26.12 Enhanced Full Rate signalling

This section only applies to MS supporting enhanced full rate speech.

As an EFR mobile station necessarily supports the speech full rate version 1 or both speech full rate version 1 and speech half rate version 1, conformance requirements of section 26 fully apply to this mobile.

The purpose of this extra section is to test the different procedures which may be impacted when Enhanced full rate speech codec is used.

26.12.1 EFR signalling/ test of the channel mode modify procedure

NOTE: This test is derived from the tests in sections 26.6.7.1 and 26.6.7.2 respectively entitled “Test of the channel mode modify procedure / full rate” and “Test of the channel mode modify procedure / half rate”.

This test is only applicable to an enhanced full rate speech MS.

26.12.1.1 Conformance requirement

The MS with a TCH/F allocated acknowledges a CHANNEL MODE MODIFY message by sending a CHANNEL MODE MODIFY ACKNOWLEDGE message specifying the new mode and by swithcing to this mode when this one is set to :

- speech full rate or half rate version 1
- speech full rate or half rate version 2
- any other mode declared supported by the mobile

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

TS GSM 02.06 , subclauses 3.2.3
TS GSM 04.08, subclauses 3.4.6.1.1 and 3.4.6.1.2

26.12.1.2 Test purpose

To verify that the MS with a TCH/F allocated acknowledges a CHANNEL MODE MODIFY message by sending a CHANNEL MODE MODIFY ACKNOWLEDGE message specifying the new mode and by swithcing to this mode when this one is set to :

- speech full rate or half rate version 1
- speech full rate or half rate version 2
- any other mode declared supported by the mobile

To verify that the MS, in an RR connected state, acknowledges a CHANNEL MODE MODIFY message by sending a CHANNEL MODE MODIFY ACKNOWLEDGE message specifying the old mode when the new mode is not declared as supported by the mobile

26.12.1.3 Method of test

Initial Conditions

System Simulator: 1 cell, default parameters.

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

Related PICS/PIXIT Statements

- Type of MS (P-GSM900 or EGSM or DCS1800).
- The MS supports speech full rate version 2
  - Bearer Capabilities supported by the MS
  - Channel modes supported by the MS
  * MS supports speech full rate version 3 (p1 = Y/N)
  * MS supports data 12 Kb/s (p2 = Y/N)
  * MS supports data 6 Kb/s full rate (p3 = Y/N)
  * MS supports data 3,6 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"). If necessary, the MS shall be correctly configured in order to accept this mode .

- 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

50 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 MODIDY ACKNOWLEDGE	
6	SS->MS	CHANNEL MODE MODIFY	
7	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
8	SS->MS	CHANNEL MODE MODIFY	
9	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
10	SS->MS	CHANNEL MODE MODIFY	
11	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
12	SS->MS	CHANNEL MODE MODIFY	
13	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
14	SS->MS	CHANNEL MODE MODIFY	
15	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
16	SS->MS	CHANNEL MODE MODIFY	
17	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
18	SS->MS	CHANNEL MODE MODIFY	
19	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
20	SS->MS	CHANNEL MODE MODIFY	
21	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
22	SS->MS	CHANNEL MODE MODIFY	
23	MS->SS	CHANNEL MODE MODIDY ACKNOWLEDGE	
24	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 or half rate version 2 in step 6: data 3,6 Kb/s in step 8: speech full or half rate version 2 in step 10: data 6 Kb/s in step 12: speech full or half rate version 2 in step 14: data 12 Kb/s in step 16: speech full or half rate version 2 in step 18: speech full or half rate version 1 in step 20: speech full or half rate version 2 in step 22: speech full or half rate version 3

CHANNEL MODE MODIFY ACKNOWLEDGE

Channel mode Mode	in steps 5, 9, 13, 17, 21 : speech full rate version 2 in step 7: if p 4= Y: data 3,6 Kb/s if p4 = N: same as in step 5 in step 11 : if p3 = Y: data 6,0 Kb/s full rate if p3 = N: same as in step 9 in step 15: if p2 = Y: data 12 Kb/s full rate if p2 = N: same as in step 13 in step 19: speech full rate version 2 in step 23: if p1 = Y: speech full rate version 3 if p1 = N: same as in step 21

26.12.2 EFR signalling/ tests 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.

Section 26.12.2.1contains generic test procedures to be used for executing successful Handover tests dealing with EFR mode.

It deals with EFR signalling in the Handover/successful/active call/non synchronised case.

Table 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.

sv1 stands for speech full/half rate version 1.

sv2 stands for speech full/half rate version 2 (enhanced full rate).

Table 1

From	To	Timing Adv.	Start Time	Syn ?	State of call	Section	Exec Counter
TCH/F, sv2, no FH	TCH/F, sv2, no FH	20	none	no	U10	26.12.2.1	1
TCH/F, sv2, no FH	TCH/F, sv2, FH	arbitrary	none	no	U10	26.12.2.1	2
TCH/F, sv2, FH	TCH/F, sv2, no FH	20	1,1s	no	U10	26.12.2.1	3
TCH/F, sv2, no FH	TCH/F, sv1, no FH	20	none	no	U10	26.12.2.1	4
TCH/F, sv1,no FH	TCH/F, sv2, no FH	arbitrary	none	no	U10	26.12.2.1	5
TCH/F, sv2, no FH	TCH/F, sv1, FH	arbitrary	none	no	U10	26.12.2.1	6
TCH/F, sv1, FH	TCH/F, sv2,FH	20	1,1	no	U10	26.12.2.1	7
TCH/F, sv2, FH	TCH/F, sv1, FH	arbitrary	none	no	U10	26.12.2.1	8
TCH/F, sv1, FH	TCH/F, sv2, no FH	arbitrary	none	no	U10	26.12.2.1	9
TCH/F, sv2, no FH	TCH/H, sv1, FH	arbitrary	none	no	U10	26.12.2.1	10
TCH/H, sv1, FH	TCH/F, sv2, FH	20	1,1	no	U10	26.12.2.1	11
TCH/F, sv2, FH	TCH/H, sv1, FH	arbitrary	none	no	U10	26.12.2.1	12
TCH/H, sv1, FH	TCH/F, sv2, noFH	20	none	no	U10	26.12.2.1	13
TCH/F, sv2, noFH	TCH/H, sv1, noFH	20	none	no	U10	26.12.2.1	14
TCH/H, sv1, noFH	TCH/F, sv2, noFH	20	none	no	U10	26.12.2.1	15

Table 2

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

n : number of access bursts.

26.12.2.1 EFR signalling / Handover / active call / successful case

NOTE: This test is derived from the one defined in section 26.6.5.1 “Handover/successful/active call/non-synchronized”

This test only applies for MS supporting full rate speech version 2 (enhanced full rate speech).

26.12.2.1.1 Conformance requirements

The MS shall correctly apply the handover procedure in the non-synchronized case when :

- a call is in progress and,
- handover is performed from a TCH/F with/without frequency hopping towards a TCH/F with/without frequency hopping and,
- the mode of either the current or the target channel is set to full rate speech version 2 (enhanced full rate speech).

The MS also supporting half rate shall correctly apply the handover procedure in the non-synchronized case when:

- a call is in progress and,
- a handover is performed between a TCH/H with/without frequency hopping and a TCH/F with/without frequency hopping and,
- the mode of the TCH/F is set to full rate speech version 2.

References

GSM 04.08 sections 3.4.4 and 9.1.15
GSM 04.13 section 5.2.6.2.

26.12.2.1.2 Test purpose

To test that the MS shall correctly apply the handover procedure in the non-synchronized case when :

- a call is in progress and,
- handover is performed from a TCH/F with/without frequency hopping towards a TCH/F with/without frequency hopping and,
- the mode of either the current or the target channel is set to full rate speech version 2 (enhanced full rate speech).

To test that the MS also supporting half rate shall correctly apply the handover procedure in the non-synchronized case when :

- a call is in progress and,
- a handover is performed between a TCH/H with/without frequency hopping and a TCH/F with/without frequency hopping and,
- the mode of the TCH/F is set to full rate speech version 2.

26.12.2.1.3 Method of test

Initial Conditions

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

GSM900 :

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.

DCS1800 :

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 full rate speech version 2 (enhanced full rate speech)
supported radio interface rates : 12kbps, 6kbps, 3,6kbps
Type of Mobile Station (P-GSM900 or EGSM or DCS1800).

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 15.

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 2 of section 26.12.2) access bursts, the SS sends one PHYSICAL INFORMATION message with a Timing Advance as specified in table 1 of section 26.12.2. 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 TS 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

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

Expected Sequence

This sequence is performed for an execution counter M = 1, 2, ...9 for an MS which supports enhanced full speech codec and only TCH/F .

This sequence is performed for an execution counter M = 1, 2, ...15 for an MS which supports enhanced full speech codec and 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 TCH described below. The SS checks that the TCH is through connected in the correct mode.

Specific Message Contents

For M = 1 :

P-GSM900

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 2 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- 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 with speech full rate version 2 and in non hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 2 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- 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 with speech full rate version 2 and in non hopping mode on cell B.

For M = 2 :

GSM900

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 2 and 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)
Synchronisation 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 with speech full rate version 2 and in hopping mode on cell A.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 2 and 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)
Synchronisation 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 with speech full rate version 2 and in hopping mode on cell A.

For M = 3 :

GSM900

Step 0 : The MS and SS are using a full rate TCH ith speech full rate version 2 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- 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.

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 with speech full rate version 2 and in non-hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 2 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- 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.

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 with speech version 2 and in non-hopping mode on cell B.

For M = 4 :

P-GSM900

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- Normal Cell Indication	Ignore out of range timing advance.
Mode of the first channel	
- Mode	speech full rate 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 with speech full rate version 1 and in non hopping mode on cell A.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 2 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- Normal Cell Indication	Ignore out of range timing advance.
Mode of the first channel	
- Mode	speech full rate 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 with speech full rate version 1 and in non hopping mode on cell A.

For M = 5 :

GSM900

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 1 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- Normal Cell Indication	Ignore out of range timing advance.

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 with speech full rate version 2 and in non hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 1 and 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
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- 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 with speech full rate version 2 mode and non hopping mode on cell B.

For M=6 :

GSM900

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 2 and 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)
Synchronisation Indication IE is not included.	
Mode of the first channel.	
- Mode	speech full rate or half rate version 1
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 with speech full rate version 1 and hopping mode on cell A.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and 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)
Synchronisation Indication IE is not included.	
Mode of the first channel	
- Mode	speech full rate or half rate version 1
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 with full rate speech version 1 and in hopping mode on cell A.

For M=7 :
GSM900

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 1 and 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/F + ACCHs
- TDMA offset	Chosen arbitrarily
- Timeslot number	Chosen arbitrarily, but not Zero
- Training Sequence Code	Chosen arbitrarily
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Frequency List IE.
- HSN	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)
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- 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 full rate TCH with full rate speech version 2 and in hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 1 and 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/F + ACCHs
- TDMA offset	Chosen arbitrarily
- Timeslot number	Chosen arbitrarily but not Zero
- Training Sequence Code	Chosen arbitrarily
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Frequency List IE.
- HSN	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)
Synchronisation Indication	
- Report Observed Time Difference	Shall not be included.
- Synchronisation Indication	'Non synchronised'.
- 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 full rate TCH with full rate speech version 2 and in hopping mode on cell B.

For M = 8 :

GSM900

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in hopping mode on cell B.

HANDOVER COMMAND

same as for M=6

PHYSICAL INFORMATION

same as for M=6

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 1 and in hopping mode on cell A.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in hopping mode on cell B.

HANDOVER COMMAND

same as for M=6

PHYSICAL INFORMATION

same as for M=6

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 1 and in hopping mode on cell A.

For M = 9 :

GSM900

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 1 and in hopping mode on cell A.

HANDOVER COMMAND

same as for M=5.

PHYSICAL INFORMATION

same as For M=5.

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in non hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with speech full rate version 1 and in hopping mode on cell A.

HANDOVER COMMAND

same as for M=5.

PHYSICAL INFORMATION

same as for M=5.

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in non hopping mode on cell B.

For M=10 :
GSM900

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in non hopping mode on cell B.

HANDOVER COMMAND

same as for M=6 except :
Channel Description
- Channel Type TCH/H + ACCHs

PHYSICAL INFORMATION

same as for M=6

Step 6 : x = 750
Step 7 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in non hopping mode on cell B.

HANDOVER COMMAND

same as for M=6 except :
Channel Description
- Channel Type TCH/H + ACCHs

PHYSICAL INFORMATION

same as for M=6

Step 6 : x = 750
Step 7 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

For M = 11 :

GSM900

Step 0 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

HANDOVER COMMAND

same as for M=7

PHYSICAL INFORMATION

same as For M=7.
Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

HANDOVER COMMAND

same as for M=7

PHYSICAL INFORMATION

same as for M=7.

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in hopping mode on cell B.

For M = 12 :
GSM900

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in hopping mode on cell B.

HANDOVER COMMAND

same as for M=6 except :

Channel Description - Channel Type	TCH/H + ACCHs

PHYSICAL INFORMATION

same as for M=6

Step 6 : x = 750
Step 7 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in hopping mode on cell B.

HANDOVER COMMAND

same as for M=6 except :

Channel Description - Channel Type	TCH/H + ACCHs

PHYSICAL INFORMATION

same as for M=6

Step 6 : x = 750
Step 7 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

For M = 13 :

GSM900

Step 0 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

HANDOVER COMMAND

same as for M=1

PHYSICAL INFORMATION

same as For M=1.

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in non hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a half rate TCH with speech half rate version 1 and in hopping mode on cell A.

HANDOVER COMMAND

same as for M=1

PHYSICAL INFORMATION

same as for M=1.

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in non hopping mode on cell B.

For M = 14 :

GSM900

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in non hopping mode on cell B.

HANDOVER COMMAND

same as for M=4 except :

Channel Description - Channel Type	TCH/H + ACCHs

PHYSICAL INFORMATION

same as for M=4

Step 6 : x = 750
Step 7 : The MS and SS are using a half rate TCH with speech half rate version 1 and in non hopping mode on cell A.

DCS1800

Step 0 : The MS and SS are using a full rate TCH with full rate speech version 2 and in non hopping mode on cell B.

HANDOVER COMMAND

same as for M=4 except :

Channel Description - Channel Type	TCH/H + ACCHs

PHYSICAL INFORMATION

same as for M=4

Step 6 : x = 750
Step 7 : The MS and SS are using a half rate TCH with speech half rate version 1 and in non hopping mode on cell A.

For M = 15 :
GSM900

Step 0 : The MS and SS are using a half rate TCH with speech half rate version 1 and in non hopping mode on cell A.

HANDOVER COMMAND

same as for M=1

PHYSICAL INFORMATION

same as For M=1.

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in non hopping mode on cell B.

DCS1800

Step 0 : The MS and SS are using a half rate TCH with speech half rate version 1 and in non hopping mode on cell A.

HANDOVER COMMAND

same as for M=1

PHYSICAL INFORMATION

same as for M=1.

Step 6 : x = 750
Step 7 : The MS and SS are using a full rate TCH with speech full rate version 2 and in non hopping mode on cell B.

26.12.3 EFR Signalling / Structured procedures / MS originated call / late assignment

NOTE: this test is derived from the one defined in section 26.9.3 and entitled “Structured procedures / MS originated call / late assignment”

26.12.3.1 Conformance requirement

1) The MS shall indicate and include in the mobile originating SETUP for speech call all the speech versions that it supports.

2) Upon receipt of the ASSIGNMENT COMMAND message specifying either speech full rate version 1 or speech full rate version 2 or speech half rate version 1 (for an MS also supporting half rate), the Mobile Station starts a normal channel assignment procedure. It means that the MS initiates a local end release of link layer connections, disconnects the physical channels, commands the switching to the assigned channels and initiates the establishment of lower layer connections (this includes the activation of the channels, their connection and the establishment of the data links). After the main signalling link is successfully established, the MS returns an ASSIGNMENT COMPLETE message, specifying cause 'normal event', to the network on the main DCCH.

3,4) The call control entity of the Mobile Station in the "call initiated" state, in the "mobile originating call proceeding" state or in the "call delivered" state, shall, upon receipt of a CONNECT message:
- attach the user connection to the radio path;
- return a CONNECT ACKNOWLEDGE message.

References

Conformance requirement 1: TS GSM 04.08 sections 10.5.4.5 and 10.5.4.5.1 and TS GSM 02.06 section 3.2.3
Conformance requirement 2: TS GSM 04.08 section 3.4.3.1, 3.4.3.2
Conformance requirement 3: TS GSM 04.08 section 5.2.1.6.

26.12.3.2 Test purpose

1) To verify that the MS indicates and includes in the mobile originating SETUP for speech call all the speech versions that it supports.

2) To verify that subsequently after receipt of an IMMEDIATE ASSIGNMENT message allocating an SDCCH, after completion of establishment of the main signalling link, after having sent a CM SERVICE REQUEST message, after having successfully performed authentication and cipher mode setting procedures, after having sent a SETUP message, after having received a CALL PROCEEDING message followed by an ALERTING message and an ASSIGNMENT COMMAND message allocating either speech full rate version 1 TCH or speech full rate version 2 TCH or speech half rate version 1 TCH (for an MS also supporting half rate), the MS sends an ASSIGNMENT COMPLETE message.

3) To verify that subsequently, after the suite of actions specified in test purposes 1 and 2, the MS after receiving a CONNECT message returns a CONNECT ACKNOWLEDGE message.

4) To verify that after the suite of actions specified in test purposes 1 and 2, the MS after receiving a CONNECT message attaches the user connection to the radio path. (This is checked by verifying that there is a point in time after transmission of the first L2 frame containing the (complete) CONNECT message, where the MS is sending appropriate speech or data frames whenever it doesn't have to transmit or acknowledge an I frame on layer 2 of the FACCH.)

26.12.3.3 Method of test

Related PICS/PIXIT statements

- Enhanced full rate speech MS
- Supported speech versions
- Interface to the human user (p1 = Y/N)
- Way to display the called number (only applicable if the MS has an interface to the human user)
- Way to indicate alerting (only applicable if the MS supports the feature)
- Supported teleservices
- Classmark

Initial Conditions

System Simulator:
1 cell, default parameters.

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

Foreseen Final State of the MS

The MS has a MO call in state U10, "active".

Test procedure

The following test is performed for all rates (full rate/half rate) supported by the MS:

The MS is made to initiate a speech call. The call is established with late assignment.

Maximum Duration of Test

3 minutes.

Expected Sequence

This test is repeated for execution counter M=1, 2 for an MS supporting full rate channels only.

This test is repeated for execution counter M=1, 2, 3 for an MS supporting both half and full rate channels.

Step	Direction	Message	Comments
1	MS		The "called number" is entered
2	MS		
3	MS -> SS	CHANNEL REQUEST	Establishment cause is "originating call and the network does not set the NECI bit to 1".
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
6	SS -> MS	AUTHENTICATION REQ	
7	MS -> SS	AUTHENTICATION RESP	SRES specifies correct value.
8	SS -> MS	CIPHER MODE COMMAND	SS starts deciphering after sending the message.
9	MS -> SS	CIPHER MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS		SS starts ciphering.
11	MS -> SS	SETUP	If the mobile only supports full rate speech , it is checked that it indicates support of full rate speech version 1 and version 2. If the mobile supports both rates, it is checked that it indicates full rate speech version 1, half rate speech version 1 and full rate speech version 2.
12	SS -> MS	CALL PROCEEDING	
13	SS -> MS	ALERTING	
14	MS		Depending on the PICS, an alerting indication is given.
15	SS -> MS	ASSIGNMENT COMMAND	
16	MS -> SS	ASSIGNMENT COMPLETE	
17	SS -> MS	CONNECT	
18	MS -> SS	CONNECT ACKNOWLEDGE	
19	MS		The appropriate bearer channel is through connected in both directions.

Specific Message Contents:

For M = 1 :

ASSIGNMENT COMMAND

see default message contents section 26.12.8.

SETUP

Same contents as 26.12.8 but all the speech versions supported by the MS shall be indicated in octet_3a_etc(s).

For M = 2 :

ASSIGNMENT COMMAND

same as for default message contents except :

Mode of the first channel - Mode	 speech full rate or half rate version 1

SETUP

Same contents as 26.12.8 but all the speech versions supported by the MS shall be indicated in octet_3a_etc(s).

For M = 3 :

ASSIGNMENT COMMAND

same as for default message contents except :

Channel Description - TDMA offset Mode of the first channel - Mode	 TCH/H+ACCHs speech full rate or half rate version 1

SETUP

same contents as 26.12.8 but the supported speech versions and their preferred order indicated in octet_3a_etc(s) shall be as declared by the manufacturer.

26.12.4 Structured procedures / MS terminated call / l early assignment

NOTE: this test is derived from the one described in section 26.9.4 and entitled “Structured procedures / MS terminated call / early assignment”

26.12.4.1 Conformance requirement

1) In acceptance to a SETUP message indicating speech, the MS shall indicate and include in the CALL CONFIRMED message all the speech versions that it supports.

2) Upon receipt of the ASSIGNMENT COMMAND message specifying either speech full rate version 1 or speech full rate version 2 or speech half rate version 1 (for an MS also supporting half rate), the Mobile Station continues a mobile terminating call establishment with early assignment of traffic channel

   a) by replying to the ASSIGNMENT command with an ASSIGNMENT COMPLETE message and ,
   b) by continuing the call establishment by through connecting TCH in both directions if it supports immediate connect or by sending an ALERTING message otherwise,

3) for speech calls, the mobile station shall attach the user connection at latest when sending the connect message, except if there is no compatible radio resource available at this time. In this case the attachment shall be delayed until such a resource becomes available.

References

Conformance requirement 1: TS GSM 04.08 sections 10.5.4.5,and 10.5.4.5.1
TS GSM 02.06 section 3.2.3
Conformance requirement 2: TS GSM 04.08 section 3.4.3.1, 3.4.3.2
Conformance requirement 3: TS GSM 04.08 section 5.2.2.9

26.12.4.2 Test purpose

1) To verify that, in acceptance to a SETUP message indicating speech, the MS indicates and includes in the CALL CONFIRMED message all the speech versions that it supports.

2) To verify that upon receipt of the ASSIGNMENT COMMAND message specifying either speech full rate version 1 or speech full rate version 2 or speech half rate version 1 (for an MS also supporting half rate), the Mobile Station continues a mobile terminating call establishment with early assignment of traffic channel

   a) by replying to the ASSIGNMENT command with an ASSIGNMENT COMPLETE message and ,

   b) by continuing the call establishment by through connecting TCH in both directions if it supports immediate connect or by sending an ALERTING message otherwise,

3) To verify that for speech calls, the mobile station shall attach the user connection at latest when sending the connect message, except if there is no compatible radio resource available at this time. In this case the attachment shall be delayed until such a resource becomes available.

26.12.4.3 Method of test

Related PICS/PIXIT statements

- Enhanced full rate speech MS
- Supported speech versions
- Interface to the human user (p1 = Y/N)
- Way to indicate alerting (only applicable if the MS supports the feature)
- Way to make the MS accept an incoming call after alerting (possibly dependent on teleservice and configuration)
- Supported teleservices
- Classmark
- Immediate connect supported (Y/N)

Initial Conditions

System Simulator: 1 cell, default parameters.

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

Foreseen Final State of the MS

CC state U10-call active.

Test procedure

The following test is performed for all rates (full rate/half rate) supported by the MS:

A teleservice is selected that is supported by the MS; if the MS supports speech, the selected teleservice is speech. If necessary, the MS is configured for that teleservice.

The MS is paged and the resulting call is established. Having reached the active state, the MS is made to clear the call.

Maximum Duration of Test

3 minutes.

Expected Sequence

This test is repeated for execution counter M=1, 2 for an MS supporting full rate channels only.

This test is repeated for execution counter M=1, 2, 3 for an MS supporting both half and full rate channels.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Sent on the correct paging subchannel
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SETUP	Message does not contain the signal IE.
11	MS -> SS	CALL CONFIRMED	If the mobile only supports full rate speech, it is checked that it indicates support of full rate speech version 1 and version 2. If the mobile supports both rates, it is checked that it indicates full rate speech version 1, half rate speech version 1 and full rate speech version 2.
			If the MS supports an Immediate connection then branch A applies. If the MS doesn't support an immediate connection then branch B applies.
A12	MS -> SS	CONNECT	sent on the old channel
A13	SS -> MS	ASSIGNMENT COMMAND	
A14	MS -> SS	ASSIGNMENT COMPLETE	
B12	SS -> MS	ASSIGNMENT COMMAND	
B13	MS -> SS	ASSIGNMENT COMPLETE	Sent on the new channel.
B14	MS -> SS	ALERTING	
B15	MS		An alerting indication as defined in an PICS/PIXIT statement is given by the MS.
B16	MS		The MS is made to accept the call in the way described in a PICS/PIXIT statement.
B17	MS -> SS	CONNECT	
18	MS		the TCH shall be through connected in both directions. in the indicated mode.
19	SS -> MS	CONNECT ACKNOWLEDGE	
20	MS		The MS is made to release the call.
21	MS -> SS	DISCONNECT	
22	SS -> MS	RELEASE	
23	MS -> SS	RELEASE COMPLETE	
24	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

For M = 1 :

ASSIGNMENT COMMAND

see default message contents section 26.12.8.

CALL CONFIRMED

Same contents as 26.12.8 but all the speech versions supported by the MS shall be indicated in octet_3a_etc(s).

For M = 2 :

ASSIGNMENT COMMAND

same as for default message contents except :

Mode of the first channel - Mode	 speech full rate or half rate version 1

CALL CONFIRMED

Same contents as 26.12.8 but all the speech versions supported by the MS shall be indicated in octet_3a_etc(s).

For M = 3 :

ASSIGNMENT COMMAND

same as for default message contents except :

Channel Description - TDMA offset Mode of the first channel - Mode	 TCH/H+ACCHs speech full rate or half rate version 1

CALL CONFIRMED

same contents as 26.12.8 but all the speech versions supported by the MS shall be indicated in octet_3a_etc(s).

26.12.5 Structured procedures / emergency call

NOTE : This test is derived from the ones described in sections 26.9.6.1.1 and 26.9.6.1.2 and respectively entitled “Structured procedures / emergency call / idle updated, preferred channel rate “ and “Structured procedures / emergency call / idle updated, non-preferred channel rate”.

This test applies to mobiles supporting Enhanced Full Rate speech.

26.12.5.1 Conformance requirement

1) The MS in the "idle, updated" state, as after a successful location update, after the number 112 has been entered by user, shall send a CHANNEL REQUEST message with correct establishment cause ("emergency call").

2) After assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct CKSN and TMSI , with CM Service Type "emergency call establishment".

3) Authentication and cipher mode setting shall be performed successfully.

4) After cipher mode setting acceptance by the network, the MS shall send an EMERGENCY SETUP message.

5) The EFR mobile station shall accept channel assignment to a TCH full rate speech version 1 or 2 and if it supports half rate, in addition it shall accept channel assignment to a TCH half rate speech version 1.

6) After receipt of a CONNECT ACKNOWLEDGE message during correct establishment of the emergency call the TCH shall be through connected in both directions if an appropriate TCH is available.

7) The call shall be cleared correctly.

Requirement Reference:

For conformance requirement 1 and 2:	TS GSM 04.08 section 3.3.1, TS GSM 04.08 section 5.2.1, TS GSM 04.08 section 4.5.1.5., TS GSM 02.30 section 4.
For conformance requirement 3:	TS GSM 04.08, section 3.4.7, TS GSM 04.08 section 4.3.2.
For conformance requirement 4:	TS GSM 04.08, section 5.2.1.1.
For conformance requirement 5 :	TS GSM 04.08, sections 5.2.1.1 and 3.4.3. TS GSM 02.06 , subclause 3.2.3.
For conformance requirement 6:	TS GSM 04.08, section 5.2.1.6
For conformance requirement 7:	TS GSM 04.08, section 5.4.

26.12.5.2 Test purpose

1) To verify that an MS supporting speech in the MM state "idle, updated", when made to call the number 112, sends a CHANNEL REQUEST message with establishment cause "emergency call".

2) To verify that after assignment of a dedicated channel the first layer message sent by the MS on the assigned dedicated channel is a CM SERVICE REQUEST message specifying the correct CKSN and TMSI, with CM Service Type "emergency call establishment" .

3) To verify that authentication and cipher mode setting are performed successfully.

4) To verify that after cipher mode setting acceptance by the SS, the MS sends an EMERGENCY SETUP message.

5) To verify that the EFR mobile station shall both accept channel assignment to a TCH full rate speech version 1 or 2 and if it supports half rate, in addition it shall accept channel assignment to a TCH half rate speech version 1.

6) To verify that subsequently the MS has through connected the TCH in both directions.

7) To verify that the call is cleared correctly.

26.12.5.3 Method of test

Related PICS/PIXIT Statements

- Speech supported (Y/N).
- Supported rate for speech: (F/H, F).
- Speech version supproted :
- Classmark.
- Inclusion of the bearer capability IE in the emergency setup

Initial Conditions

System Simulator:
1 cell, default parameters.

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

Foreseen Final State of the MS

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

Test procedure

The MS is made to initiate an emergency call. The call is established with late assignment. Having reached the active state, the call is cleared by the SS. This procedure is repeated so that the assignment is made with all the channel rates and speech versions supported by the mobile station.

Maximum Duration of Test

3 minutes

Expected Sequence

The expected sequence is executed for M=1 and 2, for a full rate only mobile station which includes the bearer capabilityv IE in the emergency setup message .

The expected sequence is executed for M=1, 2 and 3, for a dual rate mobile station which includes the bearer capabilityv IE in the emergency setup message.

The expected sequence is executed for M=1, for a mobille which does not include the bearer capability IE in the emergency setup message.

Step	Direction	Message	Comments
1	MS		The "called number" 112 is entered
3	MS -> SS	CHANNEL REQUEST	Establishment cause is emergency call establishment.
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. The CM service type IE indicates "emergency call establishment".
6	SS -> MS	AUTHENTICATION REQUEST	
7	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
8	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
9	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS		SS starts ciphering.
11	MS -> SS	EMERGENCY SETUP	If the bearer capability IE is including, it shall be checked that all the speech versions supported by the MS are present.
12	SS -> MS	CALL PROCEEDING	
13	SS -> MS	ALERTING	
14	SS -> MS	ASSIGNMENT COMMAND	See specific message contents.
15	MS -> SS	ASSIGNMENT COMPLETE	
16	SS -> MS	CONNECT	
17	MS -> SS	CONNECT ACKNOWLEDGE	
18	MS		The TCH is through connected in both directions in the correct mode.
19	SS -> MS	DISCONNECT	
20	MS -> SS	RELEASE	
21	SS -> MS	RELEASE COMPLETE	
23	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

For M= 1

ASSIGNMENT COMMAND

same as for default message contents except :

Mode of the first channel - Mode	 Speech full rate or half rate version 1

For M= 2

ASSIGNMENT COMMAND

same as for default message contents

For M= 3

ASSIGNMENT COMMAND

same as for default message contents except :

Channel Description - TDMA offset	 TCH/H+ACCHs
Mode of the first channel - Mode	 Speech full rate or half rate version 1

26.12.6 EFR Signalling / Directed Retry / Mobile Originated Call

This test is applicable to all MS which support EFR speech.

NOTE: This test is derived from the one defined in section 26.9.7 and entitled „Directed Retry / MS originated call“

26.12.6.1 Conformance requirements

The MS shall correctly apply the Directed Retry procedure from SDCCH/8 (no frequency hopping) to TCH/EFR with frequency hopping in the non-synchronized case during call establishment. The call control entity of the Mobile Station in the "mobile originating call proceeding" state shall, upon receipt of a CONNECT message, attach the EFR speech connection to the radio path and return a CONNECT ACKNOWLEDGE message to the SS.

References

GSM 04.08, sections 3.4.4, 5.2.1.6. and 9.1.15.

GSM 04.13, section 5.2.6.2.

26.12.6.2 Test purpose

To test that, when the MS is ordered to perform a non-synchronized handover after the CALL PROCEED message, it continuously sends access bursts on the main DCCH until it receives a PHYSICAL INFORMATION message from the SS. To test that the MS correctly takes the values of the Timing Advance information element in the PHYSICAL INFORMATION message into account. To test that the MS activates the new channel correctly and transmits the HANDOVER COMPLETE message without undue delay. To test that the call control entity of the Mobile Station in the "mobile originating call proceeding" state, upon receipt of a CONNECT message, attaches the EFR speech connection to the radio path and returns a CONNECT ACKNOWLEDGE message to the SS.

26.12.6.3 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.

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.

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/EFR.
Support for MO calls.
Way to indicate alerting (only applicable if the MS supports the feature).
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

The MS is made to initiate a speech call on Cell A. After the SS has sent the CALL PROCEEDING message the SS sends a HANDOVER COMMAND message, ordering the MS to switch to cell B. The MS shall then begin to send access bursts on the new DCCH 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 an arbitrarily chosen Timing Advance. The MS shall activate the channel in sending and receiving mode. The MS shall establish a signalling link. The MS shall be ready to transmit a HANDOVER COMPLETE message before x ms after the end of the PHYSICAL INFORMATION message, but not before a UA frame has been sent by the SS. After the successful handover procedure the SS sends the ALERTING message. The correct

alerting indication shall be given to the user (only applicable if the MS supports this feature). The SS sends the CONNECT message indicating that the call has been answered. The EFR speech channel shall be through connected in both directions. The MS shall send then the CONNECT ACKNOWLEDGE message as the response on the CONNECT message. Having reached the active state, the call is cleared by the SS.

The term "ready to transmit" is defined in 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

1 minute, including 30 seconds for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
1	--------	--------	A MO call is initiated on cell A.
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "originating call and the network does not set the NECI bit to 1".
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	CM SERVICE REQUEST	CM Service Type = Mobile Originating Call Establishment.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	MS -> SS	SETUP	EFR speech
11	SS -> MS	CALL PROCEEDING	
12	SS -> MS	HANDOVER COMMAND	See specific message contents.
13	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND.
14	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS message. Timing Advance is arbitrarily chosen.
15	MS -> SS	SABM	Sent without information field.
16	SS -> MS	UA	
17	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step 14.
18	SS -> MS	ALERTING	
19	MS		Depending on the PICS, an alerting indication is given.
20	SS -> MS	CONNECT	
21	MS -> SS	CONNECT ACKNOWLEDGE	
22	MS		The EFR speech channel is through connected in both directions.
23	SS -> MS	DISCONNECT	
24	MS -> SS	RELEASE	
25	SS -> MS	RELEASE COMPLETE	
26	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

For 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/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
- TDMA offset	Chosen arbitrarily.
- Timeslot number	Chosen arbitrarily but not zero.
- Training Sequence Code	Chosen arbitrarily.
- Hopping	RF hopping channel.
- MAIO	Chosen arbitrarily from the set (0, 1 to N-1), where N is the number of frequencies encoded in the Frequency List IE.
- HSN	Zero (this gives cyclic hopping).
Synchronization Indication IE is not included	
Frequency list after time	
- Frequency List	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).
Channel Mode IE	Speech (full rate version 2 or half rate version 2).

Step 17: "**x**" = 500.

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/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
- 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 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	Speech (full rate version 2 or half rate version 2).

Step 17: "**x**" = 500.

26.12.7 EFR Signalling / Directed Retry / Mobile Terminated Call

This test is applicable to all MS which support EFR speech.

NOTE: This test is derived from the one defined in section 26.9.8 and entitled „Directed Retry / MS originated call“

26.12.7.1 Conformance requirements

The MS shall correctly apply the Directed Retry procedure from SDCCH/8 with frequency hopping to TCH/EFR with frequency hopping and starting time in the non-synchronized case during call establishment. The call control entity of the Mobile Station in the "call delivered" state shall, if the MS supports immediate connect, continue the call establishment by through-connecting the EFR traffic channel in both directions, or if the MS does not support immediate connect, send an ALERTING message. The MS indicates acceptance of a MT call by sending CONNECT.

The mobile station shall attach the user connection at latest when sending the CONNECT message, except if there is no compatible radio resource available at this time. In this case the attachment shall be delayed until such a resource becomes available.

References

GSM 04.08, sections 3.4.4, 5.2.2.5, 5.2.2.6, 5.2.2.9 and 9.1.15.

GSM 04.13, section 5.2.6.2.

26.12.7.2 Test purpose

To test that when the MS is ordered to perform a non-synchronized handover after the CALL CONFIRM message, it continuously sends access bursts on the main DCCH until it receives a PHYSICAL INFORMATION message from the SS. To test that the MS correctly takes the values of the Timing Advance information element in the PHYSICAL INFORMATION message into account. To test that the MS activates the new channel correctly and transmits the HANDOVER COMPLETE message without undue delay. To test that the call control entity of the Mobile Station in the "call delivered" state, if the MS supports immediate connect, continues the call establishment by through-connecting the EFR traffic

channel in both directions, or if the MS does not support immediate connect, sends an ALERTING message. To test that the MS indicates acceptance of a MT call by sending CONNECT.

To test that the mobile station attaches the user connection at latest when sending the CONNECT message, except if there is no compatible radio resource available at this time. To test that in this case the attachment is delayed until such a resource becomes available.

26.12.7.3 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.

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.

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/EFR.
Support for MT calls.
Way to indicate alerting (only applicable if the MS supports the feature).
Way to make the MS accept an incoming call after alerting.
Immediate connect supported (Y/N).
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

The MS is paged on Cell A. The MS responds to the PAGING REQUEST message and establishes a mobile terminated speech call on Cell A. If the MS supports immediate connect, it continues the call establishment by through-connecting the traffic channel in both directions, or if the MS does not support immediate connect, it sends an ALERTING message. The MS indicates acceptance of a MT call by sending CONNECT.

After the MS has sent the CALL CONFIRMED message (if the MS supports immediate connect then the MS sends the CONNECT message after the CALL CONFIRMED message on the old channel) the SS sends a HANDOVER COMMAND message, ordering the MS to switch to cell B. The MS shall then begin to send access bursts on the new DCCH 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 an arbitrarily chosen Timing Advance. The MS shall activate the channel in sending and receiving mode. The MS shall establish a signalling link. The MS shall be ready to transmit a HANDOVER COMPLETE message before x ms after the end of the PHYSICAL INFORMATION message, but not before a UA frame has been sent by the SS. After the successful handover procedure the MS sends the ALERTING message (if the MS runs the immediate connect procedure then the MS does not send an ALERTING message). The correct alerting indication shall be given to the user (only applicable if the MS supports the feature or if the MS is not using the immediate connect procedure). After the MS sent the CONNECT message the EFR speech channel shall be through connected in both directions. The SS sends then the CONNECT ACKNOWLEDGE message as the response on the CONNECT message. Having reached the active state, the call is cleared by the SS.

The term "ready to transmit" is defined in 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

1 minute, including 30 seconds for any necessary operator actions.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Sent on the correct paging subchannel on cell A.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	See specific message contents.
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SETUP	EFR speech.
11	MS -> SS	CALL CONFIRMED	If the MS supports immediate connect then branch A applies. If the MS does not support immediate connect then branch B applies
A12	MS -> SS	CONNECT	sent on the old channel
A13	SS -> MS	HANDOVER COMMAND	See specific message contents.
A14	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND. The first HANDOVER ACCESS message shall be transmitted in the indicated frame (unless the indicated frame is not used by that channel, in which case the next frame used by that channel shall be used).
A15	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS message. Timing Advance is arbitrarily chosen.
A16	MS -> SS	SABM	Sent without information field.
A17	SS -> MS	UA	
A18	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step A15.
B12	SS -> MS	HANDOVER COMMAND	See specific message contents.
B13	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH until reception of PHYSICAL INFORMATION. Handover Reference as included in the HANDOVER COMMAND. The first HANDOVER ACCESS message shall be transmitted in the indicated frame (unless the indicated frame is not used by that channel, in which case the next frame used by that channel shall be used).
B14	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS message. Timing Advance is arbitrarily chosen.
B15	MS -> SS	SABM	Sent without information field.
B16	SS -> MS	UA	
B17	MS -> SS	HANDOVER COMPLETE	This message shall be ready to be transmitted before "x" ms after the completion of step B14.
B18	MS -> SS	ALERTING	
B19	MS		Gives an alerting indication as defined in a PICS/PIXIT statement is given by the MS
B20	MS		The MS is made to accept the call in the way described in a PICS/PIXIT statement
B21	MS -> SS	CONNECT	
22	MS		The TCH/EFR channel shall be through connected in both directions.
23	SS -> MS	CONNECT ACKNOWLEDGE	
24	SS -> MS	DISCONNECT	
25	MS -> SS	RELEASE	
26	SS -> MS	RELEASE COMPLETE	
27	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents

For 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
- 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.
Mode of First Channel	Speech (full rate version 2 or half rate version 2).
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.

Step A18 / B17: "**x**" = 750.

DCS 1 800:

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
- 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.
Mode of First Channel	Speech (full rate version 2 or half rate version 2).
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..

Step A18 / B17: "**x**" = 750.

26.12.8 Default contents of layer 3 messages for Enhanced Full rate speech tests

same as section 26.6.14 for GSM900 MS and 26.6.15 for DCS1800 MS except for :

Contents of ASSIGNMENT COMMAND message in the GSM900 band:

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101110
Channel Description	
- Channel Type and TDMA offset	TCH/F + 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
Mode of the first channel	
- Mode	speech full rate or half rate version 2
All other information elements	Not present

Contents of ASSIGNMENT COMMAND message in the DCS1800 band :

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101110
Channel Description	
- Channel Type and TDMA offset	TCH/F + 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
Mode of the first channel	
- Mode	speech full rate or half rate version 2
All other information elements	Not present

CALL CONFIRMED

Information element	Value/remark
Repeat indicator	Omitted
Bearer capability 1	coding as described in section 11.8.2.9.2
Bearer capability 2	Omitted
Cause	Omitted

Contents of CHANNEL MODE MODIFY message in the GSM900 band :

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00010000
Channel Description	same as the dedicated channel currently allocated
Channel Mode	
- Mode	speech full rate version 2

Contents of CHANNEL MODE MODIFY ACKNOWLEDGE message in the GSM900 band :

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00010111
Channel Description	same as the dedicated channel currently allocated
Channel Mode	
- Mode	Speech full rate version 2

Contents of CHANNEL MODE MODIFY message in the DCS1800 band :

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00010000
Channel Description	same as the dedicated channel currently allocated
Channel Mode	
- Mode	speech full rate version 2

Contents of CHANNEL MODE MODIFY ACKNOWLEDGE message in DCS 1800 band :

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00010111
Channel Description	same as the dedicated channel currently allocated
Channel Mode	
- Mode	Speech full/half rate version 2

Contents of HANDOVER COMMAND message in the GSM900 band :

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101011
Cell Description	
- Network Colour Code	1
- Base station Colour Code	5
- 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	TCH/F + 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
Mode of the first channel	
- Mode	speech full/half rate version 2
All other information elements	Not present

Contents of HANDOVER COMMAND message in the DCS 1800 band :

Protocol Discriminator	RR Management
Skip Indicator	0000
Message Type	00101011
Cell Description	
- Network Colour Code	1
- Base station Colour Code	5
- 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	TCH/F + 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
Mode of the first channel	
- Mode	speech full/half rate version 2
All other information elements	Not present

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
Protocol Discriminator	Call Control
Transaction Identifier	set {0, ..., 6}
TI flag	0
BC repeat indicator	Not present
Bearer capability 1	codind as described in section 11.8.2.9.2
All other information elements	Not present

Contents of SETUP message; (SS to MS for speech teleservice)

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
Protocol Discriminator	Call Control
Transaction Identifier	set {0, ..., 6}
TI flag	0
BC repeat indicator	Not present
Bearer capability 1	
octet 2	
length	01 H
octet 3	
extension	1
radio channel requirement	01
coding standard	GSM standardized coding
transfer mode	circuit mode
information transfer capability	speech
All other information elements	Not present