLETE message has been sent, the mobile station deactivates the new channels, reactivates the old channels, reconnects the TCHs if any and triggers the establishment of the main signalling link. It then sends a ASSIGNMENT FAILURE message, cause "protocol error unspecified" on the main DCCH and resumes the normal operation, as if no assignment attempt had occurred. The operational parameters (e.g. ciphering mode) when returning on the old channel are those applied before the procedure.

References

GSM 04.08 section 3.4.3.3.

26.6.4.2.2.2 Test purpose

To test that, when the MS fails to seize the new channel, the MS reactivates the old channel.

This is tested in the special cases of a transition:

- from SDCCH to hopping TCH/F; this test part is only applicable if the MS supports TCH/F.
- from non-hopping SDCCH to hopping TCH/H; this test part is only applicable if the MS supports TCH/H.
- from hopping TCH/F to hopping TCH/H; this test part is only applicable if the MS supports TCH/H.

NOTE: 26.6.8.4 contains the case of an assignment failure SDCCH -> SDCCH.

26.6.4.2.2.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters.

Mobile Station:
The MS is "idle updated".

Related PICS/PIXIT Statements

- Support for TCH/F.
- Support for TCH/H.
- Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The MS is "idle updated".

Test Procedure

A mobile terminated RR connection is established on an SDCCH. The SS sends an ASSIGNMENT COMMAND message allocating a hopping TCH/F, but does not activate the assigned channels. The MS shall 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. Then the MS shall send an ASSIGNMENT FAILURE.

For an MS not supporting TCH/H, the SS initiates the channel release procedure and the test ends here. For an MS supporting TCH/H, the test sequence is repeated another two times, with half rate channels involved, and again it is checked that the MS correctly returns to the old channels, before the SS initiates the channel release procedure.

Maximum Duration of Test

30 s.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Channel Type: SDCCH.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	ASSIGNMENT COMMAND	Channel Type = TCH/F, hopping. The MS attempts (and fails) to establish a signalling link on the new channel.
6			The MS re-establishes the signalling link on the old channel.
7	MS -> SS	ASSIGNMENT FAILURE	RR cause value = “protocol error unspecified".
A			This test part is performed if the MS does not support TCH/H.
A8	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
B			This test part is performed if the MS supports TCH/H.
B8	SS -> MS	ASSIGNMENT COMMAND	Channel Type = TCH/H, hopping. The MS attempts (and fails) to establish a signalling link on the new channel.
B9			The MS re-establishes the signalling link on the old channel.
B10	MS -> SS	ASSIGNMENT FAILURE	RR cause value = “protocol error unspecified".
B11	SS -> MS	ASSIGNMENT COMMAND	Channel Type = TCH/F, hopping.
B12	MS -> SS	ASSIGNMENT COMPLETE	Sent on the assigned channel after establishment of the main signalling link.
B13	SS -> MS	ASSIGNMENT COMMAND	Channel Type = TCH/H, hopping. The MS attempts (and fails) to establish a signalling link on the new channel.
B14			The MS re-establishes the signalling link on the old channel.
B15	MS -> SS	ASSIGNMENT FAILURE	RR cause value = “protocol error unspecified".
B16	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

None.

26.6.5 Test of handover

With the Handover procedure, it is possible to completely alter the channels allocated to a MS. This makes it possible in particular to switch a call in progress from one cell to another. The procedure is always initiated by the network and with the MS in a dedicated mode.

Sections 26.6.5.1 - 26.6.5.4 contain generic test procedures to be used for executing successful Handover tests. Table 26.6-1 contains a summary of the different combinations of parameters which have to be tested, together with a reference to the appropriate generic test procedure. If a test uses a channel rate which the MS under test does not support, the test shall be skipped.

Table 26.6-1

From	To	Timing Adv.	Start Time	Syn ?	State of call	Section	Exec Counter
TCH/F, no FH	TCH/F, no FH	20	none	no	U10	26.6.5.1	1
TCH/F, no FH	TCH/F, FH	arbitrary	none	no	U10	26.6.5.1	2
TCH/F, FH	TCH/F, no FH	20	1,1s	no	U10	26.6.5.1	3
TCH/H, FH	TCH/H, no FH	20	none	no	U10	26.6.5.1	6
TCH/H, no FH	TCH/H, FH	arbitrary	none	no	U10	26.6.5.1	7
TCH/H, FH	TCH/H, FH	20	1,1s	no	U10	26.6.5.1	5
TCH/F, no FH	TCH/H, FH	arbitrary	none	no	U10	26.6.5.1	4
TCH/H, FH	TCH/F, no FH	arbitrary	none	no	U10	26.6.5.1	8
SDCCH/4, no FH	TCH/F, FH	20	none	no	estab	26.6.5.2	1
SDCCH/4, no FH	TCH/H, FH	20	none	no	estab	26.6.5.2	2
SDCCH/4, no FH	SDCCH/8, FH	20	none	no	estab	26.6.5.2	3
SDCCH/8, no FH	SDCCH/8, FH	arbitrary	none	no	estab	26.6.5.2	4
TCH/F, no FH	TCH/H, no FH	20	none	no	estab	26.6.5.2	5
TCH/H, FH	TCH/F, FH	20	none	no	estab	26.6.5.2	6
TCH/F, FH	TCH/F, FH	arbitrary	none	no	estab	26.6.5.2	7
SDCCH/8, FH	TCH/F, no FH	20	none	no	estab	26.6.5.2	8
SDCCH/8, no FH	TCH/F, FH	20	none	no	estab	26.6.5.2	9
SDCCH/8, no FH	TCH/H, FH	arbitrary	none	no	estab	26.6.5.2	10
TCH/F, FH	TCH/F, no FH	(2k+y) mod 256	none	yes	U10	26.6.5.3	1
TCH/H, FH	TCH/H, no FH	(2k+y) mod 256	none	yes	U10	26.6.5.3	2
SDCCH/8, FH	SDCCH/8, FH	(2k+y) mod 256	none	yes	estab	26.6.5.4	1
SDCCH/8, FH	SDCCH/4, no FH	(2k+y) mod 256	1,1s	yes	estab	26.6.5.4	2
TCH/F, no FH	TCH/F, FH	(2k+y) mod 256	none	yes	estab	26.6.5.4	3
SDCCH/8, no FH	TCH/F, no FH	(2k+y) mod 256	none	yes	estab	26.6.5.4	4

Table 26.6-2

	TCH/FS	TCH/HS	SDCCH
n	10-20	5-10	2-5

In addition to the successful case of Handover, 2 unsuccessful cases shall be tested. These tests are described in 26.6.5.8 and 26.6.5.9.

26.6.5.1 Handover / successful / active call / non-synchronized

26.6.5.1.1 Conformance requirements

The MS shall correctly apply the handover procedure in the non-synchronized case when a call is in progress and when handover is performed from a TCH/F without frequency hopping towards a TCH/F without frequency hopping.

The MS shall correctly apply the handover procedure in the non-synchronized case when a call is in progress and when handover is performed from a TCH/H without frequency hopping to a TCH/H with frequency hopping. This does not apply to MSs not supporting TCH/H.

References

GSM 04.08 sections 3.4.4 and 9.1.15.

GSM 04.13 section 5.2.6.2.

26.6.5.1.2 Test purpose

To test that when the MS is ordered to make a non-synchronized handover it continuously sends access bursts on the main DCCH until it receives a PHYSICAL INFORMATION message from the SS. To test that the MS correctly handles the values of any Starting Time IE in the HANDOVER COMMAND message in the case when none of the information elements referring to before the starting time are present. To test that the MS correctly handles the Timing Advance IE in the PHYSICAL INFORMATION message. To test that the MS activates the new channel correctly and transmits the HANDOVER COMPLETE message without undue delay.

26.6.5.1.3 Method of test

Initial Conditions

System Simulator:
2 cells, A and B with same LAI, default parameters except:

GSM 900:

Cell A has:
BCCH ARFCN = 20
Cell Allocation = (10, 17, 20, 26, 34, 42, 45, 46, 52, 59, 66, 73, 74, 75, 76, 108, 114)
Cell B has:
BCCH ARFCN = 40
Cell Allocation = (14, 18, 22, 24, 30, 31, 38, 40, 60, 66, 73, 74, 75, 76, 108, 114)

The frame numbers of cells A and B shall be different by 100.

The timebase of cells A and B shall be such that the edges of their timeslots are not coincident at the antenna connector.

DCS 1 800:

Cell A has:
BCCH ARFCN = 747
Cell Allocation = (734, 741, 747, 754, 759, 762, 766, 767, 773, 775, 779, 782, 791, 798, 829, 832, 844)
Cell B has:
BCCH ARFCN = 764
Cell Allocation = (739, 743, 746, 749, 756, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844)

The Cell Allocation of both Cell A and Cell B shall be coded using range 256 format.
The frame numbers of cells A and B shall be different by 100.
The timebase of cells A and B shall be such that the edges of their timeslots are not coincident at the antenna connector.

Mobile Station:
The MS is in the active state (U10) of a call on cell A.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F and/or TCH/H.
Support for state U10 of the Call Control protocol.
Support for speech: yes/no.
supported radio interface rates: 12kbps, 6kbps, 3,6kbps.
Type of Mobile Station (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The active state (U10) of a call on cell A.

Test Procedure

This procedure is repeated for execution counter M = 1 to 8. (See table 26.6-1.)

The MS is in the active state (U10) of a call. The SS sends a HANDOVER COMMAND on the main DCCH. The MS shall (at the time defined by the Starting Time information element, if included in the message) begin to send access bursts on the new DCCH of the target cell. The SS observes the access bursts and after receiving n (n being arbitrarily chosen between values according to table 26.6-2 of section 26.6.5) access bursts, the SS sends one PHYSICAL INFORMATION message with a Timing Advance as specified in table 26.6-1 of section 26.6.5. 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.

The term "ready to transmit" is defined in GSM 04.13. The value of "**x**" depends upon the target channel and is specified in the specific message contents section.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed for an execution counter M = 1, 2, 3 for an MS which only supports TCH/F.
This sequence is performed for an execution counter M = 1, 2.. 8 for an MS which supports TCH/F and H

Step	Direction	Message	Comments
0	MS -> SS		The MS and SS are in the active state of a call on the channel described below.
1	SS -> MS	HANDOVER COMMAND	See Specific message contents.
2	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH 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).
3	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS messages. See specific message contents.
4	MS -> SS	SABM	Sent without information field.
5	SS -> MS	UA	
6	MS -> SS	HANDOVER COMPLETE	The message shall be ready to be transmitted before "x" ms after the completion of step 3.
7	MS -> SS		The MS and SS are in the active state of a call on the channel described below.

Specific Message Contents For Mobiles Supporting Speech

For M = 1:

P-GSM 900

Step 0: The MS and SS are using a full rate TCH in non-hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 500
Step 7: The MS and SS are using a full rate TCH in non hopping mode on cell B.

DCS 1 800

Step 0: The MS and SS are using a full rate TCH in non-hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 500
Step 7: The MS and SS are using a full rate TCH in non hopping mode on cell B.

For M = 2:

GSM 900

Step 0: The MS and SS are using a full rate TCH in non-hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	20
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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 Channel Sequence IE.
- HSN	Chosen arbitrarily from the set (1,2,..63).
Synchronization Indication IE is not included.	
Channel Mode IE is not included.	
Frequency Channel Sequence after time	
- Frequency Channel Sequence	Allocates the following 12 frequencies (10, 17, 20, 26, 59, 66, 73, 74, 75, 76,108, 114).

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 500.
Step 7: The MS and SS are using a full rate TCH in hopping mode on cell A.

DCS 1 800

Step 0: The MS and SS are using a full rate TCH in non-hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	747
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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 Short List IE.
- HSN	Chosen arbitrarily from the set (1,2,..63).
Synchronization Indication IE is not included.	
Channel Mode IE is not included.	
Frequency Short List after time	
- Frequency List	Use Range 256 to encode the following 9 frequencies: (747, 775, 779, 782, 791, 798, 829, 832, 844).

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 500.
Step 7: The MS and SS are using a full rate TCH in hopping mode on cell A.

For M = 3:

GSM 900

Step 0: The MS and SS are using a full rate TCH in hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Out of range timing advance shall trigger a handover failure procedure.
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.
Mode of first channel	Speech (full rate version 1 or half rate version 1).

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 500.
Step 7: The MS and SS are using a full rate TCH in non-hopping mode on cell B.

DCS 1 800

Step 0: The MS and SS are using a full rate TCH in hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except: Cell Description - Network Colour Code - Base Station Colour Code - BCCH Carrier Number Synchronization Indication - Report Observed Time Difference - Synchronization Indication - Normal Cell Indication Starting Time Mode of first channel	 1 5 764 Shall not be included. "Non synchronized". Out of range timing advance shall trigger a handover failure procedure. 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. Speech (full rate version 1 or half rate version 1).

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 500.
Step 7: The MS and SS are using a full rate TCH in non-hopping mode on cell B.

For M = 4:

GSM 900

Step 0: The MS and SS are using a full rate TCH in non-hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	20
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	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).
Synchronization Indication IE is not included.	
Cell Channel Description	Use bit map 0 to encode the complete CA of Cell A.
Mobile Allocation after time	Indicates all of the CA of cell A except for the BCCH frequency.

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 500.
Step 7: The MS and SS are using a half rate TCH in hopping mode on cell A.

DCS 1 800

Step 0: The MS and SS are using a full rate TCH in non-hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	747
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	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).
Synchronization Indication IE is not included.	
Cell Channel Description	Use Range 512 to encode the complete CA of Cell A.
Mobile Allocation after time	Indicates all of the CA of cell A except for the BCCH frequency.

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 500.
Step 7: The MS and SS are using a half rate TCH in hopping mode on cell A.

For M = 5:

GSM 900

Step 0: The MS and SS are using a half rate TCH in hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
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	Chosen arbitrarily from the set. (1,2,..63).
Frequency List after time	
- Frequency List	use bit map 0 to allocates the following 12 frequencies: (14, 18, 22, 24, 60, 66, 73, 74, 75, 76,108, 114).
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
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.

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 750.
Step 7: The MS and SS are using a half rate TCH in hopping mode on cell B.

DCS 1 800

Step 0: The MS and SS are using a half rate TCH in hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
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	Chosen arbitrarily from the set (1,2,..63).
Frequency List after time	
- Frequency List	Use Range 1024 to allocate the following 12 frequencies: (749, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844).
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
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..

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 750.
Step 7: The MS and SS are using a half rate TCH in hopping mode on cell B.

For M = 6:

GSM 900

Step 0: The MS and SS are using a half rate TCH in hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	20
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Chosen arbitrarily but not Zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of Cell A.
Synchronization Indication IE not included.	

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 750.
Step 7: The MS and SS are using a half rate TCH in non-hopping mode on cell A.

DCS 1 800

Step 0: The MS and SS are using a half rate TCH in hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	747
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Chosen arbitrarily but not Zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of Cell A.
Synchronization Indication IE not included.	

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents.	

Step 6: x = 750.
Step 7: The MS and SS are using a half rate TCH in non-hopping mode on cell A.

For M = 7:

GSM 900

Step 0: The MS and SS are using a half rate TCH in non-hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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 Channel Sequence IE.
- HSN	Chosen arbitrarily from the set. (1,2,..63).
Frequency Channel Sequence after time	
- Frequency Channel Sequence	Allocates the following 8 frequencies: (40, 66, 73, 74, 75, 76,108, 114).
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).

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 750.
Step 7: The MS and SS are using a half rate TCH in hopping mode on cell B.

DCS 1 800

Step 0: The MS and SS are using a half rate TCH in non-hopping mode on cell A.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
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	Chosen arbitrarily from the set. (1,2,..63).
Frequency List after time	
- Frequency List	Use Variable Bit Map to encode the following 8 frequencies: (764, 779, 782, 791, 798, 829, 832, 844).
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).

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 750.
Step 7: The MS and SS are using a half rate TCH in hopping mode on cell B.

For M = 8:

GSM 900

Step 0: The MS and SS are using a half rate TCH in hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	20
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	Chosen arbitrarily but not Zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF channel.
- ARFCN	20
Synchronization Indication IE not included.	

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 500.
Step 7: The MS and SS are using a full rate TCH in non-hopping mode on cell A.

DCS 1 800

Step 0: The MS and SS are using a half rate TCH in hopping mode on cell B.

HANDOVER COMMAND

Information Element	value/remarks
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	747
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	Chosen arbitrarily but not Zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF channel.
- ARFCN	747
Synchronization Indication IE not included.	

PHYSICAL INFORMATION

Information Element	value/remarks
As default message contents, except:	
Timing advance	Arbitrarily selected but different to default value.

Step 6: x = 500.
Step 7: The MS and SS are using a full rate TCH in non-hopping mode on cell A.

Specific Message Contents For Mobiles not Supporting Speech

If the mobile station supports half rate, then the 12 kbps radio interface rate is not used for this test. With this restriction, the radio interface rate is selected arbitrarily from those support.

The message contents shall be the same for the declared type of Mobile Station (either P-GSM 900 or DCS 1 800) supporting speech , except for:

M = 3 and 7:

HANDOVER COMMAND

Information Element	value/remarks
Mode of first channel	Data, with the full rate radio interface rate that is in use.

26.6.5.2 Handover / successful / call under establishment / non-synchronized

This test is applicable to all MS which support at least one MO circuit switched basic service.

26.6.5.2.1 Conformance requirements

The MS shall correctly apply the handover procedure from SDCCH/8, TCH/F or TCH/H with or without frequency hopping to SDCCH/8, TCH/F or TCH/H with or without frequency hopping in the non-synchronized case during call establishment. The mobile shall correctly apply the handover procedures from non frequency hopping SDCCH/4 to SDCCH/8, TCH/F or TCH/H with or without frequency hopping. If during call establishment a Layer 3 MM or CC message just sent by the MS is not Layer 2 acknowledged before the channel change caused by the HANDOVER COMMAND message, the MS shall send the Layer 3 message to the new cell, using the same value in the N(SD) field, after the handover procedure.

References

GSM 04.08, sections 3.1.4.2, 3.4.4 and 9.1.15.

GSM 04.13, section 5.2.6.2.

26.6.5.2.2 Test purpose

To test that when the MS is ordered to make a non-synchronized handover, it continuously sends access bursts on the main DCCH 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 MS correctly retransmits Layer 3 MM or CC messages, that were not acknowledged by Layer 2 before the Handover, after completion of the Handover.

26.6.5.2.3 Method of test

Initial Conditions

System Simulator:
2 cells A and B with same LAI, default parameters, except:

GSM 900:
Cell A has:
BCCH ARFCN = 20.
Cell Allocation = (10, 17, 20, 26, 34, 42, 45, 46, 52, 59, 66, 73, 74, 75, 76, 108, 114).
PLMN colour code, NCC = as defaults.
BS colour code, BCC = as defaults.
PLMN_PERM = 00001010.

Cell B has:
BCCH ARFCN = 40.
Cell Allocation = (14, 18, 22, 24, 30, 31, 38, 40, 60, 66, 73, 74, 75, 76, 108, 114).
PLMN colour code, NCC = 3.
BS colour code, BCC = 0.

Both cells send SYSTEM INFORMATION TYPE 1 messages containing the complete Cell Allocation of the cell, using bit map 0 format.

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, 2 and 3 a combined CCH/SDCCH is used.
For execution counter M = 4 to 10 a non combined SDCCH is used.

DCS 1 800:
Cell A has:
BCCH ARFCN = 747.
Cell Allocation = (734, 741, 747, 754, 759, 762, 766, 767, 773, 775, 779, 782, 791, 798, 829, 832, 844).
PLMN colour code, NCC = as defaults.
BS colour code, BCC = as defaults.
PLMN_PERM = 00001010.

Cell B has:
BCCH ARFCN = 764.
Cell Allocation = (739, 743, 746, 749, 756, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844).
PLMN colour code, NCC = 3.
BS colour code, BCC = 0.

Both cells send SYSTEM INFORMATION TYPE 1 messages containing the complete Cell Allocation of the cell, using Range 512 format.

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, 2 and 3 a combined CCH/SDCCH is used.
For execution counter M = 4 to 10 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.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F and/or TCH/H.
Support for MO calls.
Supported speech and data rates.
Type of MS (P-GSM 900 or EGSM or DCS 1 800).

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 .. 10 (See table 26.6-1.)

A Mobile Originating Call is initiated on Cell A. After the MS has sent the SETUP message (and before the last L2 frame carrying the SETUP message is acknowledged by the SS) 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 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 section 26.6.5) access bursts, the SS sends one PHYSICAL INFORMATION message with a Timing Advance as specified in table 26.6-1 of section 26.6.5. 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. The MS shall then again send the SETUP message to the SS, using the same value in the N(SD) field. Finally the SS sends a CHANNEL RELEASE to end the test.

The term "ready to transmit" is defined in GSM 04.13. The value of "**x**" depends upon the target channel and is specified in the specific message contents section.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

The sequence is performed for execution counter M = 1, 2..10 (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	Establ. Cause = "Originating call, NECI not set to 1
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	CM SERVICE REQUEST	CM Service Type = Mobile Origina- ting Call Establishment.
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	MS -> SS	SETUP	Last L2 frame not acknowledged by the SS.
8	SS -> MS	HANDOVER COMMAND	See specific message contents.
9	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND
10	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS message. Timing Advance as specified in table 26.6-1 of section 26.6.5.
11	MS -> SS	SABM	Sent without information field.
12	SS -> MS	UA	
13	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step 10.
14	MS -> SS	SETUP	Same N(SD) as in step 7.
15	SS -> MS	CHANNEL RELEASE	

Specific Message Contents For Mobiles Supporting Speech

M = 1.

DCS 1 800:

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	764
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	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 Short List IE.
- HSN	Chosen arbitrarily from the set. (1,2,..63).
Synchronization IE is not included.	
Frequency Short List after time	
- Frequency Short List	Use Range 128 to encode the following 11 frequencies: (756, 758, 761, 771, 779, 782, 791, 798, 829, 832, 844).
Mode of the First Channel	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 500.

For GSM 900:

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	40
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	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 Channel Sequence IE.
- HSN	Chosen arbitrarily from the set. (1,2,..63).
Synchronization IE is not included.	
Frequency Channel Sequence, after time	
- Frequency Channel Sequence	Allocates the following 15 frequencies: (14, 18, 22, 24, 30, 31, 38, 53, 66, 73, 74, 75, 76, 108, 114).
Mode of the First Channel	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 500.

M = 2.

DCS 1 800:

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	764
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	Use Range 512 to encode the following frequencies: (761, 764, 771, 779, 782, 791, 798, 829, 832).
Mobile Allocation after time	Indicates (791, 798, 829) only).
Mode of First Channel	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 750.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents.	

HANDOVER COMMAND

As default message contents, except:	
Cell Description	
- Network Colour Code	3
- Base Station Colour Code	0
- BCCH Carrier Number	40
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Chosen arbitrarily.
- 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 IE is not included	
Cell Channel Description	uses bit map 0 to encode: {40, 66, 73, 74, 75, 76, 108, 114} only.
Mobile Allocation after time	indicates channel {73, 74, 75} only.
Channel Mode IE	speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 750.

M = 3.

DCS 1 800:

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	764
Channel Description	
- Channel Type	SDCCH/8
- TDMA offset	Chosen arbitrarily.
- Timeslot number	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 Short List IE.
- HSN	Zero (this gives cyclic hopping).
Synchronization Indication IE not included.	
Frequency Short List after time	
- Frequency Short List	Use Range 128 to encode the following 2 frequencies (746, 779).
Mode of First Channel	Signalling Only.

Step 13: "**x**" = 1 500.

GSM 900:

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 - Base Station Colour Code - BCCH Carrier Number Channel Description - Channel Type - TDMA offset - Timeslot number - Training Sequence Code - Hopping - MAIO - HSN Synchronization Indication IE is not included - Frequency List Channel Mode IE	 3 0 40 SDCCH/8 Chosen arbitrarily. Zero. Chosen arbitrarily. RF hopping channel. Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Frequency List IE. Chosen arbitrarily from the set {1, 2, ..., 63}. Frequency list after time. uses bit map 0 to allocate the following 15 frequencies {14, 18, 22, 24, 30, 31, 38, 60, 66, 73, 74, 75, 76, 108, 114}. signalling only.

Step 13: "**x**" = 1 500.

M = 4.

DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except: - Timeslot number - ARFCN	 Arbitrary value, but not zero. 747

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	764
Channel Description	
- Channel Type	SDCCH/8
- TDMA offset	Chosen arbitrarily.
- 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 Frequency List IE.
- HSN	zero (this gives cyclic hopping).
Frequency List after time	
- Frequency List	Use Range 1024 to encode the complete CA of Cell B.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Channel Mode IE is not included.	

Step 13: "**x**" = 1 500.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
- Timeslot number	Arbitrary value, but not zero.
- ARFCN	20

HANDOVER COMMAND

Information Element	value/remarks
Cell Description	
- Network Colour Code	3
- Base Station Colour Code	0
- BCCH Carrier Number	40
Channel Description	
- Channel Type	SDCCH/8
- TDMA offset	Chosen arbitrarily.
- 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 Frequency Channel Sequence IE.
Frequency Channel Sequence, after time	
- Frequency channel sequence	Allocates the following 14 frequencies: {14, 18, 22, 24, 30, 31, 38, 40, 66, 73, 74, 75, 76, 108}.
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	Not included

Step 13: "**x**" = 1 500.

M = 5.

DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	
- Channel Type	TCH/F + ACCH's
- Timeslot number	Arbitrary value but not zero.
- Hopping Channel	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of cell A.

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	764
Channel Description	
- Channel Type	TCH/H + ACCH's
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Arbitrary value but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of cell B.
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	Signalling only.

Step 13: "**x**" = 750.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	
- Channel Type	TCH/F + ACCH's
- Timeslot number	Arbitrary value, but not zero.
- Hopping Channel	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of cell A.

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	40
Channel Description	
- Channel Type	TCH/H + ACCH's
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Arbitrary value but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of cell B.
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	Signalling only.

Step 13: "**x**" = 750.

M = 6.

DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	14 octets (11 + contents of the MA).
Channel Description	Channel Description.
- Channel Type	TCH/H + ACCHs
- 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 all of the CA of cell A.

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	764
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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 Frequency List IE.
- HSN	Chosen arbitrarily from the set. (1,2,..63).
Frequency List after time	
- Frequency List	Use Range 256 to encode the following 9 frequencies: (746, 749, 756, 761, 764, 798, 829, 832,844).
Synchronization Indication IE not included.	
Channel Mode	Signalling Only.

Step 13: "**x**" = 500.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	14 octets (11 + contents of the MA).
Channel Description	Channel Description.
- Channel Type	TCH/H + ACCHs.
- TDMA offset	Chosen arbitrarily.
- 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 all of the CA of cell A.

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	40
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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 IE.
- HSN	Chosen arbitrarily from the set (1,2,..63).
Cell Channel Description	uses bit map 0 to encode the complete CA of cell B.
Mobile Allocation after time	Indicates the following 5 frequencies: (14, 18, 22, 31, 40).
Synchronization Indication IE not included.	
Channel Mode	Signalling Only.

Step 13: "**x**" = 500.

M = 7:

DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	14 octets (11 + contents of the MA).
Channel Description	Channel Description.
- Channel Type	TCH/F + ACCHs
- Timeslot number	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.
Mobile Allocation	
- Length	3 octets.
- Contents	Indicates only one frequency (844).

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	764
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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).
Cell Channel Description	Use Variable bit map to encode the complete CA of cell B.
Mobile Allocation	Indicates all of the CA of cell B except for the following three frequencies: (764, 832 and 844).
Mode of First channel	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 500.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	14 octets (11 + contents of the MA).
Channel Description	Channel Description.
- Channel Type	TCH/F + ACCHs
- Timeslot number	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.
Mobile Allocation	
- Length	3 octets.
- Contents	Indicates only one frequency (114).

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	40
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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 Frequency List IE.
- HSN	Chosen arbitrarily from the set (1,2,..63).
Synchronization Indication IE is not included:	
Frequency list after time.	
- Frequency List IE	uses bit map 0 to allocate the following 16 frequencies {14, 18, 22, 24, 30, 31, 38, 40, 60, 66, 73, 74, 75, 76, 108, 114}.
Mode of First channel	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 500.

M = 8:

DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	14 octets (11 + contents of the MA).
Channel Description	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	3octets.
- Contents	Indicates only three frequencies: (773, 775, 779).

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	764
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).

Step 13: "**x**" = 500.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
L2 pseudo length	14 octets (11 + contents of the MA).
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: (73, 74, 75).

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	40
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.
Mode of First Channel	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 500.

M = 9:

DCS 1 800:

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	764
Channel Description	
- Channel Type	TCH/F + ACCHs
- 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 Frequency Short List IE.
- HSN	Zero (this gives cyclic hopping).
Frequency Short List after time	
- Frequency Short List	Use Range 256 to encode the following 3 frequencies: (764, 779, 782).
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Non synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Channel mode	Speech (full rate version 1 or half rate version 1)

Step 13: "**x**" = 500.

GSM 900:

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	40
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	RF hopping channel
- MAIO	Chosen arbitrarily from the set {0, 1}.
- HSN	Chosen arbitrarily from the set {1, 2,..., 63}.
Synchronization Indication IE is not included	
Frequency Channel Sequence, after time.	
- Frequency Channel Sequence IE	allocates the following two frequencies {14, 114}.
Mode of the first channel	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 500.

M = 10:

DCS 1 800:

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	764
Channel Description	
- Channel Type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- 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 Frequency List IE.
- HSN	Zero (this gives cyclic hopping).
Frequency List after time	
- Frequency List	Use Variable Bit Map to encode the following 15 frequencies: (739, 743,746,749, 756, 758, 764, 771, 779, 782, 791, 798, 829, 832, 844).
Synchronization Indication IE is not included.	
Channel mode	Speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 750.

GSM 900:

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	40
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}.
- HSN	Chosen arbitrarily from the set {1, 2,..., 63}.
Synchronization Indication IE is not included	
Frequency Channel Sequence, after time	
- Frequency Channel Sequence IE	allocates the following two frequencies {40, 114}.
Channel Mode IE	speech (full rate version 1 or half rate version 1).

Step 13: "**x**" = 750.

Specific Message Contents For Mobiles not Supporting Speech

The message contents shall be the same for the declared type of Mobile Station (either P-GSM 900 or DCS 1 800 supporting speech , except for:

M = 1, 7, 8 and 9:

HANDOVER COMMAND

Information Element	value/remarks
Mode of first channel	Arbitrary from those supported (12, 6, 3,6 kbps).

For M = 2 and 10 :

HANDOVER COMMAND

Information Element	value/remarks
Mode of first channel	Arbitrary from those supported (6, 3,6 kbps).

26.6.5.3 Handover / successful / active call / finely synchronized

26.6.5.3.1 Conformance requirements

The MS shall correctly apply the handover procedure from TCH/F with frequency hopping to TCH/F without frequency hopping in the finely synchronized case when a call is in progress.

The MS shall correctly apply the handover procedure from TCH/H with frequency hopping to TCH/H without frequency hopping in the finely synchronized case when a call is in progress. This requirement does not apply to MSs not supporting TCH/H.

References

GSM 04.08 sections 3.4.4, 9.1.14, 9.1.15 and 9.1.16.
GSM 04.13 section 5.2.6.
GSM 05.05 section 4.1.1.
GSM 05.10, section 6.6.

26.6.5.3.2 Test purpose

To test that when the MS is ordered to make a finely synchronized handover to a synchronized cell, it sends 4 access bursts on the main DCCH and then activates the channel correctly, taking into account the value of any Starting Time information element, power command and correctly calculating the timing advance to use. To test the MS activates the new channel correctly and transmits the HANDOVER COMPLETE message without undue delay.

26.6.5.3.3 Method of test

Initial Conditions

System Simulator:

2 cells, A and B, with same LAI, default parameters, except:
The BCCH of cell A is sent k bit periods before the BCCH of cell B. The timing advance in cell A sent to the MS is y bit periods. k and y are selected such that $0 < (2k+y) \bmod 256 < 60$.

P-GSM 900:

Cell B has BCCH ARFCN = 40.

DCS 1 800:

Cell B has BCCH ARFCN = 764.

Mobile Station:

The MS is in the active state (U10) of a call (on cell A). The MS is using a power level P. Where P is a power level within the supported range of that type of MS.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F and/or TCH/H.
Support for state U10 of the Call Control protocol.
Supported speech and data rates.
Type of Mobile Station (P-GSM 900 or EGSM or DCS 1 800).
Power class of Mobile Station.

Foreseen Final State of the MS

The active state (U10) of a mobile call (on cell B).

Test Procedure

This procedure is repeated for execution counter M = 1 to 2. (See table 26.6-1.)

The MS is in the active state (U10) of a call on cell A. The SS sends a HANDOVER COMMAND on the main DCCH. The MS shall (at the time specified in the Starting Time information element, if included) send 4 access bursts, in 4 successive slots on the new DCCH to cell B. Then the MS shall establish a signalling link indicating the correct Timing Advance and power level and send a HANDOVER COMPLETE message.

The MS shall be "ready to transmit" a HANDOVER COMPLETE message before "**x**" ms after the end of the HANDOVER COMMAND message, but not before a UA frame has been sent by the SS.

The term "ready to transmit" is defined in GSM 04.13. The value of "**x**" depends upon the target channel and is specified in the specific message contents section.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed for execution counter M = 1 for an MS which only supports TCH/F.
This sequence is performed for execution counter M = 1 to 2 for an MS which supports TCH/F and H.

Step	Direction	Message	Comments
0	MS -> SS		M = 1, The MS and SS are using a full rate TCH in hopping mode on cell A. M = 2, The MS and SS are using a half rate TCH in hopping mode on cell A.
1	SS -> MS	HANDOVER COMMAND	See Specific Message Contents.
2	MS -> SS	HANDOVER ACCESS	See specific message contents. Four messages.
3	MS -> SS	HANDOVER ACCESS	are transmitted to Cell B in 4 successive slots.
4	MS -> SS	HANDOVER ACCESS	on the new DCCH.
5	MS -> SS	HANDOVER ACCESS	
6	MS -> SS	SABM	Sent without information field.
7	SS -> MS	UA	
8	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step 1. See specific message contents.
9	SS		The header of the next uplink SACCH is examined and the Timing Advance and Power Level indications are examined. The correct timing advance shall be indicated. A tolerance of +/- 2 bit periods is allowed. The power level indication shall indicate the power level used in the handover command.
10	MS, SS		M =1, The MS and SS are using a full rate TCH in non-hopping mode on cell B M = 2, The MS and SS are using a half rate TCH in non-hopping mode on cell B.

Specific Message Contents

M = 1:
GSM 900

HANDOVER COMMAND

Information Element	value/remark
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Channel Description	
- Channel type	TCH/F + ACCHs
- Timeslot Number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	40
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by that type of MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.

HANDOVER ACCESS

Information Element	value/remark
As default message contents except: Handover Reference - Value	 Same as HANDOVER COMMAND

Step 8: x = 650 ms.

DCS 1 800

HANDOVER COMMAND

Information Element	value/remark
As default message contents, except: Cell Description - Network Colour Code - Base Station Colour Code - BCCH Carrier Number Channel Description - Channel type - Timeslot Number - Training Sequence Code - Hopping - ARFCN Handover Reference - Value Power command - Power Level Synchronization Indication - Report Observed Time Difference - Synchronization Indication - Normal Cell Indication	 1 5 764 TCH/F + ACCHs Arbitrary value, but not zero. Chosen arbitrarily. Single RF Channel. 764 Chosen arbitrarily from the range (0, 1..255). Arbitrarily chosen, but different to the one already in use and within the range supported by that type of MS. Shall not be included. "Synchronized". Ignore out of range timing advance.

HANDOVER ACCESS

Information Element	value/remark
As default message contents except: Handover Reference - Value	 Same as HANDOVER COMMAND

Step 8: x = 650 ms.

M = 2:
GSM 900

HANDOVER COMMAND

Information Element	value/remark
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Channel Description	
- Channel type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot Number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	40
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by that type of MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Mode of First Channel	If speech is supported: Speech (full rate version 1 or half rate version 1). If speech is not supported: arbitrary from those supported, 12, 6, 3,6 kbps).

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 8: x = 900 ms.

DCS 1 800

HANDOVER COMMAND

Information Element	value/remark
As default message contents, except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
Channel Description	
- Channel type	TCH/H + ACCHs
- TDMA offset	Chosen arbitrarily.
- Timeslot Number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	764
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by that type of MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Mode of First Channel	If speech is supported: Speech (full rate version 1 or half rate version 1). If speech is not supported: arbitrary from those supported (12, 6, 3,6 kbps).

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 8: x = 900 ms.

26.6.5.4 Handover / successful / call under establishment / finely synchronized

This test is applicable to all MS which support at least one MO circuit switched basic service.

26.6.5.4.1 Conformance requirements

The MS shall correctly apply the handover procedure from SDCCH/8 or TCH/F with or without frequency hopping to SDCCH4, SDCCH/8 or TCH/F with or without frequency hopping in the finely synchronized case, during call establishment.

If during call establishment a Layer 3 MM or CC message just sent by the MS is not Layer 2 acknowledged before the channel change caused by the HANDOVER COMMAND message, the MS shall send the Layer 3 message to the new cell, using the same value in the N(SD) field, after the handover procedure.

References

GSM 05.10, section 6.6.
GSM 04.08, section 3.4.4.
GSM 04.08, section 3.1.4.2.

GSM 04.13, section 5.2.6.

26.6.5.4.2 Test purpose

To test that when the MS is ordered to make a finely synchronized handover to a synchronized cell, it sends 4 access bursts on the main DCCH and then activates the channel correctly, taking into account the value of any Starting Time information element, power command and correctly calculating the timing advance to use. To test that the MS correctly retransmits Layer 3 MM or CC messages that were not acknowledged by Layer 2 before the Handover, after completion of the Handover. To verify the MS transmits the HANDOVER COMPLETE message without undue delay.

26.6.5.4.3 Method of test

Initial Conditions

System Simulator:

2 cells, A and B, with same LAI, default parameters, except:
The BCCH of cell A is sent k bit periods before the BCCH of cell B. The timing advance in cell A sent to the MS is y bit periods. k and y are selected such that $0 < (2k + y) \bmod 256 < 60$.
The frame numbers of cells A and B shall be different by 100.

GSM 900:

Cell A has:
BCCH ARFCN = 20.
Cell Allocation = (10, 17, 20, 26, 34, 42, 45, 46, 52, 59, 66, 73, 74, 75, 76, 108, 114).
Cell B has:
BCCH ARFCN = 40.
Cell Allocation = (14, 18, 22, 24, 30, 31, 38, 40, 60, 66, 73, 74, 75, 76, 108, 114).

DCS 1 800:

Cell A has:
BCCH ARFCN = 747.
Cell Allocation = (734, 741, 747, 754, 759, 762, 766, 767, 773, 775, 779, 782, 791, 798, 829, 832, 844).
Cell B has:
BCCH ARFCN = 764.
Cell Allocation = (739, 743, 746, 749, 756, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844).

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated and camped on cell A. The MS is using a power level P, where P is a power level within the supported range of that type of MS.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F.
Support for state MO calls.
Supported speech and data rates.
Type of Mobile Station (P-GSM 900 or EGSM or DCS 1 800).
Power class of Mobile Station.

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, 3, 4 (See table 26.6-1.)

A Mobile Originating Call is initiated on cell A. After the MS has sent the SETUP message (and before the last L2 frame carrying the SETUP message is acknowledged by the SS) the SS sends a HANDOVER COMMAND message, ordering the MS to switch to cell B. The MS shall then (at the time specified in the Starting Time information element, if included) send 4 access bursts, in successive slots on the new

DCCH to cell B. Then the MS shall establish a signalling link indicating the correct timing advance and power level and send a HANDOVER COMPLETE message. The MS shall be "ready to transmit" the HANDOVER COMPLETE message before "**x**" ms after the end of the HANDOVER COMMAND message, but not before a UA frame has been sent by the SS. The MS shall then again send the SETUP message to the SS, using the same value in the N(SD) field. Finally the SS sends a CHANNEL RELEASE to end the test.

The term "ready to transmit" is defined in GSM 04.13. The value "**x**" depends upon the target channel and is specified in the specific message contents section.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This procedure is repeated for execution counter M = 1, 2, 3, 4 (unless a particular TCH is not supported).

Step	Direction	Message	Comments
1	--------	--------	A MO call is initiated.
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Originating call, NECI not set to 1"
3	SS -> MS	IMMEDIATE ASSIGNMENT	See Specific Message contents.
4	MS -> SS	CM SERVICE REQUEST	CM Service Type = Mobile Origina- ting Call Establishment.
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	MS -> SS	SETUP	Last L2 frame not acknowledged by the SS.
8	SS -> MS	HANDOVER COMMAND	See Specific Message Contents.
9	MS -> SS	HANDOVER ACCESS	
10	MS -> SS	HANDOVER ACCESS	
11	MS -> SS	HANDOVER ACCESS	See Specific message contents. Four.
12	MS -> SS	HANDOVER ACCESS	Messages are transmitted to cell B in 4 successive slots on the new DCCH. If the HANDOVER COMMAND message includes a starting time IE then the first HANDOVER ACCESS message shall be transmitted in the indicated frame (unless the starting time has elapsed).
13	MS -> SS	SABM	Sent without information field.
14	SS -> MS	UA	
15	MS -> SS	HANDOVER COMPLETE	The message shall be ready to be transmitted before "x" ms after the completion of step 8.
16	SS		The header of the next uplink SACCH is examined and the Timing Advance and Power Level indications are examined. The correct timing advance shall be indicated. A tolerance of +/- 2 bit periods is allowed. The power level indication shall indicate the power level used in the handover command.
17	MS -> SS	SETUP	Same N(SD) as in step 7.
18	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

M = 1:
DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	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	Indicates all of the CA of cell A except for the BCCH frequency.

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
Channel Description	
- Channel Type	SDCCH/8
- TDMA offset	Chosen arbitrarily.
- 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 Frequency List IE.
- HSN	Zero (this gives cyclic hopping).
Frequency List after time	
- Frequency List	Use Range 512 to encode the complete CA of Cell B.
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Mode of First Channel	Signalling only

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 1 500 ms.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	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	Indicates all of the CA of cell A except for the BCCH frequency.

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Channel Description	
- Channel Type	SDCCH/8
- TDMA offset	Chosen arbitrarily.
- 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 Frequency List IE.
- HSN	Zero (this gives cyclic hopping).
Frequency List after time	
- Frequency List	Use Bit Map 0 to encode the complete CA of Cell B.
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Mode of First Channel	Signalling only.

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 1 500 ms.

M = 2:
DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	Channel Description.
- Channel Type	SDCCH/8
- TDMA offset	As default message contents.
- Timeslot number	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	Indicates all of the CA of cell A except for the following 2 frequencies: (747 and 767).

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
Channel Description	
- Channel Type	SDCCH/4
- TDMA offset	Chosen arbitrarily.
- Timeslot number	zero.
- Training Sequence Code	same as the BCCH.
- Hopping	Single RF Channel.
- ARFCN	764
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Starting Time	Indicates the frame number of cell B that will occur approximately 1,1 seconds after the HANDOVER COMMAND message is sent by cell A.

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 2 600 ms.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	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	Indicates all of the CA of cell A except for the following 2 frequencies: (20 and 52).

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Channel Description	
- Channel Type	SDCCH/4
- TDMA offset	Chosen arbitrarily.
- Timeslot number	zero.
- Training Sequence Code	same as the BCCH.
- Hopping	Single RF Channel.
- ARFCN	40
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Starting Time	Indicates the frame number of cell B that will occur approximately 1,1 seconds after the HANDOVER COMMAND message is sent by cell A.

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 2 600 ms.

M = 3:
DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	Channel Description.
- Channel Type	TCH/F + ACCHs
- Timeslot number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	747

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	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 Short list IE.
- HSN	Chosen arbitrarily from the set (1,2,..63).
Frequency Short List after time	
- Frequency Short List	Use Range 128 to encode the following 3 frequencies: (758, 761, 771).
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 650 ms.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	Channel Description.
- Channel Type	TCH/F + ACCHs
- Timeslot number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	20

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	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 Channel Sequence IE.
- HSN	Chosen arbitrarily from the set (1,2,..63).
Frequency Channel Sequence after time	
- Frequency Channel Sequence	Indicates (66, 75, 76, 108).
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 650 ms.

M = 4:
DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	Channel Description.
- Channel Type	SDCCH/8
- TDMA offset	As default message contents.
- Timeslot number	As default message contents.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of Cell A.

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	764
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of Cell B.
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Channel Mode	If speech is supported: Speech (full rate version 1 or half rate version 1). If speech is not supported: arbitrary from those supported (12, 6, 3,6 kbps).

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 650 ms.

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
As default message contents except:	
Channel Description	Channel Description.
- Channel Type	SDCCH/8
- TDMA offset	As default message contents.
- Timeslot number	As default message contents.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of Cell A.

HANDOVER COMMAND

Information Element	value/remark
As default message contents except:	
Cell Description	
- Network Colour Code	1
- Base Station Colour Code	5
- BCCH Carrier Number	40
Channel Description	
- Channel Type	TCH/F + ACCHs
- Timeslot number	Arbitrary value, but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	Single RF Channel.
- ARFCN	Chosen arbitrarily from the Cell Allocation of Cell B.
Handover Reference	
- Value	Chosen arbitrarily from the range (0, 1..255).
Power command	
- Power Level	Arbitrarily chosen, but different to the one already in use and within the range supported by the MS.
Synchronization Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronization Indication	"Synchronized".
- Normal Cell Indication	Ignore out of range timing advance.
Channel Mode	If speech is supported: Speech (full rate version 1 or half rate version 1). If speech is not supported: arbitrary from those supported (12, 6, 3,6 kbps).

HANDOVER ACCESS

Information Element	value/remark
As default message contents except:	
Handover Reference	
- Value	Same as HANDOVER COMMAND

Step 15: x = 650 ms.

26.6.5.5 Pre-synchronized handovers

26.6.5.5.1 Handover / successful / active call / pre-synchronized / Timing Advance IE not included

If an MS does not implement the pre-synchronized handover procedure correctly then calls may fail.

26.6.5.5.1.1 Conformance requirements

1 The MS shall correctly apply the handover procedure from TCH/F without frequency hopping to TCH/F without frequency hopping in the pre-synchronized case when a call is active.

2 When the Timing Advance information element is not included in the HANDOVER COMMAND, the MS shall access the new cell with the default timing advance of 1 bit period.

3 The MS shall be ready to transmit the HANDOVER COMPLETE message within 650 ms of the end of the HANDOVER COMMAND message.

References

Conformance requirement 1: GSM 04.08 section 3.4.4.

Conformance requirement 2: GSM 05.10, section 6.6.

Conformance requirement 3: GSM 04.13, section 5.2.6.1.

26.6.5.5.1.2 Test purpose

To verify that when the MS is ordered to make a pre-synchronized handover to another cell, it sends 4 access bursts on the main DCCH and then activates the channel correctly and correctly calculates the time to transmit.

26.6.5.5.1.3 Method of test

Initial Conditions

System Simulator:
2 cells, A and B, with same LAI, default parameters.
The BCCH of cell A is sent k bit periods before the BCCH of cell B. k is arbitrarily selected.

Mobile Station:
The MS is in the active state (U10) of a call (on cell A) using a full rate TCH in non-hopping mode.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F.

Support for state U10 of the Call Control protocol.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The active state (U10) of a mobile call (on cell B) using a full rate TCH in non-hopping mode.

Test Procedure

The MS is in the active state (U10) of a call on cell A. The SS sends a HANDOVER COMMAND for a pre-synchronized handover without the Timing Advance IE on the main DCCH. The MS shall send 4 access bursts, at the commanded power level, in 4 successive slots of the new DCCH to cell B with a Timing Advance of zero. Then the MS shall establish a signalling link using a Timing Advance of one and send a HANDOVER COMPLETE message. The MS shall be ready to transmit the HANDOVER COMPLETE message before 650 ms after the end of the HANDOVER COMMAND message, but not before a UA frame has been sent by the SS.

The term "ready to transmit" is defined in GSM 04.13.

Maximum Duration of Test

5 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	HANDOVER COMMAND	See specific message contents below.
2	MS -> SS	HANDOVER ACCESS	Handover Reference as included in the
3	MS -> SS	HANDOVER ACCESS	HANDOVER COMMAND.
4	MS -> SS	HANDOVER ACCESS	
5	MS -> SS	HANDOVER ACCESS	
6	MS -> SS	SABM	Sent without information field.
7	SS -> MS	UA	
8	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before 650 ms after the completion of step 1.
9	SS	-	The SS checks that the timing advance reported in the layer 1 header of the SACCH message that is sent in the first SACCH multiframe following the SABM is 1 bit period.

Specific Message Contents

HANDOVER COMMAND

As default message contents, except: Synchronization Indication	 pre-synchronized; ROT=0; NCI=0.

26.6.5.5.2 Handover / successful / call being established / pre-synchronized / timing advance IE is included / reporting of observed time difference requested.

This test is applicable to all MS which support at least one MO circuit switched basic service.

If an MS does not implement the pre-synchronized handover procedure correctly then calls may fail.

If an MS does not report the observed time difference between cells correctly then pseudo synchronized handovers might not be possible for any MS.

26.6.5.5.2.1 Conformance requirements

1 The MS shall correctly apply the handover procedure from an SDCCH/4 to a TCH/F without frequency hopping in the pre-synchronized case while a call is being established.

2 If during call establishment a Layer 3 MM or CC message just sent by the MS is not Layer 2 acknowledged before the channel change caused by the HANDOVER COMMAND message, the MS shall send the Layer 3 message to the new cell, using the same value in the N(SD) field, after the handover procedure.

3 When the Timing Advance information element is included in the HANDOVER COMMAND, the MS shall access the new cell with the timing advance included in the Timing Advance IE.

4 The MS shall be ready to transmit the HANDOVER COMPLETE message within 650 ms of the end of the HANDOVER COMMAND message.

5 When requested to do so in the HANDOVER COMMAND message, the MS shall return the Mobile Time Difference IE in the HANDOVER COMPLETE message indicating the sum of the observed time difference between the cells and the timing advance used on the old cell.

References

Conformance requirement 1: GSM 04.08, section 3.4.4.

Conformance requirement 2: GSM 04.08, section 3.1.4.3.
Conformance requirement 3: GSM 05.10, section 6.6.
Conformance requirement 4: GSM 04.13, section 5.2.6.1.
Conformance requirement 5: GSM 04.08, section 10.5.2.39.

26.6.5.5.2.2 Test purpose

To test that when the MS is ordered to make a pre-synchronized handover to another cell, it sends 4 access bursts on the main DCCH and then activates the channel correctly and correctly calculates the time to transmit. To test that the MS correctly retransmits Layer 3 MM or CC messages that were not acknowledged by Layer 2 before the Handover, after completion of the Handover. To test that the MS correctly reports on the time difference between the cells.

26.6.5.5.2.3 Method of test

Initial Conditions

System Simulator:
2 cells, A and B, with same LAI, default parameters.
The BCCH of cell A is sent k bit periods before the BCCH of cell B.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated and camped on cell A.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F.

Support for state MO calls.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated" with TMSI allocated and camped on cell B.

Test Procedure

A Mobile Originating Call is initiated. The SS sends an IMMEDIATE ASSIGNMENT message allocating an SDCCH/4. The MS is commanded to use a timing advance of y bit periods on cell A. After the MS has sent the SETUP message (and before the last L2 frame carrying the SETUP message is acknowledged by the SS) the SS sends a HANDOVER COMMAND, ordering the MS to switch to cell B. The MS shall then send 4 access bursts, at the commanded power level, in 4 successive slots of the new DCCH to cell B. Then the MS shall establish a signalling link using the correct timing advance and send a HANDOVER COMPLETE message. The MS shall be ready to transmit the HANDOVER COMPLETE message before 650 ms after the end of the HANDOVER COMMAND message, but not before a UA frame has been sent by the SS.

The term "ready to transmit" is defined in GSM 04.13.

The MS shall then again send the SETUP message to the SS, using the same value in the N(SD) field. Finally the SS sends a CHANNEL RELEASE to end the test.

Maximum Duration of Test

20 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	--------	--------	A MO call is initiated.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	to an SDCCH/4.
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	MS -> SS	SETUP	Last L2 frame not acknowledged by the SS.
8	SS -> MS	HANDOVER COMMAND	See specific message contents below.
9	MS -> SS	HANDOVER ACCESS	Handover Reference as included in the
10	MS -> SS	HANDOVER ACCESS	HANDOVER COMMAND
11	MS -> SS	HANDOVER ACCESS	
12	MS -> SS	HANDOVER ACCESS	
13	MS -> SS	SABM	Sent without information field.
14	SS -> MS	UA	
15	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before 650 ms after the completion of step 8. Shall include the Mobile Time Difference IE with value (2k+y) mod 2,097,152 half bit periods. A tolerance of ±2 half bit periods is allowed.
16	MS -> SS	SETUP	Same N(SD) as in step 7
17	SS	-	The SS checks that the timing advance reported in the layer 1 header of the SACCH message that is sent in the first SACCH multiframe following the SABM is 9 bit periods. A tolerance of +/- 2 bit periods is allowed.
18	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

HANDOVER COMMAND

As default message contents, except:	
Synchronization Indication	pre-synchronized; ROT=1; NCI=0.
Timing Advance	9 bit periods.

26.6.5.6 Handover / successful / active call / pseudo synchronized

This test only applies to MSs that claim to support the pseudo synchronized handover procedure. If MSs that claim to support this procedure do not correctly implement it, then calls may fail.

26.6.5.6.1 Conformance requirements

1 The MS shall correctly apply the handover procedure from TCH/F without frequency hopping to TCH/F without frequency hopping in the pseudo synchronized case when a call is in progress.

2 The MS shall access the new cell with the correct timing advance.

3 The MS shall be ready to transmit the HANDOVER COMPLETE message within 650 ms of the end of the HANDOVER COMMAND message.

4 When requested to do so in the HANDOVER COMMAND message, the MS shall return the Mobile Time Difference IE in the HANDOVER COMPLETE message indicating the sum of the observed time difference between the cells and the timing advance used on the old cell.

References

Conformance requirement 1: GSM 04.08 section 3.4.4.
Conformance requirement 2: GSM 05.10, section 6.6.
Conformance requirement 3: GSM 04.13, section 5.2.6.1.
Conformance requirement 4: GSM 04.08, section 10.5.2.39.

26.6.5.6.2 Test purpose

To test that when the MS is ordered to make a pseudo synchronized handover to another cell, it sends 4 access bursts on the main DCCH and then activates the channel correctly and correctly calculates the time to transmit. To test that the MS correctly reports the time difference between the cells.

26.6.5.6.3 Method of test

Initial Conditions

System Simulator:

2 cells, A and B, with same LAI, default parameters.
The BCCH of cell A is sent k bit periods before the BCCH of cell B. k is arbitrarily selected.
The MS is being commanded to use a timing advance of y bit periods on cell A, where y is arbitrarily selected from the set {11, 12, ... ,62}.

Mobile Station:

The MS is in the active state (U10) of a call (on cell A) using a full rate TCH in non-hopping mode.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F.

Support for state U10 of the Call Control protocol.

Support for pseudo synchronization.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The active state (U10) of a mobile call (on cell B) using a full rate TCH in non-hopping mode.

Test Procedure

The MS is in the active state (U10) of a call on cell A. The SS sends a HANDOVER COMMAND for a pseudo-synchronized handover with the Real Time Difference IE included. The Time Difference value is set to (2k+10) modulo 256. The MS shall send 4 access bursts, at the commanded power level, in 4 successive slots of the new DCCH to cell B with a Timing Advance of zero. Then the MS shall establish a signalling link using a Timing Advance of (y-10) bit periods and send a HANDOVER COMPLETE message. The MS shall be ready to transmit the HANDOVER COMPLETE message before 650 ms after the end of the HANDOVER COMMAND message, but not before a UA frame has been sent by the SS.

The term "ready to transmit" is defined in GSM 04.13.

Maximum Duration of Test

5 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	HANDOVER COMMAND	See specific message contents below.
2	MS -> SS	HANDOVER ACCESS	Handover Reference as included in the HANDOVER COMMAND.
3	MS -> SS	HANDOVER ACCESS	
4	MS -> SS	HANDOVER ACCESS	
5	MS -> SS	HANDOVER ACCESS	
6	MS -> SS	SABM	Sent without information field.
7	SS -> MS	UA	
8	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before 650 ms after the completion of step 1. Shall include the Mobile Time Difference IE with value (2k+y) mod 2,097,152 half bit periods. A tolerance of ±2 half bit periods is allowed.
9	SS	-	The SS checks that the timing advance reported in the layer 1 header of the SACCH message that is sent in the first SACCH multiframe following the SABM is (y-10) bit periods. A tolerance of +/- 2 bit periods is allowed.

Specific Message Contents

HANDOVER COMMAND

As default message contents, except:	
Synchronization Indication	pseudo-synchronized; ROT=1; NCI=0.
Time Difference	(2k+10) mod 256.

26.6.5.7 Handover / successful / active call / non-synchronized / reporting of observed time difference requested.

If an MS does not report the observed time difference between cells correctly then pseudo synchronized handovers might not be possible for any MS.

26.6.5.7.1 Conformance requirements

1 The MS shall correctly apply the handover procedure from a TCH/F without frequency hopping to a TCH/F without frequency hopping in the non-synchronized case while a call is active.

2 When requested to do so in the HANDOVER COMMAND message, the MS shall return the Mobile Time Difference IE in the HANDOVER COMPLETE message indicating the sum of the observed time difference between the cells and the timing advance used on the old cell.

References

Conformance requirement 1: GSM 04.08, section 3.4.4.

Conformance requirement 2: GSM 04.08, section 10.5.2.39.

26.6.5.7.2 Test purpose

To verify that when the MS is ordered to make a non-synchronized handover to another cell and is ordered to report on the time difference between the cells, that it does so correctly.

26.6.5.7.3 Method of test

Initial Conditions

System Simulator:

2 cells, A and B with default parameters except the LAI of cell B has MNC = 02 decimal, MCC = 315 decimal, and LAC = 5344 H.

The BCCH of cell A is sent k bit periods before the BCCH of cell B.
The MS is commanded to use a timing advance of y bit periods on cell A.

Mobile Station:
The MS is in the active state (U10) of a call (on cell A) using a full rate TCH in non-hopping mode.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F.

Support for state U10 of the Call Control protocol.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The active state (U10) of a mobile call (on cell B) using a full rate TCH in non-hopping mode.

Test Procedure

The MS is in the active state (U10) of a call on cell A. The SS sends a HANDOVER COMMAND on the main DCCH. The HANDOVER COMMAND includes a Synchronization Indication IE that instructs the MS to supply the observed time difference between the cells. The MS shall begin to send access bursts on the new DCCH to cell B and the SS sends one PHYSICAL INFORMATION message. The MS shall activate the channel in sending and receiving mode and establish a signalling link using the correct timing advance. The MS shall transmit a HANDOVER COMPLETE message containing the Mobile Time Difference IE with a correct value.

Maximum Duration of Test

5 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	HANDOVER COMMAND	See specific message contents below.
2	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND.
3	SS -> MS	PHYSICAL INFORMATION	
4	MS -> SS	SABM	Sent without information field.
5	SS -> MS	UA	
6	MS -> SS	HANDOVER COMPLETE	Shall include the Mobile Time Difference IE with value (2k+y) mod 2,097,152 half bit periods. A tolerance of ±2 half bit periods is allowed.

Specific Message Contents

HANDOVER COMMAND

as default message contents, except: Synchronization Indication	 "not synchronized"; ROT=1; NCI=0.

26.6.5.8 Handover / layer 3 failure

26.6.5.8.1 Conformance requirements

The MS shall return to the old channel in the case of an handover failure caused by the non reception of the PHYSICAL INFORMATION message. On the old channel the MS shall use the Power Level that it was previously using on that channel.

References

GSM 04.08 section 3.4.4.

26.6.5.8.2 Test purpose

To verify the function of timer T3124 and the contents in the message HANDOVER FAILURE and in the layer 1 header on the SACCH.

26.6.5.8.3 Method of test

Initial Conditions

System Simulator:
2 cells with same LAI, default parameters.

Mobile Station:
The MS is in the active state (U10) of a call (on cell A). Used power level is the maximum supported by the MS.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F.
Support for state U10 of the Call Control protocol.
Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The active state (U10) of a mobile call (on cell A). Used power level is the maximum supported by the MS.

Test Procedure

The MS is in the active state (U10) of a call on cell A. The SS sends a HANDOVER COMMAND with Power Command set to 8 on the main DCCH. The MS shall begin to send access bursts at the commanded power level on the new DCCH to cell B. The SS activates the SACCH, but does not send PHYSICAL INFORMATION (thus causing a time-out of T3124). The MS shall re-establish the old link on cell A and send a HANDOVER FAILURE within 3 seconds from the transmission of HANDOVER COMMAND, using the old power level.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
0	SS	-	The SS records the power level in the layer 1 header of the last SACCH message sent by the MS before step 1.
1	SS -> MS	HANDOVER COMMAND	Channel description: non-hopping, full rate Power Command: 8. Synchronization Indication: non synchronized.
2	MS -> SS	HANDOVER ACCESS	Several messages are sent, all with correct Handover References.
3	MS -> SS	HANDOVER FAILURE	Sent on old channel, RR cause value = “Abnormal release, unspecified", "Abnormal release, channel unacceptable", "Abnormal release, timer expired", "Abnormal release, no activity on the radio path" or "Protocol error unspecified". Shall be sent within 3 seconds from the transmission of HANDOVER COMMAND.
4	SS	-	The SS checks that the power level reported in the layer 1 header of the SACCH message that is sent in the first SACCH multiframe following the SABM is the same as in step 0.

Specific Message Contents

None.

26.6.5.9 Handover / layer 1 failure

26.6.5.9.1 Conformance requirements

The MS shall return to the old channel in the case of an handover failure caused by a layer 1 failure on the target cell. On the old channel the MS shall use the Power Level that it was previously using on that channel.

References

GSM 04.08 section 3.4.4.

26.6.5.9.2 Test purpose

To verify the function of timer T3124 and the contents in the message HANDOVER FAILURE and in the layer 1 header on the SACCH.

26.6.5.9.3 Method of test

Initial Conditions

System Simulator:

2 cells with same LAI, default parameters.

Mobile Station:

The MS is in the active state (U10) of a call (on cell A). Used power level is the maximum supported by the MS.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F.

Support for state U10 of the Call Control protocol.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

The active state (U10) of a mobile call (on cell A). Used power level is the maximum supported by the MS.

Test Procedure

The MS is in the active state (u10) of a call on cell A. The SS sends a HANDOVER COMMAND on the main DCCH. The MS shall begin to send access bursts at the commanded power level on the new DCCH to cell B. With the exception of normal BCCH signalling, the SS does not transmit anything on cell B (thus causing a time-out of T3124). The MS shall re-establish the old link on cell A and send a HANDOVER FAILURE within 3 seconds from the transmission of HANDOVER COMMAND, using the old power level.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
0	SS	-	The SS records the power level in the layer 1 header of the last SACCH message sent by the MS before step 1.
1	SS -> MS	HANDOVER COMMAND	Channel description: non-hopping, full rate. Synchronization Indication: non synchronized.
2	MS -> SS	HANDOVER ACCESS	Several messages are sent, all with correct Handover References.
3	MS -> SS	HANDOVER FAILURE	Sent on old channel, RR cause value = “Abnormal release, unspecified", "Abnormal release, channel unacceptable", "Abnormal release, timer expired", "Abnormal release, no activity on the radio path" or "Protocol error unspecified". Shall be sent within 3 seconds from the transmission of HANDOVER COMMAND.
4	SS	-	The SS checks that the power level reported in the layer 1 header of the SACCH message that is sent in the first SACCH multiframe following the SABM is the same as in step 0.

Specific Message Contents

None.

26.6.6 Test of frequency redefinition

The Frequency Redefinition procedure is used by the network to change the frequencies and hopping sequences of the allocated channels.

26.6.6.1 Frequency redefinition

26.6.6.1.1 Conformance requirements

An MS, after receiving a FREQUENCY REDEFINITION message, shall start using the new frequencies and hopping sequence in the correct time slot when the MS is allocated a dedicated channel.

The behaviour described in the test purpose is applied for each combination of the value T(k) (k = 1,2,3) and for each supported dedicated channel type.

References

GSM 04.08 sections 3.4.5, 9.1.13 and 10.5.2.13.

26.6.6.1.2 Test purpose

To verify that the MS, after receiving a Frequency Redefinition message, starts using the new frequencies and hopping sequence at the time indicated in the message.

26.6.6.1.3 Method of test

Initial Conditions

System Simulator:

1 cell, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs. The cell allocation is set to $CA_{PGSM}(1)$ or $CA_{DCS}(1)$, depending on the band of operation of the Mobile Station (See PICS/PIXIT), before each execution of this test.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Supported rate(s) of TCH: TCH/F and/or TCH/H.

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

Test parameters:

P-GSM 900:

$ca_{PGSM}(1)$ is set to 64.
An arbitrary subset $CA_{PGSM}(1)$ of the set {1,...,124} containing $ca_{PGSM}(1)$ elements is drawn.
An element B of the set $CA_{PGSM}(1)$ is arbitrarily chosen.

An arbitrary value $ca_{PGSM}(2)$ in the range 20,...,63 is chosen.
An arbitrary subset $CA_{PGSM}(2)$ of the set {1,...,124} with $ca_{PGSM}(2)$ elements and containing B is chosen.

An arbitrary value $ca_{PGSM}(3)$ in the range 4,...,19 is chosen.
An arbitrary subset $CA_{PGSM}(3)$ of the set {1,...,124} with $ca_{PGSM}(3)$ elements and containing B is chosen.

For j = 1,2,3, values $ma_{PGSM}(j)$ in the range j,...,$ca_{PGSM}(j)$-1 and values $MAIO_{PGSM}(j)$ in the range 0,...,$ma_{PGSM}(j)$-1 are arbitrarily chosen.

Subsets $MA_{PGSM}(j)$ of $CA_{PGSM}(j)$ not containing B and having ma(j) elements are arbitrarily chosen.

DCS 1 800:

$ca_{DCS}(1)$ is set to 64.

An arbitrary subset $CA_{DCS}(1)$ of the set {700,...,812} containing $ca_{DCS}(1)$ elements is chosen.

An element B of the set $CA_{DCS}(1)$ is arbitrarily chosen. $CA_{DCS}(1)$ is then coded using the Variable Bit

Map coding scheme.

An arbitrary value $ca_{DCS}(2)$ in the range 17,...,63 is chosen.

An arbitrary subset $CA_{DCS}(2)$ of the set {700,...,812} with $ca_{DCS}(2)$ elements and containing B is chosen. $CA_{DCS}(2)$ is then coded using the Variable Bit Map coding scheme.

An arbitrary value $ca_{DCS}(3)$ in the range 4,...,16 is chosen.

An arbitrary subset $CA_{DCS}(3)$ of the set {700,...,812} with $ca_{DCS}(3)$ elements and containing B is chos $CA_{DCS}(3)$ is then coded according to the specific message contents.

For j = 1,2,3, values $ma_{DCS}(j)$ in the range j,...,$ca_{DCS}(j)$-1 and values $MAIO_{DCS}(j)$ in the range 0,...,$ma_{DCS}(j$ are arbitrarily chosen.

Subsets $MA_{DCS}(j)$ of $CA_{DCS}(j)$ not containing B and having $ma_{DCS}(j)$ elements are arbitrarily chosen.

DCS 1 800 and GSM 900

Let T(1) = 91, T(2) = 42 000.
An arbitrary value T(3) in the range 92,...,29999 is chosen.

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns a dedicated channel (TCH/F, TCH/H or SDCCH, as defined by the execution counter R). Then the SS sends a FREQUENCY REDEFINITION message, which modifies the frequencies/hopping sequence to be used by the MS. The MS shall then, at the TDMA frame defined by the contents of the "Starting Time" information element , use the new frequencies/hopping sequence. (The value of T(2) ensures that the MS believes the Starting Time has passed and so the MS shall start transmitting immediately. Immediately being in the scope of this test no later than 73 Frames for SDCCH/8 or TCH/F and 90 Frames for TCH/H after the SS sends the last burst of the first L2 frame containing the beginning of the FREQUENCY REDEFINITION message. The range for T(3) ensures that the MS has to wait until the designated frame before starting transmission on the new frequencies.)

The verification is performed at the RF burst level. The MS transmits the standard test signal C1 (annex 5), and for the TCH case, the SS checks the received pattern with the expected pattern. For the SDCCH case the MS transmits fill frames, and the SS checks for each burst whether the burst is transmitted at the right frequency.

Maximum Duration of Test

3 * (number of supported channels * T(3) + 7)

Expected Sequence

This sequence is performed for every combination of execution counters K = 1,2,3 and R = 1,2,3:

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	--------	--------	The SS checks that the MS is transmitting on the correct frequencies without delay.
6	SS -> MS	FREQUENCY REDEFINITION	See description 1 below.
7	--------	--------	The SS checks that the MS is transmitting on the correct frequencies and that the transmissions started in the correct frame.
8	SS -> MS	FREQUENCY REDEFINITION	See description 2 below.
9	--------	--------	The SS checks that the MS is transmitting on the correct frequencies and that the transmissions started in the correct frame.
10	SS -> MS	CHANNEL RELEASE	

For K=1, R = 1,2,3 T(K) = T(1);
K=2, R = 1,2,3 T(K) = T(2);
K=3, R = 1,2,3 T(K) = T(3).

Specific Message Contents

GSM 900:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
L2 pseudo length	value dependent on the length of the Mobile Allocation and thus on the number of channels in CAPGSM(1).
Channel Description	
Channel type and TDMA offset	SDCCH/8 arbitrary offset, for R=1 Bm + ACCHs for R=2 Lm + ACCHs arbitrary offset, for R=3
Timeslot number	arbitrarily selected by
TSC	arbitrarily selected
Hopping channel	RF hopping channel
MAIO	MAIOPGSM(1)
HSN	0
Request reference	corresponds to the Channel Request
Timing advance	30 bit periods
Mobile Allocation	corresponds to set MAPGSM(1)
Starting Time	not present
IA rest octets	all bits are set to spare

FREQUENCY REDEFINITION (Description 1)

Information Element	value/remark
Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101011
Channel Description	
Channel type	SDCCH/8 offset not changed, for R=1
and TDMA offset	Bm + ACCHs for R=2
	Lm + ACCHs offset not changed, for R=3
Timeslot number	not changed
TSC	not changed
Hopping channel	RF hopping channel
MAIO	MAIOPGSM(2)
HSN	0
Mobile Allocation	corresponds to set MAPGSM(2)
Starting Time	The last burst of the first L2 frame containing the beginning of this message is transmitted in frame number X. The starting time is set to frame number (X plus T(K) modulo 42 432).
Cell Channel Description	
Information element identifier	62H
contents	corresponds to set CAPGSM(2) with "Format ID" set to "bit map 0".

FREQUENCY REDEFINITION (Description 2)

Information Element	value/remark
Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101011
Channel Description	
Channel type	SDCCH/8 offset not changed, for R=1
and TDMA offset	Bm + ACCHs, for R=2
	Lm + ACCHs offset not changed, for R=3
Timeslot number	not changed
TSC	not changed
Hopping channel	RF hopping channel
MAIO	MAIOPGSM(3)
HSN	0
Mobile Allocation	corresponds to set MAPGSM(3)
Starting Time	The last burst of the first L2 frame containing the beginning of this message is transmitted in frame number X. The starting time is set to frame number (X plus T(K) modulo 42 432).
Cell Channel Description	
Information element identifier	62H
contents	corresponds to set CAPGSM(3) with "Format ID" set to "bit map 0".

DCS 1 800:

IMMEDIATE ASSIGNMENT

Information Element	value/remark
L2 pseudo length	value dependent on the length of the Mobile Allocation and thus on the number of channels in CADCS(1).
Channel Description	
Channel type and TDMA offset	SDCCH/8 arbitrary offset, for R=1 Bm + ACCHs for R=2 Lm + ACCHs arbitrary offset, for R=3
Timeslot number	arbitrarily selected
TSC	arbitrarily selected
Hopping channel	RF hopping channel
MAIO	MAIODCS(1)
HSN	0
Request reference	corresponds to the Channel Request
Timing advance	30 bit periods
Mobile Allocation	corresponds to set MADCS(1)
Starting Time	not present
IA rest octets	all bits are set to spare

FREQUENCY REDEFINITION (Description 1)

Information Element	value/remark
Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101011
Channel Description	
Channel type and TDMA offset	SDCCH/8 offset not changed, for R=1 Bm + ACCHs for R=2 Lm + ACCHs offset not changed, for R=3
Timeslot number	not changed
TSC	not changed
Hopping channel	RF hopping channel
MAIO	MAIODCS(2)
HSN	0
Mobile Allocation	corresponds to set MADCS(2)
Starting Time	The last burst of the first L2 frame containing the beginning of this message is transmitted in frame number X. The starting time is set to frame number (X plus T(K) modulo 42 432).
Cell Channel Description	
Information element identifier	62H
contents	K = 1 - corresponds to set CADCS(2) with "Format ID" set to " Variable Bit Map" K = 2- corresponds to set CADCS(2) with "Format ID" set to " Variable Bit Map" K = 3 - corresponds to set CADCS(2) with "Format ID" set to " Variable Bit Map"

FREQUENCY REDEFINITION (Description 2)

Information Element	value/remark
Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101011
Channel Description	
Channel type and TDMA offset	SDCCH/8 offset not changed, for R=1 Bm + ACCHs, for R=2 Lm + ACCHs offset not changed, for R=3
Timeslot number	not changed
TSC	not changed
Hopping channel	RF hopping channel
MAIO	MAIODCS(3)
HSN	0
Mobile Allocation	corresponds to set MADCS(3)
Starting Time	The last burst of the first L2 frame containing the beginning of this message is transmitted in frame number X. The starting time is set to frame number (X plus T(K) modulo 42 432).
Cell Channel Description	
Information element identifier	62H
contents	K = 1 - corresponds to set CADCS(3) with "Format ID" set to "Range 1024" K = 2- corresponds to set CADCS(3) with "Format ID" set to "Range 256" K = 3 - corresponds to set CADCS(3) with "Format ID" set to "Range 512"

26.6.7 Test of the channel mode modify procedure

The channel mode modify procedure allows the network to request the MS to change the channel mode for one channel. If the mobile station does not correctly respond to the CHANNEL MODE MODIFY message (with a positive acknowledgement if the new channel mode is supported, with a negative acknowledgement if the new channel mode is not supported), the network may try to repeat the procedure, release the connection, or continue to wait for the acknowledgement (the maximum time resulting from layer two re-transmissions and MS reaction time being around 5 seconds).

26.6.7.1 Test of the channel mode modify procedure / full rate

This test is only applicable to an MS supporting TCH/F.

26.6.7.1.1 Conformance requirement

When the MS has received the CHANNEL MODE MODIFY message, the mobile station changes the mode for the indicated channel and then replies by a CHANNEL MODE MODIFY ACKNOWLEDGE message indicating the new channel mode.

If the mobile station does not support the indicated mode, it shall retain the old mode and return the associated channel mode information in the CHANNEL MODE MODIFY ACKNOWLEDGE message.

References

GSM 04.08, subclauses 3.4.6.2 and 3.4.6.3.

26.6.7.1.2 Test purpose

To verify that the MS, in an RR connected state, acknowledges a CHANNEL MODE MODIFY message by sending a CHANNEL MODE MODIFY ACKNOWLEDGEMENT message specifying and switching to the correct mode.

- the new mode if that mode is supported.

- the old mode if the new mode is not supported.

This shall be verified for the channel modes

- signalling only.
- speech full rate version 1.
- data 9,6 Kb/s.
- data 4,8 Kb/s full rate.
- data 2,4 Kb/s full rate.

26.6.7.1.3 Method of test

Initial Conditions

System Simulator:
1 cells, default parameters.

Mobile Station:
The MS is "idle updated", with TMSI allocated.

Related PICS/PIXIT Statements

- Type of MS (P-GSM 900 or EGSM or DCS 1 800).
- The MS supports TCH/F (Y/N).
- Bearer Capabilities supported by the MS.
- Channel modes supported by the MS:
  * MS supports speech full rate version 1 (p1 = Y/N);
  * MS supports data 9,6 Kb/s (p2 = Y/N);
  * MS supports data 4,8 Kb/s full rate (p3 = Y/N);
  * MS supports data 2,4 Kb/s full rate (p4 = Y/N).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test procedure

A Mobile Terminated call is initiated , however following the Channel Request received from the Mobile Station, the SS sends an Immediate Assignment to the MS commanding it to go to a TCH/F. This sets the Channel Mode automatically to "Signalling Only".

The SS then sends a series of CHANNEL MODE MODIFY messages to the MS. Each time it is checked that the MS responds with a CHANNEL MODE MODIFY ACKNOWLEDGE message specifying:

- the channel mode that has been specified in the CHANNEL MODE MODIFY message, if the MS supports that mode (this mode then becomes the "channel mode in use");

- the channel mode that was in use when the CHANNEL MODE MODIFY message has been received, if the MS does not support the channel mode specified in the CHANNEL MODE MODIFY message.

Maximum Duration of Test

30 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS->MS	PAGING REQUEST TYPE 1	Sent on correct paging subchannel.
2	MS->SS	CHANNEL REQUEST	Establishment cause indicates "answer to paging".
3	SS->MS	IMMEDIATE ASSIGNMENT	Assignment to a non hopping TCH/F.
4	SS->MS	CHANNEL MODE MODIFY	
5	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
6	SS->MS	CHANNEL MODE MODIFY	
7	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
8	SS->MS	CHANNEL MODE MODIFY	
9	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
10	SS->MS	CHANNEL MODE MODIFY	
11	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
12	SS->MS	CHANNEL MODE MODIFY	
13	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
14	SS->MS	CHANNEL RELEASE	

Specific Message Contents

CHANNEL MODE MODIFY

Information Element	value/remark
Channel description	describes the already assigned dedicated channel.
Channel mode	
Mode	in step 4: speech full rate version 1 in step 6: data 9,6 Kb/s in step 8: data 4,8 Kb/s full rate in step 10: data 2,4 Kb/s full rate in step 12 signalling only

CHANNEL MODE MODIFY ACKNOWLEDGE

Channel mode	
Mode	in step 2: signalling only in step 4: if p2 = Y: data 9,6 Kb/s if p2 = N: signalling only in step 6: if p3 = Y: data 4,8 Kb/s full rate if p3 = N: same as in step 4 in step 8: if p4 = Y: data 2,4 Kb/s full rate if p4 = N: same as in step 6 in step 10: if p1 = Y: speech full rate version 1 if p1 = N: same as in step 8

26.6.7.2 Test of the channel mode modify procedure / half rate

This test is only applicable to an MS supporting TCH/H.

26.6.7.2.1 Conformance requirement

When the MS has received the CHANNEL MODE MODIFY message, the mobile station changes the mode for the indicated channel and then replies by a CHANNEL MODE MODIFY ACKNOWLEDGE message indicating the new channel mode.

If the mobile station does not support the indicated mode, it shall retain the old mode and return the associated channel mode information in the CHANNEL MODE MODIFY ACKNOWLEDGE message.

References

GSM 04.08, subclauses 3.4.6.2 and 3.4.6.3.

26.6.7.2.2 Test purpose

To verify that the MS, in an RR connected state, acknowledges a CHANNEL MODE MODIFY message by sending a CHANNEL MODE MODIFY ACKNOWLEDGEMENT message specifying and switches to the correct mode:

- the new mode if that mode is supported;
- the old mode if the new mode is not supported.

This shall be verified for the channel modes:

- signalling only;
- speech half rate version 1;
- data 4,8 Kb/s half rate;
- data 2,4 Kb/s half rate.

26.6.7.2.3 Method of test

Initial Conditions

System Simulator:
1 cells, default parameters.

Mobile Station:
The MS is "idle updated", with TMSI allocated.

Related PICS/PIXIT Statements

- Type of MS (P-GSM 900 or EGSM or DCS 1 800).
- The MS supports TCH/H (Y/N).
- Bearer Capabilities supported by the MS.
- Channel modes supported by the MS:
  * MS supports speech half rate version 1 (q1 = Y/N);
  * MS supports data 4,8 Kb/s half rate (q2 = Y/N);
  * MS supports data 2,4 Kb/s half rate (q3 = Y/N).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test procedure

A Mobile Terminated call is initiated , however following the Channel Request received from the Mobile Station, the SS sends an Immediate Assignment to the MS commanding it to go to a TCH/H. This sets the Channel Mode automatically to "Signalling Only".

The SS then sends a series of CHANNEL MODE MODIFY messages to the MS. Each time it is checked that the MS responds with a CHANNEL MODE MODIFY ACKNOWLEDGE message specifying:

- the channel mode that has been specified in the CHANNEL MODE MODIFY message, if the MS supports that mode (this mode then becomes the "channel mode in use");

- the channel mode that was in use when the CHANNEL MODE MODIFY message has been received, if the MS does not support the channel mode specified in the CHANNEL MODE MODIFY message.

Maximum Duration of Test

30 seconds.

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	Assignment to a non hopping TCH/H.
4	SS->MS	CHANNEL MODE MODIFY	
5	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
6	SS->MS	CHANNEL MODE MODIFY	
7	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
8	SS->MS	CHANNEL MODE MODIFY	
9	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
10	SS->MS	CHANNEL MODE MODIFY	
11	MS->SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
12	SS->MS	CHANNEL RELEASE	

Specific Message Contents

CHANNEL MODE MODIFY

Information Element	value/remark
Channel description	describes the already assigned dedicated channel.
Channel mode	
Mode	in step 4: signalling only in step 6: data 4,8 Kb/s half rate in step 8: data 2,4 Kb/s half rate in step 10: speech half rate version 1

CHANNEL MODE MODIFY ACKNOWLEDGE

Information Element	value/remark
Channel mode	
Mode	in step 5: if q1 = Y: Speech half rate version 1 if q1 = N: signalling only in step 7: if q2 = Y: data 4,8 Kb/s half rate if q2 = N: same as in step 5 in step 9: if q3 = Y: data 2,4 Kb/s half rate if q3 = N: same as in step 7 in step 11: if q1 = Y: signalling only if q1 = N: same as in step 6.

26.6.8 Test of ciphering mode setting

The Ciphering Mode Setting Procedure can be used by the network to trigger the start and stop of stream ciphering.

The SS shall start and synchronize ciphering and deciphering according to GSM 03.20. The bitstream shall be generated by algorithm A5 (A5/1 or A5/2 as defined by the test case) using the encryption key Kc.

26.6.8.1 Ciphering mode / start ciphering

26.6.8.1.1 Conformance requirements

1. When the MS receives the CIPHERING MODE COMMAND message with Ciphering Mode Setting information element set to "start ciphering", the MS starts ciphering and deciphering with the algorithm indicated by the "algorithm identifier" field:

   - the MS responds with a CIPHERING MODE COMPLETE message in ciphered mode;
   - the ciphering uses the cipher key determined during the authentication procedure.

2. The MS responds to the AUTHENTICATION REQUEST message with an AUTHENTICATION RESPONSE message and continues to use the ciphering key obtained from the previous authentication procedure.

References

GSM 04.08 section 3.4.7.

26.6.8.1.2 Test purpose

To verify that the MS starts ciphering when it receives a CIPHERING MODE COMMAND message with Cipher Mode Setting = "Start Ciphering". To verify that it continues to use the old cipher key after it receives an AUTHENTICATION REQUEST whilst in ciphered mode.

26.6.8.1.3 Method of test

Initial Conditions

System Simulator:
1 cells, Radio_Link_Timeout set to 64.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Support for state U10 of the Call Control protocol.

Supported encryption algorithms: A5/1 and/or A5/2.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is made to originate a call. It shall send at least one CHANNEL REQUEST message. The SS sends an IMMEDIATE ASSIGNMENT and the MS shall answer with a CM SERVICE REQUEST. The SS sends an AUTHENTICATION REQUEST and the MS shall answer with AUTHENTICATION RESPONSE. Then the SS sends a CIPHERING MODE COMMAND, ordering the MS to start ciphering with an algorithm supported by the MS. After transmission of this command the SS starts deciphering. The MS shall respond with a CIPHERING MODE COMPLETE message in ciphered mode using the cipher key determined during the authentication procedure, and continue to establish the call with a SETUP message. After reception of the CIPHERING MODE COMPLETE the SS starts enciphering.

The SS then sends another AUTHENTICATION REQUEST and the MS shall respond with an AUTHENTICATION RESPONSE. The MS shall continue to use the old cipher key.

Finally the SS sends a CHANNEL RELEASE to end the test.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

This sequence is performed for execution counter, K=1, 2.

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Originating Call" NECI not set to 1
2	SS -> MS	IMMEDIATE ASSIGNMENT	
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	AUTHENTICATION REQUEST	
5	MS -> SS	AUTHENTICATION RESPONSE	
6	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "Start Ciphering; cipher with algorithm A5/K". The SS starts deciphering.
7	MS -> SS	CIPHERING MODE COMPLETE	Sent in ciphered mode using the cipher key determined in between steps 4&5. The SS start enciphering.
8	MS -> SS	SETUP	
9	SS -> MS	AUTHENTICATION REQUEST	Determines a new cipher key.
10	MS -> SS	AUTHENTICATION RESPONSE	Sent in ciphered mode using the cipher key determined in between steps 4&5.
11	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

CIPHERING MODE COMMAND

For	k = 1, A5/k = A5/1
For	k = 2, A5/k = A5/2

26.6.8.2 Ciphering mode / no ciphering

26.6.8.2.1 Conformance requirements

When the MS receives a CIPHERING MODE COMMAND message with Ciphering Mode Setting information element set to "no ciphering" the MS shall respond in non ciphered mode with a CIPHERING MODE COMPLETE message.

When the CIPHERING MODE COMMAND with Ciphering Mode Setting information element set to "no ciphering" is received as a response to a CM SERVICE REQUEST, the MS shall continue the establishment of the CM service.

References

GSM 04.08 section 3.4.7.

26.6.8.2.2 Test purpose

To verify that the MS does not start ciphering when it receives a CIPHERING MODE COMMAND message with Cipher Mode Setting = "No Ciphering".

26.6.8.2.3 Method of test

Initial Conditions

System Simulator:
1 cells, Radio_Link_Timeout set to 64.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Support for state U10 of the Call Control protocol.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is made to originate a call. It shall send at least one CHANNEL REQUEST message. The SS sends an IMMEDIATE ASSIGNMENT and the MS shall answer with a CM SERVICE REQUEST. The SS sends an AUTHENTICATION REQUEST and the MS shall answer with an AUTHENTICATION RESPONSE. Then the SS sends a CIPHERING MODE COMMAND, ordering the MS not to start ciphering. The MS shall respond with a CIPHERING MODE COMPLETE message in non-ciphered mode and continue to establish the call with a SETUP message.

Finally the SS sends a CHANNEL RELEASE to end the test.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Originating call; NECI not equal to 1.
2	SS -> MS	IMMEDIATE ASSIGNMENT	
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	AUTHENTICATION REQUEST	
5	MS -> SS	AUTHENTICATION RESPONSE	
6	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "No Ciphering".
7	MS -> SS	CIPHERING MODE COMPLETE	Sent in non-ciphered mode.
8	MS -> SS	SETUP	
11	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.8.3 Ciphering mode / old cipher key

26.6.8.3.1 Conformance requirements

When the MS receives the CIPHERING MODE COMMAND message with Ciphering Mode Setting information element set to "start ciphering", the MS starts ciphering and deciphering with the algorithm indicated by the "algorithm identifier" field. Also;

- the MS responds with a CIPHERING MODE COMPLETE message in the correct ciphered mode;

- the ciphering shall use the previously stored cipher key;

- in the case of a mobile originating speech call, the MS shall send a SETUP message after the completion of the ciphering procedure.

References

GSM 04.08 section 3.4.7.

26.6.8.3.2 Test purpose

To verify that the MS uses the stored cipher key when it receives a CIPHERING MODE COMMAND without a preceding authentication procedure.

26.6.8.3.3 Method of test

Initial Conditions

System Simulator:
1 cells, Radio_Link_Timeout = 64.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated and a known cipher key stored.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Support for state U10 of the Call Control protocol.

Supported encryption algorithms: A5/1 and/or A5/2.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is made to originate a call. It shall send at least one CHANNEL REQUEST message. The SS sends an IMMEDIATE ASSIGNMENT and the MS shall answer with a CM SERVICE REQUEST. The SS sends a CIPHERING MODE COMMAND, ordering the MS to start ciphering with a supported algorithm. After transmission of this command the SS starts deciphering. The MS shall respond with a CIPHERING MODE COMPLETE message in the commanded ciphered mode using the stored cipher key and continue to establish the call with a SETUP message. After reception of the CIPHERING MODE COMPLETE the SS starts enciphering.

Finally the SS sends a CHANNEL RELEASE to end the test.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Originating Call: NECI not equal to 1.
2	SS -> MS	IMMEDIATE ASSIGNMENT	
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "Start Ciphering", algorithm arbitrarily selected from those supported by the MS. The SS starts deciphering.
5	MS -> SS	CIPHERING MODE COMPLETE	Sent in commanded ciphered mode with the stored cipher key. The SS starts enciphering.
6	MS -> SS	SETUP	
7	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.8.4 Ciphering mode / change of mode, algorithm and key

Networks can be implemented that do not have the same ciphering algorithms on all base stations. In such networks changes of algorithms and ciphering mode may occur and calls will fail if MSs incorrectly handle commands or use an incorrect cipher key.

26.6.8.4.1 Conformance requirements

1 When the MS in the "not ciphered" mode, receives a CIPHERING MODE COMMAND message with the Ciphering Mode Setting information element set to "start ciphering", the MS shall load the cipher key stored in the SIM into the ME, use this key to start ciphering and deciphering with the algorithm indicated by the "algorithm identifier" field and, respond with a CIPHERING MODE COMPLETE message.

2 If the last timeslot of the message block containing a CIPHERING MODE COMMAND message occurs at time T, then the MS shall be ready to transmit the CIPHERING MODE COMPLETE message before T+500 ms.

3 When the MS receives an ASSIGNMENT COMMAND message containing a Cipher Mode Setting IE after receipt of a CIPHERING MODE COMMAND message, the MS shall perform the assignment, use the commanded mode and/or algorithm on the new channel, and not change the ciphering key.

4 When the MS receives a HANDOVER COMMAND message containing a Cipher Mode Setting IE after receipt of a CIPHERING MODE COMMAND message, the MS shall perform the handover, use the commanded mode and/or algorithm on the new channel, and not change the ciphering key.

5 When the MS in the "ciphered" mode receives a CIPHERING MODE COMMAND message with Cipher Mode Setting IE set to "no ciphering", the MS shall load the cipher key stored in the SIM into the ME, load the cipher key stored in the SIM into the ME, stop ciphering and deciphering and, respond with a CIPHERING MODE COMPLETE message.

6 When the MS receives an AUTHENTICATION REQUEST message, it shall process the challenge information and send back an AUTHENTICATION RESPONSE message to the network. The new ciphering key calculated from the challenge information shall overwrite the previous one and be stored on the SIM before the AUTHENTICATION RESPONSE message is transmitted. The ciphering key stored in the SIM shall be loaded in to the ME when any valid CIPHERING MODE COMMAND is received.

7 When the MS in the not ciphered mode receives a CIPHERING MODE COMMAND message with Cipher Mode Setting IE set to "no ciphering", the MS shall load the cipher key stored in the SIM into the ME, stop ciphering and deciphering and, respond with a CIPHERING MODE COMPLETE message.

8 If a handover fails then the operational parameters used when returning to the old channel are those applied before the HANDOVER COMMAND message was received.

9 If an assignment fails then the operational parameters used when returning to the old channel are those applied before the ASSIGNMENT COMMAND message was received.

References

Conformance requirement 1: GSM 04.08 sections 3.4.7.2 and 4.3.2.2.
Conformance requirement 2: GSM 04.13 section 5.2.7.
Conformance requirement 3: GSM 04.08 section 3.4.3.1.
Conformance requirement 4: GSM 04.08 section 3.4.4.1.
Conformance requirement 5: GSM 04.08 sections 3.4.7.2 and 4.3.2.2.
Conformance requirement 6: GSM 04.08 section 4.3.2.2.
Conformance requirement 7: GSM 04.08 section 3.4.7.2.
Conformance requirement 8: GSM 04.08 section 3.4.4.4.
Conformance requirement 9: GSM 04.08 section 3.4.3.3.

26.6.8.4.2 Test purpose

1 To verify that when the MS is in the "not ciphered" mode and receives the CIPHERING MODE COMMAND message with Ciphering Mode Setting information element set to "start ciphering", the MS uses the cipher key stored in the SIM to start ciphering and deciphering with the algorithm indicated by the "algorithm identifier" field and that the MS responds with a CIPHERING MODE COMPLETE message.

2 To verify that the MS is ready to transmit the CIPHERING MODE COMPLETE message before 500 ms after the end of the CIPHERING MODE COMMAND message.

3 To verify that when the MS receives an ASSIGNMENT COMMAND message containing a Cipher Mode Setting IE after receipt of a CIPHERING MODE COMMAND message, the MS shall perform the assignment, use the commanded mode and/or algorithm on the new channel, and not change the ciphering key.

4 To verify that when the MS receives a HANDOVER COMMAND message containing a Cipher Mode Setting IE after receipt of a CIPHERING MODE COMMAND message, the MS shall perform the handover, use the commanded mode and/or algorithm on the new channel, and not change the ciphering key

5 To verify that when the MS is in the "ciphered" mode and receives the CIPHERING MODE COMMAND message with Cipher Mode Setting IE set to "no ciphering", the MS loads the cipher key stored in the SIM into the ME, stops ciphering and deciphering and, responds with a CIPHERING MODE COMPLETE message.

6 To verify that the MS responds to an AUTHENTICATION REQUEST message with an AUTHENTICATION RESPONSE message and continues to use the cipher key obtained from the previous authentication procedure.

7 To verify that when the MS is in the "not ciphered" mode and receives the CIPHERING MODE COMMAND message with Ciphering Mode Setting information element set to "no ciphering", the does not start ciphering or deciphering, but does respond with a CIPHERING MODE COMPLETE message.

8 To verify that when the MS receives a HANDOVER COMMAND message and the handover fails, the MS sends a HANDOVER FAILURE message on the old channel using the old ciphering mode and (if ciphered) the old algorithm and old key.

9 To verify that when the MS receives an ASSIGNMENT COMMAND message and the assignment fails, the MS sends an ASSIGNMENT FAILURE message on the old channel using the old ciphering mode and (if ciphered) the old algorithm and old key.

26.6.8.4.3 Method of test

Initial Conditions

System Simulator:

1 cell, with a legal combination of CCCH_CONF with SDCCH/4s or SDCCH/8s is chosen arbitrarily by the SS.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated and a known cipher key, K, stored in the SIM.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).
Supported ciphering algorithms: A5/1 and/or A5/2.
Power class of mobile station.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is paged. The MS shall send at least one CHANNEL REQUEST message. The SS sends an IMMEDIATE ASSIGNMENT and the MS shall answer with a PAGING RESPONSE message.

The SS sends a CIPHERING MODE COMMAND, ordering the MS to start ciphering with a supported algorithm. After transmission of this command the SS starts deciphering. The MS shall respond with a CIPHERING MODE COMPLETE message in the commanded ciphered mode using the cipher key K. After reception of the CIPHERING MODE COMPLETE the SS starts enciphering. The MS shall be ready to transmit the CIPHERING MODE COMPLETE message before 500 ms after the end of the CIPHERING MODE COMMAND message.

The term "ready to transmit" is defined in GSM 04.13.

The SS sends an AUTHENTICATION REQUEST message to the MS. Cipher key L is calculated. The MS shall send an AUTHENTICATION RESPONSE message to the SS.

The SS sends a HANDOVER COMMAND (for a finely synchronized intra-BTS handover) with the Cipher Mode Setting IE set to "no ciphering". The MS shall transmit the HANDOVER COMPLETE on the commanded channel in non ciphered mode.

The SS sends an ASSIGNMENT COMMAND message containing a Cipher Mode Setting IE set to "start ciphering". The MS shall start transmitting on the commanded channel using the commanded algorithm and cipher key K. The MS shall transmit the ASSIGNMENT COMPLETE message.

The SS sends a CIPHERING MODE COMMAND, ordering the MS to stop ciphering. After transmission of this command the SS stops deciphering. The MS shall respond with a CIPHERING MODE COMPLETE message in non ciphered mode. After reception of the CIPHERING MODE COMPLETE the SS stops enciphering.

The SS sends a HANDOVER COMMAND (for a finely synchronized intra-BTS handover) with the Cipher Mode Setting IE set to "start ciphering". The MS shall transmit the HANDOVER COMPLETE on the commanded channel in ciphered mode using cipher key L and command algorithm.

The SS sends a HANDOVER COMMAND (for a finely synchronized intra-BTS handover) with the Cipher Mode Setting IE set to "start ciphering" and the algorithm identifier indicating the algorithm currently in use. The MS shall transmit the HANDOVER COMPLETE on the commanded channel in ciphered mode using the same algorithm as before the handover.

The SS sends an ASSIGNMENT COMMAND message containing a Cipher Mode Setting IE set to "no ciphering". The MS shall start transmitting on the commanded channel in non-ciphered mode. The MS shall transmit the ASSIGNMENT COMPLETE message.

The SS sends a CIPHERING MODE COMMAND, containing a Cipher Mode Setting IE set to "no ciphering". The MS shall respond with a CIPHERING MODE COMPLETE message.

The SS sends an AUTHENTICATION REQUEST message to the MS. Cipher key M is calculated. The MS shall send an AUTHENTICATION RESPONSE message to the SS.

The SS sends a HANDOVER COMMAND (for a finely synchronized intra-BTS handover) with the Cipher Mode Setting IE set to "start ciphering". The MS shall transmit the HANDOVER COMPLETE on the commanded channel using the commanded algorithm and cipher key L.

The SS sends a HANDOVER COMMAND (for a finely synchronized intra-BTS handover) with the Cipher Mode Setting IE set to "no ciphering". The SS does not activate the commanded channel. The MS's transmissions on the new channel need not be monitored. The MS shall transmit the HANDOVER FAILURE message on the "old" channel using the "old" algorithm and cipher key L and commanded algorithm.

The SS sends an ASSIGNMENT COMMAND message containing a Cipher Mode Setting IE set to "start ciphering". The SS does not activate the commanded channel. The MS's transmissions on the new channel need not be monitored. The MS shall transmit the ASSIGNMENT FAILURE message on the "old" channel using the "old" algorithm and cipher key L.

If the MS only supports one ciphering algorithm then the SS sends a CHANNEL RELEASE message.

If the MS supports more than one ciphering algorithm then the following steps are performed:

The SS sends an ASSIGNMENT COMMAND message containing a Cipher Mode Setting IE set to "start ciphering" and the Algorithm Identifier indicating a different supported algorithm to the one in use. The MS shall start transmitting on the commanded channel using the commanded algorithm. The MS shall transmit the ASSIGNMENT COMPLETE message.

The SS sends a HANDOVER COMMAND (for a finely synchronized intra-BTS handover) containing a Cipher Mode Setting IE set to "start ciphering" and the Algorithm Identifier indicating a different supported algorithm to the one in use. The MS shall transmit the HANDOVER COMPLETE on the commanded channel using the commanded algorithm.

The SS sends a CHANNEL RELEASE to end the test.

Maximum Duration of Test

3 minutes.

Expected Sequence

For MSs that only support one ciphering algorithm, the SS shall use step 61A. For MSs that support more than one ciphering algorithm, the SS shall use step 61B and the subsequent steps.

NOTE: TS GSM 04.08 appears to be unclear as to whether timer T3240 shall or shall not be started as a result of the AUTHENTICATION REQUEST messages sent in steps 8 and 44. To allow a variety of test equipment implementations, the IDENTITY REQUEST messages are included in order to avoid an unexpected expiry of timer T3240 prior to the end of the expected sequence.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	To either SDCCH4 or SDCCH8 depending upon CCCH_CONF arbitrarily chosen.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "Start Ciphering", algorithm arbitrarily selected from those supported by the MS. The SS starts deciphering with the selected algorithm.
6	MS -> SS	CIPHERING MODE COMPLETE	Sent in ciphered mode using key "K", the stored cipher key, and the commanded algorithm. This message shall be ready to be transmitted before 500 ms after the completion of step 5.
7	SS		- The SS starts enciphering using key "K".
8	SS -> MS	AUTHENTICATION REQUEST	Contains a new Ciphering Key Sequence Number which is associated with the new cipher key, "L".
9	MS -> SS	AUTHENTICATION RESPONSE	
10	SS -> MS	HANDOVER COMMAND	Includes Cipher Mode Setting IE set to "No Ciphering".
11	SS	-	The SS activates the new channel without ciphering.
12	MS -> SS	HANDOVER ACCESS	These four HANDOVER ACCESS messages are sent on the new channel in non ciphered mode.
13	MS -> SS	HANDOVER ACCESS	
14	MS -> SS	HANDOVER ACCESS	
15	MS -> SS	HANDOVER ACCESS	
16	MS -> SS	HANDOVER COMPLETE	Sent in non ciphered mode on the new channel.
17	SS -> MS	ASSIGNMENT COMMAND	Includes Cipher Mode Setting IE set to "Start Ciphering", with algorithm arbitrarily selected from those supported by the MS.
18	SS		The SS activates the new channel with enciphering and deciphering enabled and using cipher key "K".
19	MS -> SS	ASSIGNMENT COMPLETE	Sent on the new channel in ciphered mode using key "K" and the commanded algorithm.
20	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "No Ciphering". The SS starts receiving in non ciphered mode.
21	MS -> SS	CIPHERING MODE COMPLETE	Sent in non ciphered mode. This message shall be ready to be transmitted before 500 ms after the completion of step 20.
22	SS	-	The SS starts transmitting in non ciphered mode.
23	SS -> MS	HANDOVER COMMAND	Includes Cipher Mode Setting IE set to "Start Ciphering", with algorithm "X" arbitrarily selected from those supported by the MS.
24	SS		The SS activates the new channel with enciphering and deciphering enabled and using cipher key "L".
25	MS -> SS	HANDOVER ACCESS	These four HANDOVER ACCESS messages are sent on the new channel in the non ciphered mode.
26	MS -> SS	HANDOVER ACCESS	
27	MS -> SS	HANDOVER ACCESS	
28	MS -> SS	HANDOVER ACCESS	
29	MS -> SS	HANDOVER COMPLETE	Sent on the new channel in ciphered mode using key "L" and algorithm "X".
30	SS -> MS	IDENTITY REQUEST	
31	MS -> SS	IDENTITY RESPONSE	
32	SS -> MS	HANDOVER COMMAND	Includes Cipher Mode Setting IE set to "Start Ciphering", with algorithm identifier set to "X".
33	SS		The SS activates the new channel with enciphering and deciphering enabled.
34	MS -> SS	HANDOVER ACCESS	These four HANDOVER ACCESS messages are sent on the new channel in the non ciphered mode.
35	MS -> SS	HANDOVER ACCESS	
36	MS -> SS	HANDOVER ACCESS	

37	MS -> SS	HANDOVER ACCESS	
38	MS -> SS	HANDOVER COMPLETE	Sent on the new channel in ciphered mode using algorithm "X".
39	SS -> MS	ASSIGNMENT COMMAND	Includes Cipher Mode Setting IE set to "No Ciphering".
40	SS		The SS activates the new channel without ciphering.
41	MS -> SS	ASSIGNMENT COMPLETE	Sent in non-ciphered mode on the new channel.
42	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "No Ciphering".
43	MS -> SS	CIPHERING MODE COMPLETE	Sent in non ciphered mode. This message shall be ready to be transmitted before 500 ms after the completion of step 42.
44	SS -> MS	AUTHENTICATION REQUEST	Contains a new Ciphering Key Sequence Number which is associated with the new cipher key, "M".
45	MS -> SS	AUTHENTICATION RESPONSE	
46	SS -> MS	HANDOVER COMMAND	Includes Cipher Mode Setting IE set to "Start Ciphering", with algorithm "Y" arbitrarily selected from those supported by the MS.
47	SS		The SS activates the new channel with enciphering and deciphering enabled and using cipher key "L".
48	MS -> SS	HANDOVER ACCESS	These four HANDOVER ACCESS messages are sent on the new channel in the non ciphered mode.
49	MS -> SS	HANDOVER ACCESS	
50	MS -> SS	HANDOVER ACCESS	
51	MS -> SS	HANDOVER ACCESS	
52	MS -> SS	HANDOVER COMPLETE	Sent on the new channel in ciphered mode using key "L"
53	SS -> MS	HANDOVER COMMAND	Includes Cipher Mode Setting IE set to "No Ciphering".
54	SS, MS		The SS does not activate the new channel The MS's transmissions on the new channel need not be monitored.
55	MS -> SS	HANDOVER FAILURE	sent on old channel using algorithm "Y" and key "L".
56	SS -> MS	IDENTITY REQUEST	
57	MS -> SS	IDENTITY RESPONSE	
58	SS -> MS	ASSIGNMENT COMMAND	Includes Cipher Mode Setting IE set to "No Ciphering".
59	SS, MS		The SS does not activate the new channel The MS's transmissions on the new channel need not be monitored.
60	MS -> SS	ASSIGNMENT FAILURE	sent on old channel using algorithm "Y" and key "L".
61A	SS -> MS	CHANNEL RELEASE	
61B	SS -> MS	ASSIGNMENT COMMAND	Includes Cipher Mode Setting IE set to "Start Ciphering", with algorithm "Z" arbitrarily selected from those supported by the MS but different to algorithm "Y".
62B	SS		The SS activates the new channel with enciphering and deciphering enabled.
63B	MS -> SS	ASSIGNMENT COMPLETE	Sent on the new channel in ciphered mode using key "L" and algorithm "Z".
64B	SS -> MS	HANDOVER COMMAND	Includes Cipher Mode Setting IE set to "Start Ciphering" and the algorithm identifier set to "Y".
65B	SS		The SS activates the new channel with enciphering and deciphering enabled.
66B	MS -> SS	HANDOVER ACCESS	These four HANDOVER ACCESS messages are sent on the new channel in the non ciphered mode.
67B	MS -> SS	HANDOVER ACCESS	
68B	MS -> SS	HANDOVER ACCESS	
69B	MS -> SS	HANDOVER ACCESS	
70B	MS -> SS	HANDOVER COMPLETE	Sent on the new channel in ciphered mode using key "L" and algorithm "Y".
71B	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

ASSIGNMENT COMMAND

Information Element	value/remark
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101110
Channel Description	
- Channel Type	SDCCH/8 or SDCCH4 (same type as old channel)
- TDMA offset	Chosen arbitrarily, but different to the one in use (SDCCH4), otherwise arbitrary.
- Timeslot Number	Chosen arbitrarily, but different to the one in use (SDCCH8) or Timeslot zero.(SDCCH4)
- Training Sequence Code	5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	Channel number 30.
Power Command	
- Power level	Chosen arbitrarily but within the range supported by the MS.
Cipher Mode Setting	As specified above.
All other information elements:	Not present.

HANDOVER COMMAND

Information Element	value/remark
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101011
Cell Description	
- Network Colour Code	1
- Base station Colour Code	5
- BCCH Carrier Number	Channel Number 30.
Channel Description	
- Channel Type	SDCCH/8 or SDCCH4(same type as old channel)
- TDMA offset	Chosen arbitrarily, but different to the one in use(SDCCH4), otherwise arbitrary.
- Timeslot Number	Chosen arbitrarily, but different to the one in use (SDCCH8) or Timeslot zero.(SDCCH4)
- Training Sequence Code	5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	Channel Number 30.
Handover Reference	
- Handover Reference Value	Chosen arbitrarily.
Power Command	
- Power level	Chosen arbitrarily, but within the range supported by the MS.
Synchronization Indication	
- Synchronization indication	synchronized.
- Report observed time difference	not included.
- Normal cell indication	out of range ignored.
Cipher Mode setting	As specified above.
All other information elements:	Not present.

CIPHER MODE COMMAND

Information Element	value/remark
As default message contents, except:	
Cipher Mode Setting	
- Algorithm Identifier	As specified above.
- Cipher Mode Set	As specified above.

DCS 1 800:

ASSIGNMENT COMMAND

Information Element	value/remark
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101110
Channel	
- Channel Type	SDCCH/8 or SDCCH4(same type as old channel)
- TDMA offset	Chosen arbitrarily, but different to the one in use (SDCCH4), otherwise arbitrary.
- Timeslot Number	Chosen arbitrarily, but different to the one in use (SDCCH8) or Timeslot zero.(SDCCH4)
- Training Sequence Code	5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	Channel number 650.
Power Command	
- Power level	Chosen arbitrarily, but within the range supported by the MS.
Cipher Mode Setting	As specified above.
All other information elements:	Not present.

HANDOVER COMMAND

Information Element	value/remark
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101011
Cell Description	
- Network Colour Code	1
- Base station Colour Code	5
- BCCH Carrier Number	Channel Number 650.
Channel Description	
- Channel Type	SDCCH/8 or SDCCH4(same type as old channel)
- TDMA offset	Chosen arbitrarily, but different to the one in use (SDCCH4), ortherwise arbitrary.
- Timeslot Number	Chosen arbitrarily, but different to the one in use (SDCCH8) or Timeslot zero.(SDCCH4).
- Training Sequence Code	5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	Channel Number 650.
Handover Reference	
- Handover Reference Value	Chosen arbitrarily.
Power Command	
- Power level	Chosen arbitrarily, but within the range supported by the MS.
Synchronization Indication	
- Synchronization indication	synchronized.
- Report observed time difference	not included.
- Normal cell indication	out of range ignored.
Cipher Mode setting	As specified above.
All other information elements:	Not present.

26.6.8.5 Ciphering mode / IMEISV request

If the MS does not supply the IMEISV when requested, the network will not know whether or not the MS is type approved, i.e. whether or not it has passed any tests.

If the MS supplies its IMEISV when not requested, this may cause calls to systematically fail.

26.6.8.5.1 Conformance requirements

1. When the MS receives the CIPHERING MODE COMMAND message with Cipher Response bit set to "IMEISV shall be included", the MS shall include the IMEISV in the Mobile Identity IE in the CIPHERING MODE COMPLETE message.
2. When the MS receives the CIPHERING MODE COMMAND message with Cipher Response bit set to "IMEISV shall not be included", the MS shall not include the Mobile Identity IE in the CIPHERING MODE COMPLETE message.

References

Conformance requirement 1: GSM 04.08 sections 3.4.7.2 and 9.1.10.1.
Conformance requirement 2: GSM 04.08 section 9.1.10.1.

26.6.8.5.2 Test purpose

To verify that the MS supplies its IMEISV in the CIPHERING MODE COMPLETE message when it receives a CIPHERING MODE COMMAND message with a Cipher Response bit set to "IMEISV shall be included".

To verify that the MS does not supply any Mobile Identity IE in the CIPHERING MODE COMPLETE message when it receives a CIPHERING MODE COMMAND message with a Cipher Response bit set to "IMEISV shall not be included".

26.6.8.5.3 Method of test

Initial Conditions

System Simulator:
1 cell.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

IMEISV of the MS.
Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is paged. It shall send at least one CHANNEL REQUEST message. The SS sends an IMMEDIATE ASSIGNMENT and the MS shall answer with a PAGING RESPONSE. Then the SS sends a CIPHERING MODE COMMAND indicating "No ciphering" and with the Cipher Response bit set to "IMEISV shall not be included". The MS shall respond with a CIPHERING MODE COMPLETE message that does not include the Mobile Identity IE.

Then the SS sends a CIPHERING MODE COMMAND indicating "No ciphering" and with the Cipher Response bit set to "IMEISV shall be included". The MS shall respond with a CIPHERING MODE COMPLETE message that carries the IMEISV in the Mobile Identity IE.

Finally the SS sends a CHANNEL RELEASE to end the test.

Maximum Duration of Test

10 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "No Ciphering". Cipher Response = "IMEISV shall not be included".
6	MS -> SS	CIPHERING MODE COMPLETE	Shall not include Mobile Identity IE.
7	SS -> MS	CIPHERING MODE COMMAND	Cipher Mode Setting = "No Ciphering". Cipher Response = "IMEISV shall be included".
8	MS -> SS	CIPHERING MODE COMPLETE	Shall include one Mobile Identity IE carrying the MS's IMEISV.
9	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.9 Test of additional assignment

The Additional Assignment procedure is used to change an MS's channel configuration from Lm + ACCH to Lm + Lm + ACCH. It is therefore only relevant to those mobiles which perform such an operation.

No tests are specified at the moment.

26.6.10 Test of partial release

The Partial Release procedure is used to change an MS's channel configuration from Lm + Lm + ACCH to Lm + ACCH. It is therefore only relevant to those mobiles which perform such an operation.

No tests are specified at the moment.

26.6.11 Test of classmark

26.6.11.1 Classmark change

This procedure allows the MS to indicate to the network that a change in the classmark (e.g. due to addition of power amplification) has taken place.

26.6.11.1.1 Conformance requirements

If the RF power capability of the MS is changed during a call, this change shall be signalled to the network.

If the RF power capability of the MS is changed in idle mode, the up to date RF power capability shall be signalled to the network during RR connection establishment.

References

GSM 04.08 section 3.4.10.

26.6.11.1.2 Test purpose

To verify that if the RF power capability or any other capability indicated in a Classmark IE of the MS is changed during a call, the change is communicated on the DCCH to the network.

To verify that if the RF power capability or any other capability indicated in a Classmark IE of the MS is changed in idle mode, the out of date capabilities are not communicated to the network during RR connection establishment.

26.6.11.1.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated and with no additional power amplification applied.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).
Support for more than one RF power class: yes/no.
Support for state U10 of the Call Control protocol.
Full rate channel modes supported by the MS

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated and with no additional power amplification applied.

Test Procedure

With the MS in idle mode, the RF power capability shall be changed by the addition of power amplification, after which the MS is made to originate a call. The new RF power capability shall be included in the CM SERVICE REQUEST message. After the call has reached the Call Control state U10, the RF power capability of the MS is changed by removal of the additional power amplification. The MS shall send a CLASSMARK CHANGE message indicating the new RF power capability. The RF power capability is then changed by adding the power amplification. The MS shall again send a CLASSMARK CHANGE message indicating the new RF power capability. The call is then released by the SS.

With the MS in idle mode, the power amplification is removed. The SS then pages the MS, which in the PAGING RESPONSE message shall indicate the correct RF power capability.

Finally the SS transmits a CHANNEL RELEASE to end the test.

Maximum Duration of Test

5 minutes, including 1 minute for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
1	--------	--------	Add power amplification.
2	--------	--------	The MS shall be made to originate a call.
3	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Originating call" NECI not equal to one.
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	The "Mobile Station Classmark 2" IE shall indicate the new RF power capability.
6	SS -> MS	CM SERVICE ACCEPT	
7	MS -> SS	SETUP	
8	SS -> MS	CALL PROCEEDING	
9	SS -> MS	ALERTING	
10	SS -> MS	ASSIGNMENT COMMAND	The Channel Mode is a non-signalling mode arbitrarily selected from the full rate capabilities declared for the MS
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> MS	CONNECT	
13	MS -> SS	CONNECT ACKNOWLEDGE	
14	--------	--------	Remove the power amplification.
15	MS -> SS	CLASSMARK CHANGE	The "Mobile Station Classmark 2" IE shall indicate the new power capability.
16	--------	--------	Add power amplification.
17	MS -> SS	CLASSMARK CHANGE	The "Mobile Station Classmark 2" IE shall indicate the new power capability.
18	SS -> MS	CHANNEL RELEASE	
19	--------	--------	Remove the power amplification.
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
20	SS -> MS	PAGING REQUEST TYPE 1	
21	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
22	SS -> MS	IMMEDIATE ASSIGNMENT	
23	MS -> SS	PAGING RESPONSE	The "Mobile Station Classmark 2" IE shall indicate the new power capability.
24	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.11.2 Classmark interrogation

This procedure allows the network to request the MS to supply all its classmark information to the network.

Networks may systematically use this procedure (e.g. during location updating) and, it if is incorrectly implemented in the MS, the basic connection establishment procedure may systematically fail.

26.6.11.2.1 Conformance requirements

On receipt of a CLASSMARK ENQUIRY message, the MS sends a CLASSMARK CHANGE message to the network containing the Mobile Station Classmark 2 information element and depending upon the contents of this information element, possibly the Mobile Station Classmark 3 information element.

References

GSM 04.08 sections 3.4.11 and 9.1.11.1.

GSM 04.13 section 5.2.9.

26.6.11.2.2 Test purpose

To verify that if the network requests the MS to supply all its classmark information then this information is communicated on the DCCH to the network.

26.6.11.2.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters.

Mobile Station:
"Idle, updated", with TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Contents of Mobile Station Classmark 2 information element.

Existence of Mobile Station Classmark 3 information element: yes/no.

Contents of Mobile Station Classmark 3 information element.

Switch off button: yes/no.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is switched off (or has its power removed).

The SS then sets the IMSI attach-detach flag in the SYSTEM INFORMATION messages so that the MS shall perform a location update when switched on.

The MS is switched on (or its power is re-applied). The MS then initiates a location update attempt. After the mobile has sent the LOCATION UPDATING REQUEST message, the SS transmits a CLASSMARK ENQUIRY message. The MS shall be ready to transmit the CLASSMARK CHANGE message before 300 ms after the end of the CLASSMARK ENQUIRY message.

The term "ready to transmit" is defined in GSM 04.13.

Then the SS transmits a LOCATION UPDATING ACCEPT message that does not contain a Mobile Identity IE.

Maximum Duration of Test

2 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is switched off (or has its power removed).
2	SS		IMSI attach-detach flag changed.
3	MS		The MS is switched on (or its power is re-applied).
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	LOCATION UPDATING REQUEST	
7	SS -> MS	CLASSMARK ENQUIRY	
8	MS -> SS	CLASSMARK CHANGE	Contents as defined for default message. This message shall be ready to be transmitted before 300 ms after the completion of step 7.
9	SS -> MS	LOCATION UPDATING ACCEPT	
10	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

Default Message Contents

Contents of LOCATION UPDATING ACCEPT message:

Protocol Discriminator	MM message
Skip Indicator	0000
Message Type	00000010
Location Area Identification	
- Mobile Country Code	001 decimal
- Mobile Network Code	01 decimal
- Location Area Code	0001H
Mobile Identity	Not present
Follow on proceed	Not present

26.6.12 Test of channel release

The purpose of this procedure is to deactivate the dedicated channels in use. When the channels are released, the MS returns to the CCCH configuration, idle mode.

26.6.12.1 Channel release / SDCCH

26.6.12.1.1 Conformance requirements

After the acknowledgement of the Layer 2 disconnection by the network, the MS shall not produce any further RF-transmission.

References

GSM 04.08 section 3.5.1.

26.6.12.1.2 Test purpose

To verify that the MS is able to correctly release an SDCCH after having received a CHANNEL RELEASE message.

26.6.12.1.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is paged and allocated a dedicated channel and the Layer 2 signalling link is established. The SS then sends a CHANNEL RELEASE message, after which the MS shall initiate a Layer 2 disconnection process on the main signalling link. After the acknowledgement of the Layer 2 disconnection by the SS, the MS shall stop transmission of Layer 2 messages. This is verified for 3 seconds. The MS shall return to the idle state, which is verified through the paging procedure to which the MS shall respond.

Maximum Duration of Test

20 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	SS -> MS	IMMEDIATE ASSIGNMENT	Channel Type = SDCCH/8
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CHANNEL RELEASE	With a valid RR cause value.
6	MS -> SS	DISC	The MS may send the DISC message without performing a layer 2 acknowledgement of the CHANNEL RELEASE message.
7	SS -> MS	UA	
	--------	--------	The SS verifies for 3 seconds that the MS does not produce any Layer 2 messages.
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
8	SS -> MS	PAGING REQUEST TYPE 1	
9	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	PAGING RESPONSE	
12	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.12.2 Channel release / SDCCH - no L2 ACK

26.6.12.2.1 Conformance requirements

After the expiry of timer T3110 the MS shall not produce any further RF-transmission.

References

GSM 04.08 section 3.5.1.

26.6.12.2.2 Test purpose

To verify that the MS is able to correctly release a SDCCH after having received a CHANNEL RELEASE message, even if the SS does not L2 acknowledge the L2 DISC frame.

26.6.12.2.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is paged and allocated a dedicated channel and the Layer 2 signalling link is established. The SS then sends a CHANNEL RELEASE message, after which the MS shall send at least 2 L2 DISC frames. The SS does not acknowledge any of the L2 DISC frames. After 2 seconds, the SS verifies for 3 seconds that the MS has stopped transmission of Layer 2 messages. The MS shall return to the idle state, which is verified through the paging procedure to which the MS shall respond.

Maximum Duration of Test

25 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	SS -> MS	IMMEDIATE ASSIGNMENT	Channel Type = SDCCH/8.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CHANNEL RELEASE	With a valid RR cause value.
6	MS -> SS	DISC	The MS may send the DISC message without performing a layer 2 acknowledgement of the CHANNEL RELEASE message. The MS shall send at least 2 L2 DISC frames, to which the SS does not respond. After a period of 2 seconds, the SS verifies for 3 seconds that the MS does not produce any further Layer 2 messages.
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
7	SS -> MS	PAGING REQUEST TYPE 1	
8	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	PAGING RESPONSE	
11	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.12.3 Channel release / TCH-F

26.6.12.3.1 Conformance requirements

After the acknowledgement of the Layer 2 disconnection by the network the MS shall not produce any further RF-transmission.

References

GSM 04.08 section 3.5.1.

26.6.12.3.2 Test purpose

To verify that the MS is able to correctly release a full-rate TCH after having received a CHANNEL RELEASE message.

26.6.12.3.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Supported rate of TCH: TCH/F.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is paged and allocated a dedicated channel and the Layer 2 signalling link is established. The SS then sends a CHANNEL RELEASE message, after which the MS shall initiate a Layer 2 disconnection process on the main signalling link. After the acknowledgement of the Layer 2 disconnection by the SS, the MS shall stop transmission of Layer 2 messages. This is verified for 3 seconds. The MS shall return to the idle state, which is verified through the paging procedure to which the MS shall respond.

Maximum Duration of Test

20 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	SS -> MS	IMMEDIATE ASSIGNMENT	Channel Type = "Bm + ACCHs"
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CHANNEL RELEASE	With a valid RR cause value.
6	MS -> SS	DISC	The MS may send the DISC message without performing a layer 2 acknowledgement of the CHANNEL RELEASE message.
7	SS -> MS	UA	
	--------	--------	The SS verifies for 3 seconds that the MS does not produce any Layer 2 messages.
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
8	SS -> MS	PAGING REQUEST TYPE 1	
9	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	PAGING RESPONSE	
12	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.12.4 Channel release / TCH-F - no L2 ACK

26.6.12.4.1 Conformance requirements

After the expiry of timer T3110 the MS shall not produce any further RF-transmission.

References

GSM 04.08 section 3.5.1.

26.6.12.4.2 Test purpose

To verify that the MS is able to correctly release a TCH/F after having received a CHANNEL RELEASE message, even if the SS does not L2 acknowledge the L2 DISC frame.

26.6.12.4.3 Method of test

Initial Conditions

System Simulator:
1 cell, default parameters.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT Statements

Type of MS (P-GSM 900 or EGSM or DCS 1 800).

Supported rate of TCH: TCH/F.

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The MS is paged and allocated a dedicated channel and the Layer 2 signalling link is established. The SS then sends a CHANNEL RELEASE message (with cause "abnormal release, unspecified"), after which the MS shall send at least 2 L2 DISC frames. The SS does not acknowledge any of the L2 DISC frames. After 2 seconds, the SS verifies for 3 seconds that the MS has stopped transmission of Layer 2 messages. The MS shall return to the idle state, which is verified through the paging procedure to which the MS shall respond.

Maximum Duration of Test

25 seconds.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
3	SS -> MS	IMMEDIATE ASSIGNMENT	Channel Type = "Bm + ACCHs".
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CHANNEL RELEASE	Cause value = "Abnormal release, unspecified".
6	MS -> SS	DISC	The MS may send the DISC message without performing a layer 2 acknowledgement of the CHANNEL RELEASE message. The MS shall send at least 2 L2 DISC frames, to which the SS does not respond. After a period of 2 seconds, the SS verifies for 3 seconds that the MS does not produce any further Layer 2 messages.
	--------	--------	The SS waits 12 seconds to allow the MS to perform cell reselection.
7	SS -> MS	PAGING REQUEST TYPE 1	
8	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
9	SS -> MS	IMMEDIATE ASSIGNMENT	Channel Type = SDCCH/8.
10	MS -> SS	PAGING RESPONSE	
11	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

None.

26.6.13 Test of starting time

The Assignment, Handover and immediate assignment procedures can include a delayed change of frequency list, MAIO and HSN. This series of tests checks the behaviour of the Mobile Station when receiving channel allocation messages with a starting time and channel description for both before and after the starting time. Tests checking the phase 1 usage of the starting time (that is without a channel description for before the time) are included in the series related to immediate assignment, dedicated assignment and handover.

Throughout section 26.6.13 the defaults in section 26.6.14 for GSM 900 and 26.6.15 for DCS 1 800 are used with the following exceptions:

Contents of IMMEDIATE ASSIGNMENT message, unless otherwise defined in the individual test cases:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the IA rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 11.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00111111
Page Mode	
- Page Mode	Normal Paging.
Channel Description	
- Channel Type and TDMA offset	Chosen arbitrarily (see initial conditions).
- Timeslot Number	Chosen arbitrarily by the test house;
- Training Sequence Code	Chosen arbitrarily by the test house
- Hopping	Yes.
- Hopping parameters	Chosen arbitrarily.
Request Reference	Pertaining to last Channel Request sent by the MS.
Timing Advance	
- Timing advance value	30 bit periods.
Mobile Allocation	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	Not present.
IA rest octets	Not used (all bits set to spare).

GSM 900:

Cell A has:

BCCH ARFCN = 20.
Cell Allocation = (10, 17, 20, 26, 34, 42, 45, 46, 52, 59, 66, 73, 74, 75, 76, 108, 114).

Cell B has:

BCCH ARFCN = 40.
Cell Allocation = (14, 18, 22, 24, 30, 31, 38, 40, 60, 66, 73, 74, 75, 76, 108, 114).
Base station Colour Code = different to Cell A

The Cell Allocation of both Cell A and Cell B shall be coded using bit map 0 format.

(The BCCH ARFCNs are already included in the default BA-List.)

DCS 1 800:

Cell A has:
BCCH ARFCN = 747.
Cell Allocation = (737, 741, 747, 754, 759, 762, 766, 767, 773, 775, 779, 782, 791, 798, 829, 832, 844).
Base station Colour Code = different to Cell A

Cell B has:
BCCH ARFCN = 764.
Cell Allocation = (739, 743, 746, 749, 756, 758, 761, 764, 771, 779, 782, 791, 798, 829, 832, 844).

The Cell Allocation of both Cell A and Cell B shall be coded using range 256 format.

The BCCH ARFCNs shall be added to the default BA-List.

26.6.13.1 Dedicated assignment with starting time / successful case / time not elapsed

26.6.13.1.1 Conformance requirement

A Mobile Station receiving an ASSIGNMENT COMMAND message with a starting time and channel descriptions for both after and before the starting time, and ready to access before the indicated time has elapsed, shall perform the assignment on the channels as described for before the starting time and shall start using the new frequency parameters (frequencies and hopping sequence, or single frequency) in the correct time slot indicated by the starting time.

The Mobile Station shall accept the ASSIGNMENT COMMAND message for different message formatting, differing by the information elements used to describe frequency lists.

Reference(s)

GSM 04.08 sub-clauses 3.4.3.1, 9.1.2.

26.6.13.1.2 Test purpose

To verify that the MS, after receiving an ASSIGNMENT COMMAND message with a starting time and channel descriptions both for before and after the starting time, and ready to access before the indicated time, performs correctly the assignment using the description for before the time, and eventually starts using the frequency parameters for after the time at the time indicated in the message.

26.6.13.1.3 Method of test

Initial condition(s)

System Simulator:

1 cell, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

- TCH supported (Y/N)
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns a hopping SDCCH. Then the SS sends an ASSIGNMENT COMMAND message allocating a channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported), with a starting time and channel descriptions (hopping case) for both before and after the starting time, as detailed in the "specific message contents" clause. The indicated time is such that the Mobile Station is ready to access before that time. The Mobile Station then accesses the channel as described for before the starting time. The MS shall eventually, at the TDMA frame defined by the contents of the "Starting Time" information element of the ASSIGNMENT COMMAND message, use the new frequency parameters . The verification is performed at the RF burst level.

Test parameters:

T1 is set to T0+60 and T0+1000 (mod 42 432), where T0 is the frame number at which the first burst of the ASSIGNMENT COMMAND message is sent.

Maximum duration of test

45 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Hopping channel.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
6	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel (before time parameters) after establishment of the main signalling link.
7	--------	Time T1	The SS checks that the MS is transmitting now on the correct frequencies (after time parameters) and that the transmission started in the correct frame.
8	SS -> MS	CHANNEL RELEASE	

Specific message contents

ASSIGNMENT COMMAND

Information element	Value/remark
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T1
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least one frequency and different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.13.2 Dedicated assignment with starting time / successful case / time elapsed

26.6.13.2.1 Conformance requirement

A Mobile Station receiving an ASSIGNMENT COMMAND message with a starting time and channel descriptions for both after and before the starting time, and ready to access after the indicated time has elapsed, shall perform the assignment on the channels as described for after the starting time.

The Mobile Station shall accept the ASSIGNMENT COMMAND message for different message formattings, differing by the information elements used to describe frequency lists.

Reference(s):

GSM 04.08 sub-clauses 3.4.3.1, 9.1.2.

26.6.13.2.2 Test purpose

To verify that the MS, after receiving an ASSIGNMENT COMMAND message with a starting time and channel descriptions both for before and after the starting time, performs correctly the assignment using the frequency parameters for after the time if the indicated time has already elapsed when the Mobile Station is ready to transmit.

26.6.13.2.3 Method of test

Initial condition(s)

System Simulator:
1 cell, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns a hopping SDCCH. Then the SS sends an ASSIGNMENT COMMAND message allocating a channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported), with a starting time and channel descriptions (hopping case) for both before and after the starting time, as detailed in the "specific message contents" clause. The indicated time is such that the Mobile Station is ready to access only after that time. The Mobile Station then accesses the channel as described for after the starting time. The verification is performed at the RF burst level.

Test parameters:

T1 is set to T0+5 (mod 42 432), where T0 is the frame number at which the first burst of the ASSIGNMENT COMMAND message is sent.

Maximum duration of test

45 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Hopping channel.
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
6	MS -> SS	ASSIGNMENT COMPLETE	Sent on the correct channel (after time parameters) after establishment of the main signalling link.
7	SS -> MS	CHANNEL RELEASE	

Specific message contents

ASSIGNMENT COMMAND

Information element	Value/remark
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T1
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least one frequency and different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.13.3 Dedicated assignment with starting time and frequency redefinition / failure case / time not elapsed

26.6.13.3.1 Conformance requirement

An MS, after receiving a FREQUENCY REDEFINITION message, shall keep the provided information until the time is elapsed. The Mobile Station must accept an intervening dedicated assignment, and, in case of failure of this assignment resulting in a return to the old channel before the time indicated in the FREQUENCY REDEFINITION message, shall return on the old channel with the frequency parameters in use at the moment of the reception of the FREQUENCY REDEFINITION message, and shall eventually start using the new frequency parameters in the correct time slot indicated by the starting time of the FREQUENCY REDEFINITION message.

Reference(s):

GSM 04.08 sub-clauses 3.4.3 and 3.4.5.

26.6.13.3.2 Test purpose

To verify that the MS, after receiving a FREQUENCY REDEFINITION and then an ASSIGNMENT COMMAND message with a starting time and channel descriptions both for before and after the starting time, failing the assignment and returning on the old channel, and ready to access before the time indicated in the FREQUENCY REDEFINITION, resumes transmission on the channels used at the time of the reception of the FREQUENCY REDEFINITION message and eventually starts using the new frequency parameters at the time indicated in the FREQUENCY REDEFINITION message.

26.6.13.3.3 Method of test

Initial condition(s)

System Simulator:

1 cell, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns allocating a hopping channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported). Then the SS sends a FREQUENCY REDEFINITION message (starting time T1), which modifies the frequency parameters to be used by the MS. Then the SS sends an ASSIGNMENT COMMAND message, with a starting time (T2) and channel descriptions for both before and after the starting time. The channels and hopping sequences so allocated are distinct from those used and from those described by the FREQUENCY REDEFINITION message. The System Simulator does not activate the channels defined in the ASSIGNMENT COMMAND. The MS shall 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. Then the MS shall send an ASSIGNMENT FAILURE message. Time T1 is chosen so it is reached only after the sending of the ASSIGNMENT FAILURE message. The MS shall eventually, at the TDMA frame defined by the contents of the "Starting Time" information element of the FREQUENCY REDEFINITION message, use the new frequency parameters. The verification is performed at the RF burst level.

Test parameters:

T1 is set to T0+5000 (mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

T2 is set to T0+4000 (mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

Maximum duration of test

180 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Hopping channel.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	FREQUENCY REDEFINITION	
6	SS -> MS	ASSIGNMENT COMMAND	Hopping channel, type among possible, signalling mode.
7	MS -> SS	ASSIGNMENT FAILURE	Sent on the correct channel (original parameters) after establishment of the main signalling link.
8	--------	Time T1	The SS checks that the MS is transmitting now on the correct frequencies (parameters of the FREQUENCY REDEFINITION message) and that the transmissions started in the correct frame.
9	SS -> MS	CHANNEL RELEASE	

Specific message contents

FREQUENCY REDEFINITION

Information element	Value/remark
Channel Description	
Channel Type and TDMA offset	Same as in IMMEDIATE ASSIGNMENT
Timeslot Number	Same as in IMMEDIATE ASSIGNMENT
Training Sequence Code	Same as in IMMEDIATE ASSIGNMENT
Hopping	Yes
Hopping parameters	Chosen arbitrarily, different than those of the IMMEDIATE ASSIGNMENT message, HSN same as in IMMEDIATE ASSIGNMENT.
Mobile Allocation	Chosen arbitrarily, at least two frequencies, different than those of the IMMEDIATE ASSIGNMENT message.
Starting Time	T1

ASSIGNMENT COMMAND:

Information element	Value/remark
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least two frequency.
Starting Time	T2
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least two frequencies, different from "Mobile Allocation, after time".

26.6.13.4 Dedicated assignment with starting time and frequency redefinition / failure case / time elapsed

26.6.13.4.1 Conformance requirement

An MS, after receiving a FREQUENCY REDEFINITION message, shall keep the provided information until the time is elapsed. The Mobile Station must accept an intervening dedicated assignment, and, in case of failure of this assignment resulting in a return to the old channel after the time indicated in the FREQUENCY REDEFINITION message, shall return on the old channel with the frequency parameters indicated in the FREQUENCY REDEFINITION message.

Reference(s):

GSM 04.08 sub-clauses 3.4.3 and 3.4.5.

26.6.13.4.2 Test purpose

To verify that the MS, after receiving a FREQUENCY REDEFINITION and then an ASSIGNMENT COMMAND message with a starting time and channel descriptions both for before and after the starting time, failing the assignment and returning on the old channel, and ready to access after the time indicated in the FREQUENCY REDEFINITION, resumes transmission using the new frequency parameters indicated in the FREQUENCY REDEFINITION message.

26.6.13.4.3 Method of test

Initial condition(s)

System Simulator:
1 cell, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns allocating a hopping channel (SDCCH). Then the SS sends a FREQUENCY REDEFINITION message (starting time T1), which modifies the frequency parameters to be used by the MS. Then the SS sends an ASSIGNMENT COMMAND message, with a starting time (T2) and channel descriptions for both before and after the starting time. Time T1 is chosen so it is reached after the sending of the ASSIGNMENT COMMAND message, but before the return on the old channel. The System Simulator does not activate the channels defined in the ASSIGNMENT COMMAND. The MS shall try to activate the new channel (this is not verified) and shall then reactivate the old channel with the new frequency parameters as indicated by the FREQUENCY REDEFINITION message, and trigger the establishment of the main signalling link on the old channel. Then the MS shall send an ASSIGNMENT FAILURE message. The verification is performed at the RF burst level.

Test parameters:

i.e. for SDCCH

T2 is set to T0+5000 (mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

T1 is set to T0+214 (mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

NOTE: T0 + 214 is calculated for a maximum execution time of:

FREQUENCY REDEFINITION	using 1 L2 frame	51 frames
ASSIGNMENT COMMAND	using 2 L2 frames	102 frames
+ 120 ms maximum time for a channel change		25 frames
+ some frames conention (here 36)		

Maximum duration of test

180 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Hopping channel.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	FREQUENCY REDEFINITION	
6	SS -> MS	ASSIGNMENT COMMAND	Hopping channel, type among possible, signalling mode.
7	MS -> SS	ASSIGNMENT FAILURE	Sent on the correct channel (parameters from the FREQUENCY REDEFINITION message) after establishment of the main signalling link.
8	SS -> MS	CHANNEL RELEASE	

Specific message contents

FREQUENCY REDEFINITION

Information element	Value/remark
Channel Description	
Channel Type and TDMA offset	Same as in IMMEDIATE ASSIGNMENT
Timeslot Number	Same as in IMMEDIATE ASSIGNMENT
Training Sequence Code	Same as in IMMEDIATE ASSIGNMENT
Hopping	Yes
Hopping parameters	Chosen arbitrarily, different than those of the IMMEDIATE ASSIGNMENT message.
Mobile Allocation	Chosen arbitrarily, at least two frequencies, different than those of the IMMEDIATE ASSIGNMENT message, HSN same as in IMMEDIATE ASSIGNMENT.
Starting Time	T1

ASSIGNMENT COMMAND

Information element	Value/remark
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least two frequencies.
Starting Time	T2
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least two frequencies, different from "Mobile Allocation, after time".

26.6.13.5 Handover with starting time / successful case / time not elapsed

26.6.13.5.1 Conformance requirement

A Mobile Station receiving an HANDOVER COMMAND message with a starting time and channel descriptions for both after and before the starting time, and ready to access before the indicated time has elapsed, shall perform the handover on the channels as described for before the starting time and shall, if specified, use the parameters in the frequency list, MAIO and HSN, in the correct time slot indicated by the starting time.

The Mobile Station shall accept the HANDOVER COMMAND message for different message formatting, differing by the information elements used to describe frequency lists.

Reference(s):

GSM 04.08 sub-clauses 3.4.4.1 and 9.1.15.

26.6.13.5.2 Test purpose

To verify that the MS, after receiving a HANDOVER COMMAND message with a starting time and channel descriptions both for before and after the starting time, and ready to access before the indicated time, performs correctly the handover using the description for before the time, and then starts using the frequency parameters for after the time at the time indicated in the message.

26.6.13.5.3 Method of test

Initial condition(s)

System Simulator:

2 cells, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated, and camped on cell B.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns a hopping SDCCH. After the SS has received measurements concerning cell B, the SS sends a HANDOVER COMMAND message allocating a channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported), with a starting time and channel descriptions (hopping case) for both before and after the starting time , as detailed in the "specific message contents" clause. The indicated time is such that the Mobile Station is ready to access before that time. The Mobile Station then accesses the channel as described for before the starting time. The MS shall eventually, at the TDMA frame defined by the contents of the "Starting Time" information element of the HANDOVER COMMAND message, use the new frequency parameters. The verification is performed at the RF burst level.

Test parameters:

T1 is set to T0+1000 (mod 42 432), where T0 is the frame number at which the first burst of the HANDOVER COMMAND message is sent.

Maximum duration of test

120 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Hopping channel.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	HANDOVER COMMAND	See specific message contents.
6	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH until reception of PHYSICAL INFORMATION.
7	SS -> MS	PHYSICAL INFORMATION	
8	MS -> SS	HANDOVER COMPLETE	Sent on the correct channel (before time parameters) after establishment of the main signalling link.
9	--------	Time T1	The SS checks that the MS is transmitting now on the correct frequencies (after time parameters) and that the transmissions started in the correct frame.
10	SS -> MS	CHANNEL RELEASE	

Specific message contents

HANDOVER COMMAND:

Information element	Value/remark
Cell Description	As for cell B.
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Synchronization indication	Non synchronized.
Cell Channel Description	As for cell B.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T1
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least one frequency, different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.13.6 Handover with starting time / successful case / time elapsed

26.6.13.6.1 Conformance requirement

A Mobile Station receiving a HANDOVER COMMAND message with a starting time and channel descriptions for both after and before the starting time, and ready to access after the indicated time has elapsed, shall perform the handover on the channels as described for after the starting time.

The Mobile Station shall accept the HANDOVER COMMAND message for different message formattings, differing by the information elements used to describe frequency lists.

Reference(s):

GSM 04.08 sub-clauses 3.4.4.1 and 9.1.15.

26.6.13.6.2 Test purpose:

To verify that the MS, after receiving a HANDOVER COMMAND message with a starting time and channel descriptions both for before and after the starting time, and ready to transmit after the indicated time, performs correctly the handover using the frequency parameters for after the time.

26.6.13.6.3 Method of test

Initial condition(s)

System Simulator:
2 cells, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated, and camped on cell A

Related PICS/PIXIT statement(s)

- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated, and camped on cell B.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns a hopping SDCCH. After the SS has received measurements concerning cell B, the SS sends a HANDOVER COMMAND message allocating a channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported), with a starting time and channel descriptions (hopping case) for both before and after the starting time., as detailed in the "specific message contents" clause. The indicated time is such that the Mobile Station is ready to access only after that time. The Mobile Station then accesses the channel as described for after the starting time. The verification is performed at the RF burst level.

Test parameters:

T1 is set to T0+5 (mod 42 432), where T0 is the frame number at which the first burst of the HANDOVER COMMAND message is sent.

Maximum duration of test

120 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Hopping channel.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	HANDOVER COMMAND	See specific message contents.
6	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH until reception of PHYSICAL INFORMATION.
7	SS -> MS	PHYSICAL INFORMATION	
8	MS -> SS	HANDOVER COMPLETE	Sent on the correct channel (after time parameters) after establishment of the main signalling link.
9	SS -> MS	CHANNEL RELEASE	

Specific message contents

HANDOVER COMMAND:

Information element	Value/remark
Cell Description	As for cell B.
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Synchronization indication	Non synchronized.
Cell Channel Description	As for cell B.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T1
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least one frequency and different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.13.7 Handover with starting time and frequency redefinition / failure case / time not elapsed

26.6.13.7.1 Conformance requirement

An MS, after receiving a FREQUENCY REDEFINITION message, shall keep the provided information until the time is elapsed. The Mobile Station must accept an intervening handover, and, in case of failure of this handover resulting in a return to the old channel before the time indicated in the FREQUENCY REDEFINITION message, shall return on the old channel with the frequency parameters in use at the moment of the reception of the FREQUENCY REDEFINITION message, and shall eventually start using

the new frequency parameters in the correct time slot indicated by the starting time of the FREQUENCY REDEFINITION message.

Reference(s):

GSM 04.08 sub-clauses 3.4.4 and 3.4.5.

26.6.13.7.2 Test purpose:

To verify that the MS, after receiving a FREQUENCY REDEFINITION and then a HANDOVER COMMAND message with a starting time and channel descriptions both for before and after the starting time, failing the handover, and ready to access on the old channel before the time indicated in the FREQUENCY REDEFINITION, resumes transmission on the channels used at the time of the reception of the FREQUENCY REDEFINITION message and eventually starts using the new frequency parameters at the time indicated in the FREQUENCY REDEFINITION message.

26.6.13.7.3 Method of test

Initial condition(s)

System Simulator:

2 cells, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:

The MS is in the "idle, updated" state, with a TMSI allocated, and camped on cell A.

Related PICS/PIXIT statement(s)

- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated, and camped on cell A.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns allocating a hopping channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported). Then the SS sends a FREQUENCY REDEFINITION message (starting time T1), which modifies the frequency parameters to be used by the MS. Then the SS sends a HANDOVER COMMAND message, with a starting time (T2) and channel descriptions for both before and after the starting time. The MS shall 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 System Simulator does not activate the channels defined in the HANDOVER COMMAND. Then the MS shall send a HANDOVER FAILURE message. Time T1 is chosen so it is reached only after the sending of the HANDOVER FAILURE message. The MS shall eventually, at the TDMA frame defined by the contents of the "Starting Time" information element of the FREQUENCY REDEFINITION message, use the new frequency parameters. The verification is performed at the RF burst level.

Test parameters:

T1 is set to T0+5000 (mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

T2 is set to T0+4000 (mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

Maximum duration of test

180 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Hopping channel.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	FREQUENCY REDEFINITION	
6	SS -> MS	HANDOVER COMMAND	Hopping channel, type among possible, signalling mode.
7	MS -> SS	HANDOVER ACCESS	Not checked.
8	MS -> SS	HANDOVER FAILURE	Sent on the correct channel (original parameters) after establishment of the main signalling link.
9	--------	Time T1	The SS checks that the MS is transmitting now on the correct frequencies (parameters of the FREQUENCY REDEFINITION message) and that the transmissions started in the correct frame.
10	SS -> MS	CHANNEL RELEASE	

Specific message contents

FREQUENCY REDEFINITION

Information element	Value/remark
Channel Description	
Channel Type and TDMA offset	Same as in IMMEDIATE ASSIGNMENT
Timeslot Number	Same as in IMMEDIATE ASSIGNMENT
Training Sequence Code	Same as in IMMEDIATE ASSIGNMENT
Hopping	Yes
Hopping parameters	Chosen arbitrarily, different than those of the IMMEDIATE ASSIGNMENT message, HSN same as in IMMEDIATE ASSIGNMENT.
Mobile Allocation	Chosen arbitrarily, at least two frequencies, different than those of the IMMEDIATE ASSIGNMENT message.
Starting Time	T1

HANDOVER COMMAND:

Information element	Value/remark
Cell Description	As for cell B.
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Synchronization indication	Non synchronized.
Cell Channel Description	As for cell B.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T2
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least one frequency and different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.13.8 Handover with starting time and frequency redefinition / failure case / time elapsed

26.6.13.8.1 Conformance requirement

An MS, after receiving a FREQUENCY REDEFINITION message, shall keep the provided information until the time is elapsed. The Mobile Station must accept an intervening handover, and, in case of failure of this handover resulting in a return to the old channel after the time indicated in the FREQUENCY REDEFINITION message, shall return on the old channel with the frequency parameters indicated in the FREQUENCY REDEFINITION message.

Reference(s):

GSM 04.08 sub-clauses 3.4.4 and 3.4.5.

26.6.13.8.2 Test purpose:

To verify that the MS, after receiving a FREQUENCY REDEFINITION and then a HANDOVER COMMAND message with a starting time and channel descriptions both for before and after the starting time, failing the handover and returning on the old channel, and ready to access after the time indicated in the FREQUENCY REDEFINITION, resumes transmission using the new frequency parameters indicated in the FREQUENCY REDEFINITION message.

26.6.13.8.3 Method of test

Initial condition(s)

System Simulator:
2 cells, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated, and camped on cell A.

Related PICS/PIXIT statement(s)

- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated, and camped on cell A.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator assigns a hopping channel (SDCCH). Then the SS sends a FREQUENCY REDEFINITION message (starting time T1), which modifies the frequency parameters to be used by the MS. Then the SS sends a HANDOVER COMMAND message, with a starting time (T2) and channel descriptions for both before and after the starting time. Time T1 is chosen so it is reached after the sending of the HANDOVER COMMAND message, but before the return on the old channel. The System Simulator does not activate the channels defined in the HANDOVER COMMAND. The MS shall try to activate the new channel (this is not verified) and shall then reactivate the old channel with the new frequency parameters as indicated by the FREQUENCY REDEFINITION message, and trigger the establishment of the main signalling link on the old channel. Then the MS shall send a HANDOVER FAILURE message. The verification is performed at the RF burst level.

Test parameters:

i.e. for SDCCH
T2 is set to T0+5000 (mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

T1 is set to T0+265(mod 42 432), where T0 is the frame number at which the first burst of the FREQUENCY REDEFINITION message is sent.

NOTE: T0 + 265 is calculated for a maximum execution time of:

FREQUENCY REDEFINITION	using 1 L2 frame	51 frames
HANDOVER COMMAND	using 3 L2 frames	153 frames
+ 120 ms maximum time for a channel change		25 frames
+ some frames contention (here 36)		

Maximum duration of test

180 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	Hopping channel.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	FREQUENCY REDEFINITION	
6	SS -> MS	HANDOVER COMMAND	Hopping channel, type among possible, signalling mode.
7	MS -> SS	HANDOVER ACCESS	Not checked.
8	MS -> SS	HANDOVER FAILURE	Sent on the correct channel (parameters from the FREQUENCY REDEFINITION message) after establishment of the main signalling link.
9	SS -> MS	CHANNEL RELEASE	

Specific message contents

FREQUENCY REDEFINITION

Information element	Value/remark
Channel Description	
Channel Type and TDMA offset	Same as in IMMEDIATE ASSIGNMENT
Timeslot Number	Same as in IMMEDIATE ASSIGNMENT
Training Sequence Code	Same as in IMMEDIATE ASSIGNMENT
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different than those of the IMMEDIATE ASSIGNMENT message, HSN same as in IMMEDIATE ASSIGNMENT.
Mobile Allocation	Chosen arbitrarily, at least two frequencies, different than those of the IMMEDIATE ASSIGNMENT message
Starting Time	T1

HANDOVER COMMAND

Information element	Value/remark
Cell Description	As for cell B.
Channel Description, after time	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Power Command	
Power level	Chosen arbitrarily.
Synchronization indication	Non synchronized.
Cell Channel Description	As for cell B.
Channel Mode	
Mode	Arbitrarily selected from capabilities declared for the MS for the chosen type of channel.
Mobile Allocation, after time	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T2
Channel Description, before time	
Channel Type and TDMA offset	Same as after time.
Timeslot Number	Same as after time.
Training Sequence Code	Same as after time.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily, different from "after time".
Mobile Allocation, before time	Chosen arbitrarily, at least one frequency and different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.13.9 Immediate assignment with starting time / successful case / time not elapsed

26.6.13.9.1 Conformance requirement

A Mobile Station receiving an IMMEDIATE ASSIGNMENT message with a starting time and channel descriptions for both after and before the starting time, and ready to access before the indicated time has elapsed, shall perform the assignment on the channels as described for before the starting time and shall start using the new frequencies and hopping sequence in the correct time slot when the MS is allocated a dedicated channel.

Reference(s):

GSM 04.08 sub-clauses 3.3.1.3.1 and 9.1.18.

26.6.13.9.2 Test purpose

To verify that the MS, after receiving an IMMEDIATE ASSIGNMENT message with a starting time and channel descriptions both for before and after the starting time, and ready to access before the indicated time, performs correctly the assignment using the description for before the time, and then starts using the frequency parameters for after the time at the time indicated in the message.

26.6.13.9.3 Method of test

Initial condition(s)

System Simulator:
1 cell, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.
- Supported frequencies (P-GSM or E-GSM or DCS 1 800).

Foreseen final state of the MS

"Idle, updated", with TMSI allocated.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator sends an IMMEDIATE ASSIGNMENT message allocating a hopping channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported), with a starting time and channel descriptions for both before and after the starting time. The indicated time is such that the Mobile Station is ready to access before that time. The Mobile Station then accesses the channel as described for before the starting time. The MS shall eventually, at the TDMA frame defined by the contents of the "Starting Time" information element of the IMMEDIATE ASSIGNMENT message, use the new frequency parameters. The verification is performed at the RF burst level.

Test parameters:

T1 is chosen arbitrarily to be between T0+60 and T0+100 (mod 42 432), where T0 is the frame number at which the first burst of the IMMEDIATE ASSIGNMENT COMMAND message is sent.

Maximum duration of test

45 sec.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	PAGING RESPONSE	
5	--------	Time T1	The SS checks that the MS is transmitting now on the correct frequencies (after time parameters) and that the transmissions started in the correct frame.
6	SS -> MS	CHANNEL RELEASE	

Specific message contents

IMMEDIATE ASSIGNMENT

Information element	Value/remark
Page Mode	Normal.
Channel Description	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Timing Advance	As needed.
Mobile Allocation (after time)	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T1
IA Rest Octet	
MAIO	Chosen arbitrarily, different from "after time".
Mobile Allocation (before time)	Chosen arbitrarily, at least one frequency and different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.13.10 Immediate assignment with starting time / successful case / time elapsed

26.6.13.10.1 Conformance requirement

A Mobile Station receiving an IMMEDIATE ASSIGNMENT message with a starting time and channel descriptions for both after and before the starting time, and ready to access after the indicated time has elapsed, shall perform the assignment on the channels as described for after the starting time.

Reference(s):

GSM 04.08 sub-clauses 3.3.1.3.1 and 9.1.18.

26.6.13.10.2 Test purpose

To verify that the MS, after receiving an IMMEDIATE ASSIGNMENT message with a starting time and channel descriptions both for before and after the starting time, performs correctly the assignment using the frequencies and hopping sequence for after the time if the indicated time has already elapsed when the Mobile Station is ready to transmit.

26.6.13.10.3 Method of test

Initial condition(s)

System Simulator:

1 cell, CCCH_CONF set to 1 basic physical channel used for CCCH, not combined with SDCCHs.

Mobile Station:
The MS is in the "idle, updated" state, with a TMSI allocated.

Related PICS/PIXIT statement(s)

- Type of MS (P-GSM 900 or EGSM or DCS 1 800).
- TCH supported (Y/N).
- Supported rate(s) of TCH: (F/F+H).
- The supported channel mode(s) need to be declared.

Foreseen final state of the MS

"Idle, updated", with TMSI allocated.

Test procedure

The System Simulator pages the MS and after the MS has responded with a CHANNEL REQUEST, the simulator sends an IMMEDIATE ASSIGNMENT message allocating a hopping channel (TCH/F, TCH/H or SDCCH, arbitrarily chosen among the channels supported), with a starting time and channel descriptions for both before and after the starting time. The indicated time is such that the Mobile Station is ready to access only after that time. The Mobile Station then accesses the channel as described for after the starting time. The verification is performed at the RF burst level.

Test parameters:

T1 is set to T0+5 (mod 42 432), where T0 is the frame number at which the first burst of the IMMEDIATE ASSIGNMENT COMMAND message is sent.

Maximum duration of test

45 sec

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	PAGING RESPONSE	The SS checks that the MS is transmitting now on the correct frequencies (after time parameters).
5	SS -> MS	CHANNEL RELEASE	

Specific message contents

IMMEDIATE ASSIGNMENT:

Information element	Value/remark
Page Mode	Normal.
Channel Description	
Channel Type and TDMA offset	Chosen arbitrarily among that supported by the Mobile Station.
Timeslot Number	Chosen arbitrarily.
Training Sequence Code	Chosen arbitrarily.
Hopping	Yes.
Hopping parameters	Chosen arbitrarily.
Timing Advance	As needed.
Mobile Allocation (after time)	Chosen arbitrarily, at least one frequency. In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.
Starting Time	T1
IA Rest Octet	
MAIO	Chosen arbitrarily, different from "after time".
Mobile Allocation (before time)	Chosen arbitrarily, at least one frequency and different from "Mobile Allocation, after time". In case of an MA with just one frequency, the frequency should be different from the BCCH carrier.

26.6.14 Default contents of GSM 900 layer 3 messages for RR tests

This section contains the default values of GSM 900 L3 messages, which unless indicated otherwise in section 26.6 shall be transmitted by the system simulator and which are required to be received from the GSM 900 MS under test. These values are used in order to be consistent with the phase 2 version of 26.6.

The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).

In this section, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

Default SYSTEM INFORMATION:

NOTE 1: SYSTEM INFORMATION 2 bis, SYSTEM INFORMATION 5 bis, SYSTEM INFORMATION 7, and SYSTEM INFORMATION 8 messages are not used.

Cell A

Contents of information elements in SYSTEM INFORMATION TYPE 1 to 6 messages for cell A.

(CBCH) Channel Description	Not present.
(CBCH) Mobile Allocation	Not present.
Cell Channel Description	
- Format identifier	bit map 0.
- Cell Allocation ARFCN	Channel Numbers 20, 30, 50 and 70.
Cell Identity	
- Cell Identity Value	0001H
Cell Options	
- Power Control Indicator	Power Control Indicator is not set.
- DTX Indicator	MS shall not use DTX.
- Radio_Link_Timeout	8 SACCH blocks.
Cell Selection Parameters	
- Cell_Reselect_Hysteresis	12 dB.
- MX_TXPWR_MAX_CCH	Minimum level.
- ACS	No addition cell parameters are present in SYSTEM INFORMATION messages 7 and 8.
- NECI	New establishment causes not supported.
- RXLEV_ACCESS_MIN	Minimum level.
Control Channel Description	
- Attach-Detach allowed	No Attach/Detach.
- BS_AG_BLKS_RES	0 blocks reserved for access grant.
- CCCH_CONF	1 basic physical channel used for CCCH, combined with SDCCHs.
- BS_PA_MFRMS	5 multiframe periods for transmission of paging messages.
- T3212 Time-out value	Infinite.
L2 pseudo length	
- System information 1	21
- System information 2	22
- System information 3	18
- System information 4	12
Location Area Identification	
- Mobile Country Code	001 decimal
- Mobile Network Code	01 decimal
- Location Area Code	0001H
Message Type	
- System information 1	00011001
- System information 2	00011010
- System information 3	00011011
- System information 4	00011100
- System information 5	00011101
- System information 6	00011110
Neighbour Cells Description	
- Format identifier	bit map 0.
- BCCH Allocation Sequence	0
- BCCH Allocation ARFCN	Channels numbers 10, 20, 40, 80, 90, 100, 110 and 120.
- EXT-IND	This IE carries the complete BA.
NCC Permitted	0000 0010
RACH Control Parameters	
- Max Retrans	Max 1 retrans.
- Tx-integer	5 slots used.
- Cell Barred for Access	Cell is not barred.
- Call Reestablishment Allowed	Not allowed.
- Access Control Class	Access is not barred.
- Emergency Call allowed	Yes.
SI 1 rest octets	Not used (all bits are set to spare).
SI 2 rest octets	Not used (all bits are set to spare).
SI 3 rest octets	Not used (all bits are set to spare).

SI 4 rest octets	Not used (all bits are set to spare).

Default settings for cell A:

Downlink input level	63 dBmicroVolt emf.
Uplink output power	minimum supported by the MS's power class.
Propagation profile	static.
BCCH/CCCH carrier number	20

Cell B

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

Cell Channel Description	
- Format Identifier	Bit map 0.
- Cell Allocation ARFCN	Channel Number 10.

NOTE 2: This IE needs modification when used in handover tests which command the MS to go to a frequency hopping channel in cell B.

Cell Identity
- Cell Identity Value 0002H

Default settings for cell B:

Downlink input level	53 dBmicroVolt emf.
Uplink output power	minimum supported by the MS's power class.
Propagation profile	static.
BCCH/CCCH carrier number	10

Contents of ALERTING message (SS to MS):

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	1 (destination side).
Message Type	00000001
All other information elements	Not present.

Contents of ASSIGNMENT COMMAND message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101110
Channel Description	
- Channel Type and TDMA offset	Bm + ACCHs
- Timeslot Number	Chosen arbitrarily by the test house.
- Training Sequence Code	Chosen arbitrarily by the test house.
- Hopping	Single RF channel.
- ARFCN	Channel number 30.
Power Command	
- Power level	Chosen arbitrarily by the test house.
All other information elements	Not present.

Contents of ASSIGNMENT COMPLETE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101001
RR Cause	
- RR Cause Value	Normal event.

Contents of ASSIGNMENT FAILURE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101111
RR Cause	
- RR Cause Value	Depending on test.

Contents of AUTHENTICATION REQUEST message:

Protocol Discriminator	MM message.
Skip Indicator	0000
Message Type	00010010
Ciphering Key Sequence Number	
- Key Sequence	Chosen arbitrarily by the test house from the range 0 to 6.
Authentication Parameter RAND	
- RAND value	Chosen arbitrarily by the test house.

Contents of AUTHENTICATION RESPONSE message:

Protocol Discriminator	MM message.
Skip Indicator	0000
Message Type	0X010100
Other information element(s)	Not checked.

Contents of CALL PROCEEDING message:

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	1 (destination side).
Message Type	00000010
All other information elements	Not present.

Contents of CHANNEL MODE MODIFY message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00010000
Channel Description	
- Channel Type and TDMA offset	Depending on test.
- Timeslot Number	Chosen arbitrarily by the test house.
- Training Sequence Code	Chosen arbitrarily by the test house.
- Hopping	Single RF channel.
- ARFCN	Channel number 30.
Channel Mode	
- Mode	Depending on test.

Contents of CHANNEL MODE MODIFY ACKNOWLEDGE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00010111
Channel Description	
- Channel Type and TDMA offset	Depending on test.
- Timeslot Number	Same as in the CHANNEL MODE MODIFY message.
- Training Sequence Code	Same as in the CHANNEL MODE MODIFY message.
- Hopping	Single RF channel.
- Frequency Band	Band number 0.
- ARFCN	Channel number 30.
Channel Mode	
- Mode	Same as in the CHANNEL MODE MODIFY message.

Contents of CHANNEL RELEASE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00001101
RR Cause	
- RR Cause Value	Normal event.

Contents of CHANNEL REQUEST message

Establishment Cause	Not checked.
Random Reference	Not checked.

Contents of CIPHERING MODE COMMAND message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00110101
Cipher Mode Setting	
- algorithm identifier	cipher with A5/1.
- SC	Start ciphering.
Cipher Response	IMEI shall not be included.

Contents of CIPHERING MODE COMPLETE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00110010
Mobile Identity	Not present.

Contents of the CLASSMARK CHANGE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	000100110
Mobile Station Classmark 2	See PICS/PIXIT.
Mobile Station Classmark 3	For presence and contents see PICS/PIXIT.

Contents of CM SERVICE ACCEPT message:

Protocol Discriminator	Mobility Management.
Skip Indicator	0000
Message Type	00100001

Contents of CM SERVICE REQUEST message

Protocol Discriminator	Mobility Management.
Skip Indicator	0000
Message Type	0X100100
Other information elements	Not checked.

Contents of CONNECT message (SS to MS)

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	1
Message Type	00000111
All other information elements	Not present.

Contents of CONNECT ACKNOWLEDGE message (MS to SS)

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	0
Message Type	0X001111

Contents of HANDOVER ACCESS message:

Handover Reference	Equal to the value included in the Handover Command message.

Contents of HANDOVER COMMAND message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101011
Cell Description	
- Network Colour Code	1
- Base station Colour Code	Corresponding to target cell
- BCCH Carrier Number	Set to the BCCH carrier number of cell B. (one of 10, 20, 80, 90, 100, 110 or 120).
Channel Description	
- Channel Type and TDMA offset	Bm + ACCHs.
- Timeslot Number	Chosen arbitrarily by the test house.
- Training Sequence Code	Chosen arbitrarily by the test house.
- Hopping	Single RF channel.
- ARFCN	Chosen arbitrarily by the test house from those supported on the target cell.
Handover Reference	
- Handover Reference Value	Chosen arbitrarily by the test house.
Power Command	
- Power level	Chosen arbitrarily by the test house.
All other information elements	Not present.

Contents of HANDOVER COMPLETE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101100
RR cause	Normal event.
Time difference	Not present.

Contents of HANDOVER FAILURE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101000
RR cause	Dependent on the test.

IDENTITY REQUEST

Information element	Value/remark
Identity type	IMEI
Spare half octet	0000

IDENTITY RESPONSE

Information element	Value/remark
Mobile identity	not checked

Contents of IMMEDIATE ASSIGNMENT message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the IA rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 11.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00111111
Page Mode	
- Page Mode	Normal Paging.
Channel Description	
- Channel Type and TDMA offset	For non-combined CCCH/SDCCH (see initial conditions), SDCCH/8, with subchannel chosen arbitrarily by the test house For combined CCCH/SDCCH (default SS conditions), SDCCH/4, with subchannel chosen arbitrarily by the test house.
- Timeslot Number	For non-combined CCCH/SDCCH (see initial conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, timeslot zero.
- Training Sequence Code	For non-combined CCCH/SDCCH (see initial conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, TSC=5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	For non-combined CCCH/SDCCH (see initial conditions), Channel number 30; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, Channel number 20.
Request Reference	Pertaining to last Channel Request sent by the MS.
Timing Advance	
- Timing advance value	30 bit periods.
Mobile Allocation	
- Length	0
Starting Time	Not present.
IA rest octets	Not used (all bits set to spare).

Contents of IMMEDIATE ASSIGNMENT EXTENDED message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the IAX rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 18.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00111001
Page Mode	
- Page Mode	Normal Paging.
Channel Description 1	
- Channel Type and TDMA offset	For non-combined CCCH/SDCCH (see test conditions), SDCCH/8, with subchannel chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, with subchannel chosen arbitrarily by the test house.
- Timeslot Number	For non-combined CCCH/SDCCH (see test conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, timeslot zero.
- Training Sequence Code	For non-combined CCCH/SDCCH (see initial conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, TSC=5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	For non-combined CCCH/SDCCH (see initial conditions),Channel number 30; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, Channel number 20.
Request Reference 1	Pertaining to last Channel Request sent by the MS.
Timing Advance 1	
- Timing advance value	Chosen arbitrarily by the test house.
Channel Description 2	
- Channel Type and TDMA offset	Same channel type as in Channel Description 1, but different TDMA offset to that in Channel Description 1.
- Timeslot Number	equal to the value in Channel Description 1.
- Training Sequence Code	equal to the value in Channel Description 1.
- Hopping	Single RF channel.
- ARFCN	equal to the value in Channel Description 1.
Request Reference 2	Not pertaining to any Channel Requests sent by the MS.
Timing Advance 2	
- Timing advance value	Chosen arbitrarily by the test house.
Mobile Allocation	
- Length	0
Starting Time	Not present.
IAX rest octets	Not used (all bits set to spare).

Contents of IMMEDIATE ASSIGNMENT REJECT message:

L2 pseudo length	19
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00111010
Page Mode	
- Page Mode	Normal Paging.
Request Reference	Pertaining to last Channel Request sent by the MS.
Wait Indication	0 seconds.
Request Reference	Not pertaining to the MS under test.
Wait Indication	0 seconds.
Request Reference	Not pertaining to the MS under test.
Wait Indication	0 seconds.
Request Reference	Not pertaining to the MS under test.
Wait Indication	0 seconds.
IAR rest octets	Not used (all bits set to spare).

Contents of LOCATION UPDATING REQUEST message:

Protocol Discriminator	MM message.
Skip Indicator	0000
Message Type	0X001000
Other information elements	Not checked.

Contents of PAGING REQUEST TYPE 1 message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the P1 rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 9.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00100001
Page Mode	
- Page Mode	Normal Paging.
Channels needed	
- first channel	any channel.
- second channel	any channel.
Mobile Identity 1	
- odd/even indication	Even.
- Type of Identity	TMSI.
- Identity Digits	TMSI previously allocated to MS.
Mobile Identity 2	Not present.
P1 rest octets	Not used (all bits set to spare).

Contents of PAGING REQUEST TYPE 2 message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the P2 rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 11.
Protocol Discriminator	RR Management..
Skip Indicator	0000
Message Type	00100010
Page Mode	
- Page Mode	Normal Paging.
Channels needed	
- first channel	any channel.
- second channel	any channel.
Mobile Identity 1	
- TMSI value	TMSI previously allocated to MS.
Mobile Identity 2	
- TMSI value	TMSI not allocated to MS.
Mobile Identity	Not present.
P2 rest octets	Not used (all bits set to spare).

Contents of PAGING REQUEST TYPE 3 message:

L2 pseudo length	19
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00100100
Page Mode	
- Page Mode	Normal Paging.
Channels needed	
- first channel	any channel.
- second channel	any channel.
Mobile identity 1	
- TMSI value	TMSI previously allocated to MS.
Mobile identity 2	
- TMSI value	TMSI not allocated to MS.
Mobile identity 3	
- TMSI value	TMSI not allocated to MS.
Mobile identity 4	
- TMSI value	TMSI not allocated to MS.
P3 rest octets	Not used (all bits set to spare).

Contents of PAGING RESPONSE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00100111
Ciphering Key Sequence Number	
- Key Sequence	Key sequence number previously allocated to MS, or "111" if no key is available.
Mobile Station Classmark 2	
Mobile Identity	
- odd/even indication	Even
- Type of identity	TMSI
- Identity Digits	TMSI previously allocated to MS.

Contents of PHYSICAL INFORMATION message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101101
Timing advance	20 bit periods.

Contents of SETUP message; (MS to SS):

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	any value from the set {0, ..., 6}.
TI flag	0
Message Type	0X000101
Other information elements	Not checked.

26.6.15 Default contents of DCS 1 800 layer 3 messages for RR tests

This section contains the default values of DCS 1 800 L3 messages, which unless indicated otherwise in section 26.6 shall be transmitted by the system simulator and which are required to be received from the DCS 1 800 MS under test. These values are used in order to be consistent with the phase 2 version of 26.6.

The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).

In this section, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

Default SYSTEM INFORMATION:

NOTE 1: SYSTEM INFORMATION 2 bis, SYSTEM INFORMATION 7, and SYSTEM INFORMATION 8 messages are not used.

SYSTEM INFORMATION 5 bis is not sent as a default message. For those tests which require SYSTEM INFORMATION 5 bis see the specific message contents for that test.

Cell A

Contents of information elements in SYSTEM INFORMATION TYPE 1 to 6 messages for cell A.

(CBCH) Channel Description	Not present.
(CBCH) Mobile Allocation	Not present.
Cell Channel Description	
- Format identifier	Range 512.
- Cell Allocation ARFCN	Channel Numbers, 590, 650, 750 and 850.
Cell Identity	
- Cell Identity Value	0001H
Cell Options	
- Power Control Indicator	Power Control Indicator is not set, 0
- DTX Indicator	MS shall not use DTX.
- Radio_Link_Timeout	8 SACCH blocks.
Cell Selection Parameters	
- Cell_Reselect_Hysteresis	12 dB
- MX_TXPWR_MAX_CCH	Minimum level.
- ACS	No addition cell parameters are present in SYSTEM INFORMATION messages 7 and 8.
- NECI	New establishment causes not supported.
- RXLEV_ACCESS_MIN	Minimum level.
Control Channel Description	
- Attach-Detach allowed	MS shall not apply.
- BS_AG_BLKS_RES	0 blocks reserved for access grant.
- CCCH_CONF	1 basic physical channel used for CCCH, combined with SDCCHs.
- BS_PA_MFRMS	5 multiframe periods for transmission of paging messages.
- T3212 Time-out value	Infinite.
L2 pseudo length	
- System information 1	21
- System information 2	22
- System information 3	18
- System information 4	12
Location Area Identification	
- Mobile Country Code	001 decimal.
- Mobile Network Code	01 decimal.
- Location Area Code	0001H
Message Type	
- System information 1	00011001
- System information 2	00011010
- System information 3	00011011
- System information 4	00011100
- System information 5	00011101
- System information 6	00011110
Neighbour Cells Description	
- Format identifier	Range 512.
- BCCH Allocation Sequence	0
- BCCH Allocation ARFCN	Channels numbers, 520, 590, 600, 700, 747, 764, 780, 810, 870.
- EXT-IND	This IE carries the complete BA. EXT-IND is 0.
NCC Permitted	0000 0010
RACH Control Parameters	
- Max Retrans	Max 1 retrans.
- Tx-integer	5 slots used.
- Cell Barred for Access	Cell is not barred.
- Call Reestablishment Allowed	Not Allowed.
- Access Control Class	Access is not barred.
- Emergency Call allowed	Yes.
SI 1 rest octets	Not used (all bits are set to spare).
SI 2 rest octets	Not used (all bits are set to spare).
SI 3 rest octets	Not used (all bits are set to spare).
SI 4 rest octets	Not used (all bits are set to spare).

Default settings for cell A:

Downlink input level	63 dBmicroVolt emf().
Uplink output power	minimum supported by the MS's power class
Propagation profile	static.
BCCH/CCCH carrier number	ARFN 590.

Cell B

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

Cell Channel Description	
- Format Identifier	Range 512.
- Cell Allocation ARFCN	Channel Number 520.

NOTE 2: This IE needs modification when used in handover tests which command the MS to go to a frequency hopping channel in cell B.

Cell Identity	
- Cell Identity Value	0002H

Default settings for cell B:

Downlink input level	53 dBmicroVolt emf().
Uplink output power	minimum supported by the MS's power class
Propagation profile	static.
BCCH/CCCH carrier number	520

Contents of ALERTING message (SS to MS):

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	1 (destination side).
Message Type	00000001
All other information elements	Not present.

Contents of ASSIGNMENT COMMAND message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101110
Channel Description	
- Channel Type and TDMA offset	Bm + ACCHs.
- Timeslot Number	Chosen arbitrarily by the test house.
- Training Sequence Code	Chosen arbitrarily by the test house.
- Hopping	Single RF channel.
- ARFCN	Channel number 650.
Power Command	
- Power level	Chosen arbitrarily by the test house.
All other information elements	Not present.

Contents of ASSIGNMENT COMPLETE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101001
RR Cause	
- RR Cause Value	Normal event.

Contents of ASSIGNMENT FAILURE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101111
RR Cause	
- RR Cause Value	Depending on test.

Contents of AUTHENTICATION REQUEST message:

Protocol Discriminator	MM message.
Skip Indicator	0000
Message Type	00010010
Ciphering Key Sequence Number	
- Key Sequence	Chosen arbitrarily by the test house from the range 0 to 6.
Authentication Parameter RAND	
- RAND value	Chosen arbitrarily by the test house.

Contents of AUTHENTICATION RESPONSE message:

Protocol Discriminator	MM message.
Skip Indicator	0000
Message Type	0X010100
Other information element(s)	Not checked.

Contents of CALL PROCEEDING message:

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	1 (destination side).
Message Type	00000010
All other information elements	Not present.

Contents of CHANNEL MODE MODIFY message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00010000
Channel Description	
- Channel Type and TDMA offset	Depending on test.
- Timeslot Number	Chosen arbitrarily by the test house.
- Training Sequence Code	Chosen arbitrarily by the test house.
- Hopping	Single RF channel.
- ARFCN	Channel number 650.
Channel Mode	
- Mode	Depending on test.

Contents of CHANNEL MODE MODIFY ACKNOWLEDGE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00010111
Channel Description	
- Channel Type and TDMA offset	Depending on test.
- Timeslot Number	Same as in the CHANNEL MODE MODIFY message.
- Training Sequence Code	Same as in the CHANNEL MODE MODIFY message.
- Hopping	Single RF channel.
- Frequency Band	Band number 0.
- ARFCN	Channel number 650.
Channel Mode	
- Mode	Same as in the CHANNEL MODE MODIFY message.

Contents of CHANNEL RELEASE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00001101
RR Cause	
- RR Cause Value	Normal event.

Contents of CHANNEL REQUEST message:

Establishment Cause	Not checked.
Random Reference	Not checked.

Contents of CIPHERING MODE COMMAND message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00110101
Cipher Mode Setting	
- algorithm identifier	cipher with A5/1.
- SC	Start ciphering.
Cipher Response	IMEI shall not be included.

Contents of CIPHERING MODE COMPLETE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00110010
Mobile Identity	Not present.

Contents of the CLASSMARK CHANGE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	000100110
Mobile Station Classmark 2	
- RF Power Capability	See PICS/PIXIT.
- Frequency Capability	Set to 0.
Mobile Station Classmark 3	For presence and contents see PICS/PIXIT.

Contents of CM SERVICE ACCEPT message:

Protocol Discriminator	Mobility Management.
Skip Indicator	0000
Message Type	00100001

Contents of CM SERVICE REQUEST message:

Protocol Discriminator	Mobility Management.
Skip Indicator	0000
Message Type	0X100100
Other information elements	Not checked.

Contents of CONNECT message (SS to MS):

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	1
Message Type	00000111
All other information elements	Not present.

Contents of CONNECT ACKNOWLEDGE message (MS to SS):

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	As used in the SETUP message.
TI flag	0
Message Type	0X001111

Contents of HANDOVER ACCESS message:

Handover Reference	Equal to the value included in the Handover Command message.

Contents of HANDOVER COMMAND message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101011
Cell Description	
- Network Colour Code	1
- Base station Colour Code	Corresponding to target cell
- BCCH Carrier Number	Set to the BCCH carrier number of cell B. (one of 520, 590, 600, 700, 780, 810 or 870).
Channel Description	
- Channel Type and TDMA offset	Bm + ACCHs.
- Timeslot Number	Chosen arbitrarily by the test house.
- Training Sequence Code	Chosen arbitrarily by the test house.
- Hopping	Single RF channel.
- ARFCN	Chosen arbitrarily by the test house from those supported on the target cell.
Handover Reference	
- Handover Reference Value	Chosen arbitrarily by the test house.
Power Command	
- Power level	Chosen arbitrarily by the test house.
All other information elements	Not present.

Contents of HANDOVER COMPLETE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101100
RR cause	Normal event.
Time difference	Not present.

Contents of HANDOVER FAILURE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101000
RR cause	Dependent on the test.

IDENTITY REQUEST

Information element	Value/remark
Identity type	IMEI
Spare half octet	0000

IDENTITY RESPONSE

Information element	Value/remark
Mobile identity	not checked

Contents of IMMEDIATE ASSIGNMENT message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the IA rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 11.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00111111
Page Mode	
- Page Mode	Normal Paging.
Channel Description	
- Channel Type and TDMA offset	For non-combined CCCH/SDCCH (see initial conditions), SDCCH/8, with subchannel chosen arbitrarily by the test house For combined CCCH/SDCCH (default SS conditions), SDCCH/4, with subchannel chosen arbitrarily by the test house.
- Timeslot Number	For non-combined CCCH/SDCCH (see initial conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, timeslot zero.
- Training Sequence Code	For non-combined CCCH/SDCCH (see initial conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, TSC=5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	For non-combined CCCH/SDCCH (see initial conditions), Channel number 650; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, Channel number 590.
Request Reference	Pertaining to last Channel Request sent by the MS.
Timing Advance	
- Timing advance value	30 bit periods.
Mobile Allocation	
- Length	0
Starting Time	Not present.
IA rest octets	Not used (all bits set to spare).

Contents of IMMEDIATE ASSIGNMENT EXTENDED message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the IAX rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 18.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00111001
Page Mode	
- Page Mode	Normal Paging.
Channel Description 1	
- Channel Type and TDMA offset	For non-combined CCCH/SDCCH (see test conditions), SDCCH/8, with subchannel chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, with subchannel chosen arbitrarily by the test house.
- Timeslot Number	For non-combined CCCH/SDCCH (see test conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, timeslot zero.
- Training Sequence Code	For non-combined CCCH/SDCCH (see initial conditions), chosen arbitrarily by the test house; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, TSC=5 (same as the BCC).
- Hopping	Single RF channel.
- ARFCN	For non-combined CCCH/SDCCH (see initial conditions),Channel number 650; For combined CCCH/SDCCH (default SS conditions), SDCCH/4, Channel number 590.
Request Reference 1	Pertaining to last Channel Request sent by the MS.
Timing Advance 1	
- Timing advance value	Chosen arbitrarily by the test house.
Channel Description 2	
- Channel Type and TDMA offset	Same channel type as in Channel Description 1, but different TDMA offset to that in Channel Description 1.
- Timeslot Number	equal to the value in Channel Description 1.
- Training Sequence Code	equal to the value in Channel Description 1.
- Hopping	Single RF channel.
- ARFCN	equal to the value in Channel Description 1.
Request Reference 2	Not pertaining to any Channel Requests sent by the MS.
Timing Advance 2	
- Timing advance value	Chosen arbitrarily by the test house.
Mobile Allocation	
- Length	0
Starting Time	Not present.
IAX rest octets	Not used (all bits set to spare).

Contents of IMMEDIATE ASSIGNMENT REJECT message:

L2 pseudo length	19
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00111010
Page Mode	
- Page Mode	Normal Paging.
Request Reference	Pertaining to last Channel Request sent by the MS.
Wait Indication	0 seconds.
Request Reference	Not pertaining to the MS under test.
Wait Indication	0 seconds.
Request Reference	Not pertaining to the MS under test.
Wait Indication	0 seconds.
Request Reference	Not pertaining to the MS under test.
Wait Indication	0 seconds.
IAR rest octets	Not used (all bits set to spare).

Contents of LOCATION UPDATING REQUEST message:

Protocol Discriminator	MM message.
Skip Indicator	0000
Message Type	0X001000
Other information elements	Not checked.

Contents of PAGING REQUEST TYPE 1 message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the P1 rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 9.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00100001
Page Mode	
- Page Mode	Normal Paging.
Channels needed	
- first channel	any channel.
- second channel	any channel.
Mobile Identity 1	
- odd/even indication	Even.
- Type of Identity	TMSI.
- Identity Digits	TMSI previously allocated to MS.
Mobile Identity 2	Not present.
P1 rest octets	Not used (all bits set to spare).

Contents of PAGING REQUEST TYPE 2 message:

L2 pseudo length	This is the sum of the lengths of all the information elements present in the message except for the P2 rest octets and L2 pseudo length IEs. For the default message the L2 pseudo length is 11.
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00100010
Page Mode	
- Page Mode	Normal Paging.
Channels needed	
- first channel	any channel.
- second channel	any channel.
Mobile Identity 1	
- TMSI value	TMSI previously allocated to MS.
Mobile Identity 2	
- TMSI value	TMSI not allocated to MS.
Mobile Identity	Not present.
P2 rest octets	Not used (all bits set to spare).

Contents of PAGING REQUEST TYPE 3 message:

L2 pseudo length	19
Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00100100
Page Mode	
- Page Mode	Normal Paging.
Channels needed	
- first channel	any channel.
- second channel	any channel.
Mobile identity 1	
- TMSI value	TMSI previously allocated to MS.
Mobile identity 2	
- TMSI value	TMSI not allocated to MS.
Mobile identity 3	
- TMSI value	TMSI not allocated to MS.
Mobile identity 4	
- TMSI value	TMSI not allocated to MS.
P3 rest octets	Not used (all bits set to spare).

Contents of PAGING RESPONSE message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00100111
Ciphering Key Sequence Number	
- Key Sequence	Key sequence number previously allocated to MS, or "111" if no key is available.
Mobile Station Classmark 2	
Mobile Identity	
- odd/even indication	Even.
- Type of identity	TMSI
- Identity Digits	TMSI previously allocated to MS.

Contents of PHYSICAL INFORMATION message:

Protocol Discriminator	RR Management.
Skip Indicator	0000
Message Type	00101101
Timing advance	20 bit periods.

Contents of SETUP message; (MS to SS):

Protocol Discriminator	Call Control.
Transaction Identifier	
TI value	any value from the set {0, ..., 6}.
TI flag	0
Message Type	0X000101
Other information elements	Not checked.