

26 Testing of layer 3 functions

Ref.: 3GPP TS 04.08 / 3GPP TS 24.008 / 3GPP TS 44.018

NOTE: The tests on functioning of the elementary procedures in the MS are grouped as the description of those procedures in 3GPP TS 04.08 / 3GPP TS 24.008 / 3GPP TS 44.018. However, the test procedures are carried out in an order which is more logic for the purpose of testing.

26.1 Default conditions and structured sequence of tests

26.1.1 Default test conditions during layer 3 tests

During tests in clause 26 the following default test conditions shall apply if not otherwise stated within the test description. In the table below, decimal values are normally used. Sometimes a hexadecimal value, indicated with a "H", or a binary value, indicated with a "B" is given.

	GSM 900	DCS 1 800
General signalling conditions for all carriers		
Ciphering	yes	yes
General RF-conditions for all carriers		
Frequency hopping mode	Non-hopping	Non-hopping
Propagation profile	Static	Static
Downlink Input Level	63 dB μ Vemf()	63 dB μ Vemf()
Uplink output power	Minimum according to MS power class	Minimum according to MS power class
Serving cell, BCCH/CCCH carrier		
Channel ARFCN	20	590
Alternative channels	40 or 60	690 or 830
Serving cell, Traffic channel, SDCCH		
Channel ARFCN	30	650
Alternative channels	50 or 70	750 or 850
Power Control Indicator	0	0
Neighbouring cells BCCH/CCCH carriers		
Channel ARFCN	10, 80, 90, 100, 110, 120	520, 600, 700, 780, 810, 870
Alternative channels	15, 85, 95, 105, 115, 122	530, 610, 710, 790, 820, 880
Input level	53 dB μ Vemf()	53 dB μ Vemf()
Network dependent parameters		
Cell identity	0001H	0001H
Mobile country code, MCC	001 (decimal)	001 (decimal)
Mobile network code, MNC	01 (decimal)	01 (decimal)
Location area code, LAC	0001H	0001H
Frequency List	Bit Map 0	Range 512
BCCH allocation sequence number(BA_IND)	0	0
Cell Channel Descriptor	Bit Map 0	Range 512
PLMN colour code, NCC	1	1
BS colour code, BCC	5	5
SMS Cell Broadcast	not active	not active
DTX	MS must not use	MS must not use
IMS Attach-detach	MS shall not apply	MS shall not apply
CCCH_CONF	1 basic physical channel for CCCH combined with SDCCH	1 basic physical channel for CCCH combined with SDCCH
BS_AG_BLKS_RES	0 blocks reserved	0 blocks reserved
BS_PA_MFRMS	5 paging subgroups	5 paging subgroups

	GSM 900	DCS 1 800
CELL_BAR_ACCESS	(not barred)	(not barred)
Call-reestablishment (RE)	(allowed)	(allowed)
Emergency Call allowed	allowed	same
Access Control Class (AC) (0..9, 11..15)	allowed	same
Network dependent timers		
Radio_Link_Time-out	8	8
T3212 Periodic updating in decihours	Infinite	Infinite
Access control parameters		
Max retrans	1	1
Tx-integer, nr. of slots	5	5
CELL_RESELECT_HYSTERESIS	12 dB	12 dB
MS_TXPWR_MAX_CCH	minimum level	minimum level
RXLEV_ACCESS_MIN	minimum	minimum
NECI	New establishment causes are not supported	same
ACS (ADDITIONAL RESELECTION PARAM IND)	No additional cell parameters are present in SI messages 7 and 8	same
C2 parameters	C2 parameters not present	same
POWER OFFSET	N/A	POWER OFFSET Parameter not present.

	GSM 450	GSM 480
General signalling conditions for all carriers		
Ciphering	yes	yes
General RF-conditions for all carriers		
Frequency hopping mode	Non-hopping	Non-hopping
Propagation profile	Static	Static
Downlink Input Level	63 dB μ Vemf()	63 dB μ Vemf()
Uplink output power	Minimum according to MS power class	Minimum according to MS power class
Serving cell, BCCH/CCCH carrier		
Channel ARFCN	263	310
Alternative channels	274 or 276	321 or 323
Serving cell, Traffic channel, SDCCH		
Channel ARFCN	267	314
Alternative channels	275 or 279	322 or 326
Power Control Indicator	0	0
Neighbouring cells BCCH/CCCH carriers		
Channel ARFCN	260, 281, 284, 287, 290, 293	307, 328, 331, 334, 337, 340
Alternative channels	261, 280, 283, 286, 289, 292	308, 327, 330, 333, 336, 339
Input level	53 dB μ Vemf()	53 dB μ Vemf()
Network dependent parameters		
Cell identity	0001H	0001H
Mobile country code, MCC	001 (decimal)	001 (decimal)
Mobile network code, MNC	01 (decimal)	01 (decimal)
Location area code, LAC	0001H	0001H
Frequency List	Range 128	Range 128
BCCH allocation sequence number(BA_IND)	0	0
Cell Channel Descriptor	Range 128	Range 128
PLMN colour code, NCC	1	1
BS colour code, BCC	5	5
SMS Cell Broadcast DTX	not active	not active
IMS Attach-detach	MS must not use	MS must not use
CCCH_CONF	MS shall not apply	MS shall not apply
BS_AG_BLK_RES	1 basic physical channel for CCCH combined with SDCCH	1 basic physical channel for CCCH combined with SDCCH
BS_PA_MFRMS	0 blocks reserved	0 blocks reserved
	5 paging subgroups	5 paging subgroups

	GSM 450	GSM 480
CELL_BAR_ACCESS Call-reestablishment (RE) Emergency Call allowed Access Control Class (AC) (0..9, 11..15) Network dependent timers Radio_Link_Time-out T3212 Periodic updating in decihours	(not barred) (allowed) allowed allowed 8 Infinite	(not barred) (allowed) same same 8 Infinite
Access control parameters		
Max retrans Tx-integer, nr. of slots CELL_RESELECT_HYSTERESIS MS_TXPWR_MAX_CCH RXLEV_ACCESS_MIN NECI ACS (ADDITIONAL RESELECTION PARAM IND) C2 parameters POWER OFFSET	1 5 12 dB minimum level minimum New establishment causes are not supported No additional cell parameters are present in SI messages 7 and 8 C2 parameters not present N/A	1 5 12 dB minimum level minimum same same same N/A

	GSM 710 or GSM 750 or T-GSM 810	GSM 850
General signalling conditions for all carriers		
Ciphering	yes	yes
General RF-conditions for all carriers		
Frequency hopping mode Propagation profile Downlink Input Level Uplink output power	Non-hopping Static 63 dB μ Vemf() Minimum according to MS power class	Non-hopping Static 63 dB μ Vemf() Minimum according to MS power class
Serving cell, BCCH/CCCH carrier		
Channel ARFCN Alternative channels	460 480 or 500	150 170 or 190
Serving cell, Traffic channel, SDCCH		
Channel ARFCN Alternative channels Power Control Indicator	470 490 or 510 0	160 180 or 200 0
Neighbouring cells BCCH/CCCH carriers		
Channel ARFCN Alternative channels Input level	440, 445, 450, 455, 475, 495 443, 448, 453, 465, 485, 505 53 dB μ Vemf()	140, 210, 220, 230, 240, 250 145, 215, 225, 235, 245, 251 53 dB μ Vemf()
Network dependent parameters		
Cell identity Mobile country code, MCC Mobile network code, MNC Location area code, LAC Frequency List BCCH allocation sequence number(BA_IND) Cell Channel Descriptor PLMN colour code, NCC BS colour code, BCC SMS Cell Broadcast DTX IMS! Attach-detach CCCH_CONF BS_AG_BLKS_RES BS_PA_MFRMS	0001H 001 (decimal) 011(decimal) 0001H Range 128 0 Range 128 1 5 not active MS must not use MS shall not apply 1 basic physical channel for CCCH combined with SDCCH 0 blocks reserved 5 paging subgroups	0001H 001 (decimal) 011(decimal) 0001H Range 128 0 Range 128 1 5 not active MS must not use MS shall not apply 1 basic physical channel for CCCH combined with SDCCH 0 blocks reserved 5 paging subgroups

	GSM 710 or GSM 750 or T-GSM 810	GSM 850
CELL_BAR_ACCESS Call-reestablishment (RE) Emergency Call allowed Access Control Class (AC) (0..9, 11..15) Network dependent timers Radio_Link_Time-out T3212 Periodic updating in decihours	(not barred) (allowed) allowed allowed 8 Infinite	(not barred) (allowed) allowed allowed 8 Infinite
Access control parameters		
Max retrans Tx-integer, nr. of slots CELL_RESELECT_HYSTERESIS MS_TXPWR_MAX_CCH RXLEV_ACCESS_MIN NECI ACS (ADDITIONAL RESELECTION PARAM IND) C2 parameters POWER OFFSET	1 5 12 dB minimum level minimum New establishment causes are not supported No additional cell parameters are present in SI messages 7 and 8 C2 parameters not present N/A	1 5 12 dB minimum level minimum New establishment causes are not supported No additional cell parameters are present in SI messages 7 and 8 C2 parameters not present N/A

	PCS 1 900
General signalling conditions for all carriers	
Ciphering	yes
General RF-conditions for all carriers	
Frequency hopping mode Propagation profile Downlink Input Level Uplink output power	Non-hopping Static 63 dB μ Vemf () Minimum according to MS power class
Serving cell, BCCH/CCCH carrier	
Channel ARFCN Alternative channels	590 690 or 730
Serving cell, Traffic channel, SDCCH	
Channel ARFCN Alternative channels Power Control Indicator	650 750 or 780 0
Neighbouring cells BCCH/CCCH carriers	
Channel ARFCN Alternative channels Input level	520, 600, 700, 720, 760, 780 530, 610, 710, 740, 770, 790 53 dB μ Vemf ()
Network dependent parameters	
Cell identity Mobile country code, MCC Mobile network code, MNC Location area code, LAC Frequency List BCCH allocation sequence number(BA_IND) Cell Channel Descriptor PLMN colour code, NCC BS colour code, BCC SMS Cell Broadcast DTX IMS1 Attach-detach CCCH_CONF BS_AG_BLKS_RES BS_PA_MFRMS	0001H 001 (decimal) 011 (decimal) 0001H Range 512 0 Range 512 1 5 not active MS must not use MS shall not apply 1 basic physical channel for CCCH combined with SDCCH 0 blocks reserved 5 paging subgroups

	PCS 1 900
CELL_BAR_ACCESS	(not barred)
Call-reestablishment (RE)	(allowed)
Emergency Call allowed	same
Access Control Class (AC) (0..9, 11..15)	same
Network dependent timers	
Radio_Link_Time-out	8
T3212 Periodic updating in decihours	Infinite
Access control parameters	
Max retrans	1
Tx-integer, nr. of slots	5
CELL_RESELECT_HYSTERESIS	12 dB
MS_TXPWR_MAX_CCH	minimum level
RXLEV_ACCESS_MIN	minimum
NECI	same
ACS (ADDITIONAL RESELECTION PARAM IND)	same
C2 parameters	same
POWER OFFSET	N/A

These informations are provided by system information 1, 2, 3 and 4 messages.

The system information elements which are broadcast on the SACCH during the dedicated mode should be consistent with those sent on the BCCH when the MS was in idle mode prior to the channel request.

In addition, all fill paging messages sent on the paging sub-channels will have by default, their page mode set to NORMAL PAGING.

26.1.2 Structured sequence of the tests

The tests shall be performed in the order as indicated in the following table.

The validity of the tests depends upon the results of the tests performed before.

Channel request (basic test)	RR	26.2.1
Immediate assignment	RR	26.6.1
IMSI attach/detach (basic)	RR	26.2.2
Paging	RR	26.6.2
Test of the mobile station functions in idle mode	RR	26.3
Frequency redefinition	RR	26.6.6
Measurement report (incl. system info not idle)	RR	26.6.3
Authentication	MM	26.7.2
Cipher mode setting	RR	26.6.8
Identification	MM	26.7.3
Sequenced MM/CM message transfer	..	26.2.3
Channel release	RR	26.6.12
Location updating	MM	26.7.4
TMSI reallocation	MM	26.7.1
Classmark change	RR	26.6.11
Call control (verification on CC state diagram)	CC	26.8.1.1 and 26.8.1.2
Call rearrangement	CC	26.8.1.4.4
DTMF information transfer	CC	26.8.1.4.1
Handover	RR	26.6.5
Additional assignment	RR	26.6.9
Partial release	RR	26.6.10
Re-establishment	CC	26.8.2
Dedicated channel assignment (during calls)	RR	26.6.4
Transmission mode change	RR	26.6.7
Mobility management connection establishment	MM	26.7.5
Test of Layer 3 error handling		26.5
User to user signalling	CC	26.8.3
Testing of structured procedures		26.9
E-GSM or R-GSM signalling		26.10
Multiband signalling		26.11

26.1.3 General rules for message parameters

The following rules concerning message parameters apply to clause 26:

- 1) Those values of parameters which are a consequence of the context of a test and which are not specific to that test need not be defined.
- 2) If the value of a parameter of an uplink message (MS to Network) is specified in a test, the implicit meaning is that it has to be checked; if the value is not specified, it is not to be checked unless stated otherwise.
- 3) An optional field or optional Information Element of a downlink message (Network to MS), the presence of which is not a consequence of a test description, shall be absent in that test.
- 4) If an optional field or Information Element is not indicated for the uplink (MS to Network) - unless specified otherwise -, it may be included or not.
- 5) The Protocol Discriminator, Transaction Identifier and Message Type of all uplink messages have to be checked.

26.1.4 General rules for layer 3 testing

Unless otherwise specified, before the SS pages the MS, the MS must be given the necessary time to be able to receive paging (see clause 20). In addition and unless otherwise specified, the SS must wait at least 1s after the last time slot of the message block containing a CHANNEL RELEASE, before sending a PAGING to the mobile (see 3GPP TS 04.13).

In the signalling tests, where the following statement is used:

- 'the RF level of cell x is set sufficiently low to ensure that cell x is not suitable as defined in 3GPP TS 05.08 subclause 6.6.2';

this means that for the cell to be "not suitable" by virtue of its RF level, the RF level is to be lowered until C1 is below 0.

26.1.5 Format of layer 3 test descriptions

In subclauses 26.2, 26.5, 26.6, 26.7, 26.9, 26.10 and 26.11 a rigorous description technique is used which is defined here.

For every test, a subclause titled "method of test" and a subclause titled "expected sequence" define the exact test steps and the verifications to be performed in the test. These subclauses are normative and give requirements for the MS behaviour. The information of both subclauses applies.

For the message contents further normative requirements for the MS behaviour are defined in the following parts which apply in the following order (starting with the highest) on basis of the general rules of 26.1.3:

- specifications in the "method of test" and "expected sequence" subclauses;
- specifications in the subclause titled "specific message contents";
- specifications in the subclause "default message contents" at the end of the relevant subclauses 26.5, 26.6, 26.7, 26.9, 26.10 or 26.11;
- specifications of default conditions in subclause 26.1.

The relevant section may contain the definition of abbreviations of L3 message names that are used in that section.

In many cases, a test description contains an introductory subclause explaining the background of the relevant procedures and explaining why the tests of that description are essential.

For every test, test purposes are given. In general conformance testing methodology, the correspondence between test purposes and test cases can be n to m: To one test purpose more than one test case may correspond (e.g. different test cases checking data variations); also a test case may serve more than one test purpose. In some contexts a structure of conformance test descriptions is advisable which specifies in one part (non-duplicated) test purposes with references to corresponding test suites serving the test purposes, in another part test suites realizing the test purposes; this structuring is especially useful for gaining completeness and avoiding duplications. In the present document, however, it is preferred to group descriptions by test cases. The reasons are:

- The structure is more sought to assist the test execution and evaluation than test development. It must be easy to determine why a wrong behaviour leads to a verdict.
- The structure is to be close to GSM 11.10 phase 1.

For every test purpose of a test, a conformance requirement is given.

For each conformance requirement in a test description, references to core specifications are given.

For every test, the related PICS/PIXIT statements that are necessary for performing the test are given.

For every test, initial conditions for both the System Simulator and the Mobile Station are given. Unless otherwise specified, these initial conditions apply together with the default conditions of 26.1, the initial conditions of the test prevailing over the default conditions of 26.1.

For every test, the foreseen final state of the MS after the test and the maximum duration of the test are specified. These parts are non-normative and do not contain a description of verifications to be performed. The contained information might be used for sequencing different tests and for the decision when a test is to be interrupted.

The expected sequence specifies the actions in numbered steps in a tabular form. In the column "direction", "SS -> MS" denotes a message sent from the SS to the MS, "MS -> SS" denotes a message sent from the MS to the SS, "SS" denotes an action at the SS, "MS" denotes an action at the MS (e.g. interaction with the user or higher layers). The column "message" defines the L3 messages to be sent or expected by the SS. In the "comments" column, further normative information is to be found, e.g. message parameters. In some cases, different alternative behaviours are possible in a test. Then test steps in alternative sequences are numbered as:

"A n", "A n + 1", ..., "A n + k";

"B n", "B n + 1", ..., "B n + l";

"C_n", "C_{n + 1}", ..., "C_{n + m}";

etc. (n, m, l, k integers > 0).

and step numbering of a re-unified sequence resumes with the lowest of $n + k + 1$, $n + l + 1$, $n + m + 1$.

In some cases the test steps of a test are to be repeated. Then an execution counter is introduced for the test.

26.2 Initial tests

26.2.1 Channel request

The random access procedure is used by the MS to ask for resources to the network. If it is not performed correctly, the MS could prevent other MSs from obtaining resources, or the network could be overloaded if the MS does not respect the duration between 2 CHANNEL REQUEST messages.

26.2.1.1 Channel request / initial time

26.2.1.1.1 Conformance requirement

- 1) The MS shall start the initial access procedure at the latest 0,7 s after reception of the paging message.
- 2) The MS shall spread the initial CHANNEL REQUEST with equal probability on the correct number of time slots.

Reference(s)

3GPP TS 04.08 / 3GPP TS 44.018, subclauses 3.3.1.1.2 and 3.3.2.2.

26.2.1.1.2 Test purpose

- 1) To verify that the MS answers to a PAGING message by sending a CHANNEL REQUEST message within 0,7 s after reception of the PAGING message.
- 2) To verify that the MS does not always use the same delay between reception of paging message and sending of the CHANNEL REQUEST message. If an MS uses a fixed delay, there is a high probability that different MSs of the same product series use the same delay. There would then be a high risk of collision.

26.2.1.1.3 Method of test

Initial Conditions

System Simulator:

1 cell, Tx-Integer = 5. The CCCH is either combined or not with SDCCH. This is arbitrarily chosen.

Mobile Station:

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

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

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

Test Procedure

Specific test parameters:

K = 200.

The MS is paged. The SS measures and stores the number of CCCH RACH slots between the sending of the PAGING REQUEST message and the reception of the CHANNEL REQUEST from the MS, excluding the slots containing the messages themselves. The SS sends an IMMEDIATE ASSIGNMENT REJECT. The sequence is performed K times.

Maximum Duration of Test

30 min.

Between two consecutive executions (for k and k+1), the SS must wait for an amount of time which is enough to guarantee that the MS is in service (listening to its paging subchannel).

Expected Sequence

The sequence is executed for execution counter $k = 1, \dots, K$.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	"Mobile Identity" IE contains the TMSI allocated to the MS.
2	SS		The SS measures the number f of CCCH RACH slots between the sending of PAGING REQUEST message and the reception of a CHANNEL REQUEST message from the MS.
3	SS		The SS stores f. $f(k)$ shall be lower than $700/4,615+8$ if the CCCH is not combined or lower than $81+8$ if the CCCH is combined with SDCCH.
4	MS -> SS	CHANNEL REQUEST	"Establishment Cause" = Answer to paging.
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	the first "request reference" corresponds to the CHANNEL REQUEST sent by the MS.

NOTE: The test limit has been computed to give a confidence of [99,74 %] that a unit which follows the requirements will pass. The number of samples (200) has been chosen to get a good compromise between the test time and the risk of passing a bad unit.

26.2.1.1.4 Test requirements

$S(n) = \text{CARD} \{k \mid f(k) = n\}$

The following requirements shall be met:

$S(n) \leq 41$ for all n.

NOTE: $\text{CARD} \{k \mid f(k) = n\}$ is mathematical notation for the number of times that f(k) equals n.

26.2.1.2 Channel request / repetition time

26.2.1.2.1 Conformance requirement

- 1) The MS shall spread retransmissions of a CHANNEL REQUEST message, with equal probability on Tx-Integer timeslots and with the correct delay after the reception of the PAGING REQUEST.
- 2) The MS shall not retransmit another CHANNEL REQUEST message when Max-retrans is reached.

Reference(s)

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.1.1.2.

26.2.1.2.2 Test purpose

- 1) To verify that the MS spreads retransmission of a CHANNEL REQUEST message with equal probability on Tx-Integer time slots and correctly applies the fixed delay when the following conditions apply:
 - the CCCH is combined or not combined with SDCCHs;
 - the maximum number of retransmissions is equal to one of the following values: 1, 2, 4, 7;
 - Tx-Integer is put to any of the allowed values among those which are greater or equal to 6.

- 2) To verify that the MS retransmits exactly Max_Retrans times a CHANNEL REQUEST message if the network never responds to the CHANNEL REQUEST message.

26.2.1.2.3 Method of test

Initial Conditions

System Simulator:

1 cell.

Tx-Integer is arbitrarily chosen in the set {6, 7, 8, 9, 10, 11, 12, 14, 16, 20, 25, 32, 50}.

Max_Retrans is arbitrarily chosen in the set {1, 2, 4, 7}.

Mobile Station:

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

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

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

Test Procedure

Specific test parameters

K equals the upper rounded value of $230/\text{Max_Retrans}$.

m equals the upper rounded value of $0,5 \times \text{Tx-Integer}$.

Counter M = 0.

Parameter S: according to table 3.1/3GPP TS 04.08/ 3GPP TS 44.018 (this parameter depend on the value chosen for Tx-Integer).

$N0 = \max(8, \text{Tx-Integer})$.

The MS is paged. The MS sends a CHANNEL REQUEST message. The MS retransmits CHANNEL REQUEST messages Max_Retrans times. The SS measures the number of CCCH RACH slots $f(i,k)$ between the moment where a CHANNEL REQUEST message has been received, and the reception of the following CHANNEL REQUEST message, excluding the slots containing the messages themselves. The SS updates the counter M. The SS does not answer to the CHANNEL REQUEST messages Max_Retrans times. After the last CHANNEL REQUEST message in every sequence where k is lower than K, the SS sends an IMMEDIATE ASSIGNMENT REJECT. In the last sequence ($k = K$), the SS does not respond to the MS. The MS shall not send any other CHANNEL REQUEST message.

Maximum Duration of Test

The execution of one sequence (for one value k): 10 s.

Between two consecutive executions (for k and k+1), the SS must wait for 35 s, which is enough to guarantee that the MS is in service (listening to its paging subchannel).

Expected Sequence

The sequence is executed for execution counter $k = 1, \dots, K$ for each of the 2 test cases.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	"Mobile Identity" = TMSI of the MS.
2	MS -> SS	CHANNEL REQUEST	"Establishment Cause" = Answer to paging.
3	MS -> SS	CHANNEL REQUEST	Steps 3, 4, 5 are executed for execution counter $i = 1, \dots, \text{Max_Retrans}$.
4	SS		"Establishment Cause" = Answer to paging. The SS measures the number $f(i,k)$ of CCCH RACH slots between: - the moment where the last CHANNEL REQUEST message has been received, and - the reception of the new CHANNEL REQUEST message from the MS, excluding the slots containing the messages themselves. $f(i,k)$ shall be in the set $\{S, S+1, \dots, S+T-1\}$
5	SS		If $f(i,k) - S \geq m$, $M = M+1$
A6	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Depending on the value of k , step A6 or B6 is performed: $k < K$ The third "Request Reference" IE corresponds to the last CHANNEL REQUEST message received. The third "Wait Indication" IE specifies 0 s. Other fields do not address the MS under test.
B6	SS		$k = K$ The SS checks that the MS sends no more CHANNEL REQUEST messages. This is verified during 3 s.
7	SS		$M / (K * \text{Max_Retrans})$ shall be inside the following interval: $[0,8 - m/Tx\text{-Integer} ; 1,2 - m/Tx\text{-Integer}]$

NOTE: The confidence interval in step 7, and the number of samples are chosen in such a way that the possibility of not accepting a correct MS is less than [0,26 %].

26.2.1.3 Channel request / random reference

26.2.1.3.1 Conformance requirement

A CHANNEL REQUEST message sent by the MS shall include a random reference randomly drawn from a uniform probability distribution for every new transmission.

Reference(s)

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.1.1.23.3.1.2.

26.2.1.3.2 Test purpose

To verify that an MS produces different random references for a CHANNEL REQUEST. If a MS always produces the same random reference, it makes possible that different MSs of the same product series produce the same random reference.

26.2.1.3.3 Method of test

Initial Conditions

System Simulator:

1 cell, CCCH not combined with SDCCH.

Mobile Station:

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

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a valid TMSI. It is in the MM-state "idle, updated" and in the RR idle-mode.

Test Procedure

Specific test parameters:

K = 7.

D = 4.

The SS sends a PAGING REQUEST message. The SS stores the "Random Reference" r(k) contained as a parameter in the CHANNEL REQUEST message sent by the MS. This sequence is performed K times, and it is verified that the MS produces different values r(k).

Maximum Duration of Test

6 min

Between two consecutive executions (for k and k+1), the SS must wait for an amount of time which is enough to guarantee that the MS is in service (listening to its paging subchannel).

Expected Sequence

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

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	"Establishment Cause" = Answer to paging.
3	SS		The SS stores the "Random Reference" contained in the CHANNEL REQUEST message.

26.2.1.3.4 Test requirements

At least D values of r(1), ..., r(k) shall be different.

NOTE: D has been computed such that the probability of refusing a correct MS is less than [0,027 %].

26.2.2 IMSI detach and IMSI attach

The IMSI detach/attach procedures are used to indicate to the network that the MS is deactivated/activated. These procedures are allowed or not by the network (ATT flag set to "MSs in the cell shall apply IMSI attach and detach procedure" or "MSs in the cell are not allowed to apply IMSI attach and detach procedure").

If the IMSI attach procedure does not work correctly then the network would in certain situations not try to establish Mobile Terminating call even if the MS is "idle updated".

If an MS performs an unwanted IMSI detach procedure or does not perform IMSI detach when required, network resources are wasted.

26.2.2.1 Conformance requirement

- 1) When the Attach-detach flag in the Control Channel Description of the System Information Type 3 indicates "MSs in the cell are not allowed to apply IMSI attach and detach procedure", the MS shall not perform the IMSI detach procedure upon deactivation.
- 2) When the Attach-detach flag in the Control Channel Description of the System Information Type 3 indicates "MSs in the cell are not allowed to apply IMSI attach and detach procedure", the MS shall not perform the IMSI attach procedure upon activation.
- 3) The MS shall not perform the IMSI detach procedure if the Subscriber Identity Module is removed when the Attach-detach flag in the Control Channel Description of the System Information Type 3 indicates "MSs in the cell are not allowed to apply IMSI attach and detach procedure".

- 4) The MS shall not perform the IMSI attach procedure if the Subscriber Identity Module is inserted, when the Attach-detach flag in the Control Channel Description of the System Information Type 3 indicates "MSs in the cell are not allowed to apply IMSI attach and detach procedure".
- 5) The MS shall correctly perform the IMSI detach procedure, upon switch off, when it is required by the network to do so.
- 6) The MS shall correctly perform the IMSI attach procedure upon switch on when the IMSI attach procedure is required by the network. The MS shall correctly acknowledge the implicit TMSI reallocation procedure, which is part of this IMSI attach procedure, this means that the MS shall send a TMSI REALLOCATION COMPLETE message.
- 7) The MS shall correctly perform the IMSI detach procedure upon SIM removal when it is required by the network to do so.
- 8) The MS shall correctly perform the IMSI attach procedure, following SIM insertion and switch on when the IMSI attach procedure is required by the network. The MS shall correctly acknowledge the implicit TMSI reallocation procedure which is part of this IMSI attach procedure. This means that the MS shall send a TMSI REALLOCATION COMPLETE message.

Reference(s):

3GPP TS 02.07, normative annex B, subclause B1.17.

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 4.4.3 and 4.4.4.

26.2.2.2 Test purpose

- 1) To verify that the MS correctly performs IMSI detach/attach procedures when it is required by the network and upon deactivation/activation or SIM removal/insertion and does not perform these procedures when not required.
- 2) To verify that the mobile station acknowledges a re-allocated TMSI during IMSI attach.

26.2.2.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

For procedures 1 and 2 ATT flag is set to "MSs in the cell are not allowed to apply IMSI attach and detach procedure".

For procedures 3 and 4 ATT flag is set to "MSs in the cell should apply IMSI attach and detach procedure".

Mobile Station:

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

Specific PICS statements:

- a: SIM removal possible without removing power source (TSPC_AddInfo_SIMRmv)
- b: On/off switch (TSPC_Feat_OnOff)
- c: IMSI detach after SIM removal (TSPC_AddInfo_DetachOnSIMRmv)
- d: IMSI detach after removing power source (TSPC_AddInfo_DetachOnPwrDn)

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a valid TMSI which may be different from the initial one. It is "idle updated".

Test Procedure

The SS indicates that IMSI detach/attach is not allowed. If possible the MS is switched off, then switched on, otherwise it has its power source removed and then restored (see b in PICS). The SS checks that the MS does not perform IMSI detach/attach procedures. If possible (if a = Yes, see PICS), the SIM is removed, then the SIM is inserted. The SS checks that the MS does not perform IMSI detach/attach procedures.

The SS indicates that IMSI detach/attach is allowed. After a delay of 35s the MS should have detected The SS indicates now, that IMSI detach/attach is allowed. If possible (if b = Yes, see PICS) the MS is switched off, otherwise it has its power source removed (if d = Yes, see PICS). The MS initiates an IMSI detach procedure. Then depending on what has been performed before, the MS is switched on or has its power source restored. It initiates an IMSI attach procedure. The location updating procedure contains an implicit TMSI reallocation. The SIM is removed. If (a = yes and c = yes) or (a = no and d = yes) the MS initiates an IMSI detach procedure. Then the SIM is inserted, it initiates an IMSI attach procedure, the location updating procedure contains an implicit TMSI reallocation.

Maximum Duration of Test

4 min

Expected Sequence

Procedure 1

Step	Direction	Message	Comments
1	MS		If possible the MS is switched off (see b in PICS), otherwise the MS has its power source removed.
2	MS		The MS shall not initiate the IMSI detach procedure. This is checked by the SS during 5 s.
3	MS		Depending on what has been performed in step 1, the MS is brought back to operation.
4	MS		The MS shall not initiate an IMSI attach procedure. This is checked by the SS during 30 s.

Procedure 2

1	MS		If possible (a = Yes, see PICS), the SIM is removed from the MS.
2	MS		The MS shall not initiate the IMSI detach procedure. This is checked by the SS during 5 s.
3	MS		The SIM is inserted in the MS.
4	MS		The MS shall not initiate an IMSI attach procedure. This is checked by the SS during 30 s.

Procedure 3

1	MS		The MS is switched off, or has its power source removed, depending on value b in the PICS file. If b = Yes or d = Yes the MS initiates an IMSI detach procedure (steps A2, A3, A4, A5), otherwise the SS goes straight to step 6.
A2 A3 A4 A5	MS -> SS SS -> MS MS -> SS SS -> MS	CHANNEL REQUEST IMMEDIATE ASSIGNMENT IMSI DETACH INDICATION CHANNEL RELEASE	After the sending of this message, the SS waits the disconnection of the main signalling link.
6	MS		Depending on what has been performed in step 1, the MS is brought back to operation.
7	MS -> SS	CHANNEL REQUEST	The MS initiates an IMSI attach procedure.
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	LOCATION UPDATING REQUEST	"Location Updating Type" = IMSI attach.
10	SS -> MS	LOCATION UPDATING ACCEPT	The SS allocates a new TMSI
11	MS -> SS	TMSI REALLOCATION COMPLETE	
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits the disconnection of the main signalling link.

Specific message contents:

SYSTEM INFORMATION TYPE 3 message:

Information Element	value/remark
Control Channel Description - Attach/Detach allowed	MS shall apply IMSI attach and detach procedures.

Procedure 4

1	MS		The SIM is removed from the MS. If (a = Yes and c= Yes) or (a = no and d = yes) in PICS, the MS initiates an IMSI detach procedure (steps A2, A3, A4, A5), otherwise the SS goes straight to step 6.
A2 A3 A4 A5	MS -> SS SS -> MS MS -> SS SS -> MS	CHANNEL REQUEST IMMEDIATE ASSIGNMENT IMSI DETACH INDICATION CHANNEL RELEASE	After the sending of this message, the SS waits the disconnection of the main signalling link.
6	MS		The SIM is inserted in the MS.
7	MS -> SS	CHANNEL REQUEST	The MS initiates a IMSI attach procedure.
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	LOCATION UPDATING REQUEST	"Location Updating Type" = IMSI attach.
10	SS -> MS	LOCATION UPDATING ACCEPT	The SS allocates a new TMSI
11	MS -> SS	TMSI REALLOCATION COMPLETE	
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits the disconnection of the main signalling link.

Specific message contents:

SYSTEM INFORMATION TYPE 3 message:

Information Element	value/remark
Control Channel Description - Attach/Detach allowed	MS shall apply IMSI attach and detach procedures.

26.2.3 Sequenced MM / CM message transfer

The RR sublayer of the MS shall have an associated send state variable V(SD) for sending MM and CM messages. This send state variable has been introduced to avoid the duplication of MM and CM messages. It is useful for the network after a handover or a change of channel to identify duplicated messages.

If the MS started V(SD) with 1 instead of 0 the network would incorrectly diagnose loss of message.

If the MS later on does not handle correctly incrementation of V(SD) the network would not be able to continue the dialogue.

26.2.3.1 Conformance requirement

The MS shall implement correctly the "send state variable V(SD)" ("Send duplicated"), included in transmitted MM and CM messages.

Reference(s)

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.1.4.3.

26.2.3.2 Test purpose

To verify that V(SD) is correctly set to 0 at the beginning of the establishment of the first RR connection and to verify that the MS handles correctly this variable in the special case of IDENTITY REQUEST messages, which are MM messages.

26.2.3.3 Method of test

Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

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

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

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

Test Procedure

The MS is paged. After reception of the PAGING RESPONSE message from the MS, the SS sends an IDENTITY REQUEST message. The MS sends an IDENTITY RESPONSE message where N(SD) = 0. The SS repeats its IDENTITY REQUEST message 10 times. The MS transmits IDENTITY RESPONSE message with the value 1 and 0 in the N(SD) field alternately.

Maximum Duration of Test

1 min

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	IDENTITY REQUEST	
6	MS -> SS	IDENTITY RESPONSE	N(SD) = 0
7	SS -> MS	IDENTITY REQUEST	Steps 7, 8, 9 and 10 are repeated 5 times.
8	MS -> SS	IDENTITY RESPONSE	N(SD) = 1.
9	SS -> MS	IDENTITY REQUEST	
10	MS -> SS	IDENTITY RESPONSE	N(SD) = 0.
11	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits the disconnection of the main signalling link.

26.2.4 Establishment cause

The establishment cause set by the MS in the CHANNEL REQUEST message shall be consistent with the requested service or function, with the capabilities of the MS and with the indications given by the network.

If the MS uses a wrong establishment cause, the network might assign an inappropriate or incompatible resource.

In the case of Emergency call a wrong priority might be used.

If a reserved value is used, the network may discard the channel request.

26.2.4.1 Conformance requirements

In the CHANNEL REQUEST message, the MS shall include an establishment cause which correspond to the establishment cause given by the MM sublayer and the broadcasted NECI value, or which correspond to one of the establishment causes "answer to paging" given by the RR entity in response to a PAGING REQUEST message including the Channel Needed information.

Reference(s)

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.1.1.2.

26.2.4.2 Test purpose

To verify that the establishment cause sent by the MS in the Max-Retrans+1 CHANNEL REQUEST messages is consistent with the requested service, with the capabilities of the MS and with the indications of the network in the following cases:

- 1) If the MS supports a service on a traffic channel:
 - 1.1 when the NECI bit is set to 0 and call re-establishment is attempted and the call was established on TCH/H if the MS supports a service on half rate channel or on TCH/F otherwise.
- 2) If the MS supports a service on half rate channel:
 - 2.1 when the NECI bit is set to 1 and call re-establishment is attempted and the call was established on TCH/H.
- 3) If the MS supports speech:
 - 3.1 when the NECI bit is set to 0 and a speech call is attempted.
 - 3.2 when the NECI bit is set to 1 and a speech call is attempted.
- 4) If the MS supports a data service:
 - 4.1 when the NECI bit is set to 0 and a data call is attempted.
 - 4.2 when the NECI bit is set to 1 and a data call is attempted for a service supported on half rate channel (if the MS does not support any data call on half rate channel any data service is used).

5)

5.1 when the NECI bit is set to 0 and the MS is paged with the paging indication set to "any channel".

5.2 when the NECI bit is set to 0 and the MS is paged with the paging indication set to "SDCCH".

5.3 when the NECI bit is set to 0 and the MS is paged with the paging indication set to "TCH/F".

5.4 when the NECI bit is set to 0 and the MS is paged with the paging indication set to "TCH/H or TCH/F".

6)

6.1 when the NECI bit is set to 0 and IMSI attach is attempted.

6.2 when the NECI bit is set to 0 and normal location updating is attempted.

6.3 when the NECI bit is set to 0 and periodic location updating is attempted.

6.4 when the NECI bit is set to 0 and IMSI detach is attempted.

6.5 when the NECI bit is set to 1 and IMSI attach is attempted.

6.6 when the NECI bit is set to 1 and normal location updating is attempted.

6.7 when the NECI bit is set to 1 and periodic location updating is attempted.

6.8 when the NECI bit is set to 1 and IMSI detach is attempted.

7) If the MS supports a non call related supplementary service operation:

7.1 when the NECI bit is set to 0 and a supplementary service operation is attempted at the MS.

7.2 when the NECI bit is set to 1 and a supplementary service operation is attempted at the MS.

8) If the MS supports SMS/PP MO:

8.1 when the NECI bit is set to 0 and a mobile originated short message service transaction is attempted.

8.2 when the NECI bit is set to 1 and a mobile originated short message service transaction is attempted.

NOTE: To verify that when the MS supports speech and an emergency call is attempted and the NECI bit is set to 0, then the MS sends a CHANNEL REQUEST message with an establishment cause consistent with the requested service, with the capabilities of the MS and with the indications of the network is done in test 26.9.6.1.1 test purpose 1.

26.2.4.3 Method of test

Initial Conditions

System Simulator:

for all procedures: 1 cell, Max-Retrans = 7 slots. The NECI bit is set to 0.

Mobile Station:

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

Specific PICS statements:

- a: MS supports speech on TCH/F (TSPC_AddInfo_Full_rate_version_1)
- b: MS supports speech on TCH/H (TSPC_AddInfo_Half_rate_version_1)
- c: MS supports data on TCH/F (TSPC_AddInfo_FullRateData)
- d: MS supports data on TCH/H (TSPC_AddInfo_HalfRateData)
- e: MS only supports SDCCH (TSPC_AddInfo_SDCCHOnly)

- f: MS supports a supplementary service operation (TSPC_AddInfo_SS)
- g: MS supports SMS/PP MO (TSPC_Serv_TS22)
- h: On/Off switch (TSPC_Feat_OnOff)
- i: MS supports AMR (TSPC_AddInfo_Full_rate_version_3)
- j: MS supports Speech for Half Rate Version 3 (TSPC_AddInfo_Half_rate_version_3)

NOTE: In the above PICS, data and speech refer to the Radio Resource Channel Mode.

PIXIT Statements:

-

Foreseen Final State of the MS

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

Test Procedures

NOTE: If the procedures are chained, the SS shall ensure that at the beginning of each procedure, the initial conditions are reached and that the MS had enough time to decode the broadcasted parameters.

Procedure 1

If the MS supports a service on a traffic channel:

A call is established on TCH/H if the MS supports a service on half rate channel or on TCH/F otherwise. The SS stops transmission on the SACCH. The MS attempts call reestablishment. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "110".

Procedure 2

If the MS supports a service on half rate channel:

The NECI bit is set to 1. A call is established on TCH/H for a supported service. The SS stops transmission on the SACCH. The MS attempts call reestablishment. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "011010".

Procedure 3

If the MS supports speech:

A speech call is attempted. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "111". The NECI bit is set to 1. A speech call is attempted. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "111" if the MS does not support speech on half rate channel (version 1, GSM, nor version 3, AMR) or "0100" if the MS supports speech on half rate channel (version 1, GSM, or/and version 3, AMR).

Procedure 4

If the MS supports a data service:

A data call is attempted. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "111". The NECI bit is set to 1. A data call is attempted for a service supported on half rate channel (if the MS does not support any data call on half rate channel any data service is used). The SS does not answer to Max-Retrans CHANNEL

REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "111" if the MS does not support a data service on half rate channel or "0101" if the MS supports a data service on half rate channel.

Procedure 5

The MS is paged with the paging indication set to "any channel". The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "100". The SS waits for a time sufficient for the MS to be "idle updated". The MS is paged with the paging indication set to "SDCCH". The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "0001". The SS waits for a time sufficient for the MS to be "idle updated". The MS is paged with the paging indication set to "TCH/F". The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "100" if the MS capability is full rate only, "0010" if the MS capability is dual rate and "0001" if the MS capability is SDCCH only. The SS waits for a time sufficient for the MS to be "idle updated". The MS is paged with the paging indication set to "TCH/H or TCH/F". The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "100" if the MS capability is full rate only, "0011" if the MS capability is dual rate and "0001" if the MS capability is SDCCH only.

Procedure 6

This procedure is performed twice. Once for NECI = 0 and once for NECI = 1.

The MS is switched off or powered off. Then system information messages are altered so that IMSI attach/detach is allowed in the cell. The MS is switched on or powered on. The MS performs IMSI attach. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the values "0000" when NECI = 1, or "000" when NECI = 0. The IMSI attach procedure is followed. The location area code of the cell is changed, T3212 is set to 1 deci-hour. The MS performs a location updating. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the values "0000" when NECI = 1, or "000" when NECI = 0. The location updating procedure is followed. The SS waits for at least 7 minutes. The MS performs a periodic updating. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the values "0000". The location updating procedure is followed. The MS is switched off or powered off. If the MS has an On/off switch (see PICS), it attempts IMSI detach. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "0001" when NECI = 1, or "111" when NECI = 0.

Procedure 7

This procedure is performed twice. Once for NECI = 0 and once for NECI = 1.

If the MS supports a non call related supplementary service operation:

A supplementary service operation is attempted at the MS. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "0001".

Procedure 8

If the MS supports SMS/PP MO:

A mobile originated short message service transaction is attempted. The SS does not answer to Max-Retrans CHANNEL REQUEST messages and answers to the next CHANNEL REQUEST with an IMMEDIATE

ASSIGNMENT REJECT message. The SS checks that all CHANNEL REQUEST messages contain an establishment cause with the value "0001" when NECI = 1, or "111" when NECI = 0.

Maximum Duration of Test

For procedures 1, 2, 3, 4 and 5: 5 minutes, including 1 minute for any necessary operator actions.

For procedure 6: 20 minutes, including 2 minutes for any necessary operator actions.

For procedures 7, 8: 10 minutes, including 2 minutes for any necessary operator actions.

Expected Sequence

Procedure 1

This procedure is performed if the MS supports a service on a traffic channel.

Step	Direction	Message	Comments
1			a call is established on TCH/H if the MS supports a service on half rate channel or on TCH/F otherwise. The generic call setup procedure is used.
2	SS		the SS stops transmission on the SACCH.
3	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to "110"
4	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Procedure 2

This procedure is performed if the MS supports a service on half rate channel.

Step	Direction	Message	Comments
1	SS		The NECI bit is set to 1, a call is established on TCH/H for a supported service. The generic call setup procedure is used.
2			
3	SS		the SS stops transmission on the SACCH.
4	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to "011010"
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Procedure 3

This procedure is performed if the MS supports speech.

Step	Direction	Message	Comments
1	MS		a speech call is attempted
2	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to "111"
3	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
4	SS		The NECI bit is set to 1
5	SS		The SS waits for 30 s
6	MS		a speech call is attempted
7	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to "0100" if the MS supports speech (GSM and/or AMR) on half rate or set to "111" otherwise
8	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Procedure 4

This procedure is performed if the MS supports a data service.

Step	Direction	Message	Comments
1	MS		a data call is attempted
2	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to "111"
3	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
4	SS		
5	SS		The SS waits for 30 s
6	MS		a data call is attempted for a service supported by the MS on half rate (for any data service if the MS does not support any data service on half rate)
7	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to "0101" if the MS supports a data service on half rate or set to "111" otherwise
8	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Procedure 5

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	paging indication = any channel all messages have establishment cause set to "100"
2	MS -> SS	8 CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
4	SS		The SS waits for 5 s
5	SS -> MS	PAGING REQUEST TYPE 1	paging indication = SDCCH all messages have establishment cause set to "0001"
6	MS -> SS	8 CHANNEL REQUEST	
7	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
8	SS		The SS waits for 5 s
9	SS -> MS	PAGING REQUEST TYPE 1	paging indication = TCH/F all messages have establishment cause set to "100" if the MS capability is full rate only or "0010" if the MS capability is dual rate or "0001" if the MS capability is SDCCH only
10	MS -> SS	8 CHANNEL REQUEST	
11	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
12	SS		The SS waits for 5 s
13	SS -> MS	PAGING REQUEST TYPE 1	paging indication = TCH/H or TCH/F all messages have establishment cause set to "100" if the MS capability is full rate only or "0011" if the MS capability is dual rate or "0001" if the MS capability is SDCCH only
14	MS -> SS	8 CHANNEL REQUEST	
15	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Procedure 6

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

Step	Direction	Message	Comments
0	SS		When k = 1, NECI set to 0 When k = 2, NECI set to 1
1	MS		The MS is switched off or has its power source removed
2	SS		IMSI attach/detach is set to "MSs in the cell shall apply IMSI attach and detach procedure"
3	MS		The MS is switched on or powered on
4	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to: "000" when k = 1 "0000" when k = 2
5	SS -> MS	IMMEDIATE ASSIGNMENT	
6	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = IMSI attach
7	SS -> MS	LOCATION UPDATING ACCEPT	with no mobile identity
8	SS -> MS	CHANNEL RELEASE	
9	SS		the LAC of the cell is changed and T3212 is set to 6 minutes
10	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to: "000" when k = 1 "0000" when k = 2. The MS must send its first Channel Request within 33s after the LAC has been changed.
11	SS -> MS	IMMEDIATE ASSIGNMENT	
12	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = Normal location updating
13	SS -> MS	LOCATION UPDATING ACCEPT	with no mobile identity
14	SS -> MS	CHANNEL RELEASE	
15	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to: "000" when k = 1 "0000" when k = 2. The MS must send its first Channel Request within 7 minutes after the preceding Channel Release
16	SS -> MS	IMMEDIATE ASSIGNMENT	
17	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = Periodic updating
18	SS -> MS	LOCATION UPDATING ACCEPT	with no mobile identity
19	SS -> MS	CHANNEL RELEASE	
20	MS		If possible (see PICS), the MS is switched off, otherwise it has its power source removed
21	MS		If the MS was switched off it attempts IMSI detach
22	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to: "111" when k = 1 "0001" when k = 2
23	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Procedure 7

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

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

Step	Direction	Message	Comments
0	SS		When k = 1, NECI set to 0 When k = 2, NECI set to 1
1	MS		a non call related supplementary service operation is attempted
2	MS -> SS	8 CHANNEL REQUEST	all messages have establishment cause set to: "111" when k = 1 "0001" when k = 2
3	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Procedure 8

This procedure is performed if the MS supports SMS/PP MO.

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

Step	Direction	Message	Comments
0	SS		When k = 1, NECI set to 0 When k = 2, NECI set to 1 a mobile originated short message service transaction is attempted all messages have establishment cause set to: "111" when k = 1 "0001" when k = 2
1	MS		
2	MS -> SS	8 CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

26.3 Test of MS functions in idle mode

26.3.1 Initial conditions

The SIM shall contain a PLMN-Selector that contains only the HPLMN of the MS, and an empty forbidden PLMN list.

Related PICS/PIXIT statements

During the tests in subclauses 26.3.2 and 26.3.3, the following parameters apply according to the above PICS/PIXIT statement:

RACH control parameters

In cells:

GSM 400:	1 to 7;
GSM 710:	1 to 7;
GSM 750:	1 to 7;
T-GSM 810:	1 to 7; GSM 850: 1 to 7;
GSM 900:	1 to 7;
DCS 1 800:	1 to 6;
PCS 1 900:	1 to 6;
Multiband 900/1 800:	1 to 7;
Multiband 450/900:	1 to 7;
Multiband 480/900:	1 to 7;
Multiband 450/1 800:	1 to 7;
Multiband 480/1 800:	1 to 7;
Multiband 850/1 900:	1 to 7.

Max retrans	= 01	2 retransmissions
Tx-integer	= 0111	(10) slots for spreading
CB, Cell Barred	= 0	access is allowed
RE	= 1	re-establishment not allowed
AC C00 to AC C15	= 0	access is not barred

In cell:

- GSM 400: 8;
- GSM 710: 8;
- GSM 750: 8;
- GSM 810: 8;
- GSM 850: 8;
- GSM 900: 8;
- DCS 1 800: 7;
- PCS 1 900: 7;
- Multiband 900/1 800: 8;
- Multiband 450/900: 8;
- Multiband 480/900: 8;
- Multiband 450/1 800: 8;
- Multiband 480/1 800: 8.

- Max retrans = 01 2 retransmissions
- Tx-integer = 0111 (10) slots for spreading
- CB, Cell Barred = 1 access is not allowed
- RE = 1 re-establishment not allowed
- AC C00 to AC C15 = 0 access is not barred

Cell	PLMN perm.	GSM 900								DCS 1 800					
		BA - ARFCN bit = 1								BA - ARFCN bit = 1					
1	00000100	7	39	65	66	85	97	124	520	580	610	702	703	830	885
2	00000100	8	40	67	68	86	98	123	521	581	612	704	705	831	884
3	00000100	9	41	69	70	87	99	122	522	582	614	706	707	832	883
4	00000100	10	42	71	72	88	100	121	523	583	616	708	709	833	882
5	00000100	11	43	73	74	89	101	120	524	584	618	710	711	844	881
6	00000100	12	44	75	76	90	102	119	525	585	620	712	713	835	880
7	00000100	13	45	77	78	91	103	118	526	586	622	714	715	836	879
8	00000100	124													

Cell	PLMN perm.	GSM 450								GSM 480					
		BA - ARFCN bit = 1								BA - ARFCN bit = 1					
1	00000100	261	267	268	281	288	291	293	308	314	315	328	335	338	340
2	00000100	260	269	270	282	289	264	275	307	316	317	329	336	311	322
3	00000100	262	271	272	283	290	265	277	309	318	319	330	337	312	324
4	00000100	263	273	274	284	292	266	279	310	320	321	331	339	313	326
5	00000100	264	275	276	285	260	269	270	311	322	323	332	307	316	317
6	00000100	265	277	278	286	262	271	272	312	324	325	333	309	318	319
7	00000100	266	279	280	287	263	273	274	313	326	327	334	310	320	321
8	00000100	293							340						

		GSM 710 OR GSM 750 OR T-GSM 810							GSM 850						
Cell	PLMN perm.	BA - ARFCN bit = 1							BA - ARFCN bit = 1						
1	00000100	444	456	472	473	489	497	511	134	166	192	193	212	224	251
2	00000100	445	457	474	475	490	498	510	135	167	194	195	213	225	250
3	00000100	446	458	476	477	491	499	509	136	168	196	197	214	226	249
4	00000100	447	459	478	479	492	500	508	137	169	198	199	215	227	248
5	00000100	448	460	480	481	493	501	507	138	170	200	201	216	228	247
6	00000100	449	461	482	483	494	502	506	139	171	202	203	217	229	246
7	00000100	450	462	484	485	495	503	505	140	172	204	205	218	230	245
8	00000100	511							251						

		PCS 1 900							Multiband 850/1900						
Cell	PLMN	BA - ARFCN bit = 1							BA - ARFCN bit = 1						
1	00000100	512	520	580	610	702	703	800	134	166	610	193	212	810	251
2	00000100	513	521	581	612	704	705	801	135	167	194	195	213	225	250
3	00000100	514	522	582	614	706	707	802	136	168	196	197	214	226	249
4	00000100	515	523	583	616	708	709	803	523	583	524	585	616	708	709
5	00000100	516	524	584	618	710	711	804	520	170	200	702	216	805	247
6	00000100	517	525	585	620	712	713	805	139	171	202	203	217	229	246
7	00000100	518	526	586	622	714	715	806	526	586	622	714	715	786	808
8	00000100								251						

		Multiband 900/1800						
Cell	PLMN perm.	BA - ARFCN bit = 1						
1	00000100	7	39	702	66	85	885	124
2	00000100	8	40	67	68	86	98	123
3	00000100	9	41	69	70	87	99	122
4	00000100	523	583	616	708	709	833	882
5	00000100	520	7	39	702	85	885	124
6	00000100	12	44	75	76	90	102	119
7	00000100	526	586	622	714	715	836	879
8	00000100	124						

		Multiband 450/900							Multiband 480/900						
Cell	PLMN perm.	BA - ARFCN bit = 1							BA - ARFCN bit = 1						
1	00000100	261	267	65	281	288	124	293	308	314	65	328	335	124	340
2	00000100	260	269	270	282	289	264	275	307	316	317	329	336	311	322
3	00000100	262	271	272	283	290	265	277	309	318	319	330	337	312	324
4	00000100	10	42	71	72	88	100	121	10	42	71	72	88	100	121
5	00000100	7	260	267	65	288	124	293	7	307	314	65	335	124	340
6	00000100	265	277	278	286	262	271	272	312	324	325	333	309	318	319
7	00000100	13	45	77	78	91	103	118	13	45	77	78	91	103	118
8	00000100	293							340						

		Multiband 450/1800							Multiband 480/1800						
Cell	PLMN perm.	BA - ARFCN bit = 1							BA - ARFCN bit = 1						
1	00000100	261	267	702	281	288	885	293	308	314	702	328	335	885	340
2	00000100	260	269	270	282	289	264	275	307	316	317	329	336	311	322
3	00000100	262	271	272	283	290	265	277	309	318	319	330	337	312	324
4	00000100	523	583	616	708	709	833	882	523	583	616	708	709	833	882
5	00000100	520	260	267	702	288	885	293	520	307	314	702	335	885	340
6	00000100	265	277	278	286	262	271	272	312	324	325	333	309	318	319
7	00000100	526	586	622	714	715	836	879	526	586	622	714	715	836	879
8	00000100	293							340						

Location area identification

GSM 400, GSM 710, GSM 750, T-GSM 810, GSM 850 and GSM 900 only - begin

Cell	MCC1	MCC2	MCC3	MNC1	MNC2	LAC	
1	0	0	2	0	F	x	
2	0	0	3	2	F	x	
3	0	0	4	3	F	x	
4	0	0	5	4	F	x	
5	0	0	6	5	F	x	
6	0	0	7	6	F	x	
7	0	0	8	7	F	x	
8	0	0	1	0	1	x	The HPLMN of the MS

GSM 400, GSM 710, GSM 750, T-GSM 810, GSM 850 and GSM 900 only - end

DCS 1 800 only - begin

Cell	MCC1	MCC2	MCC3	MNC1	MNC2	LAC	
1	0	0	2	0	F	x	
2	0	0	3	2	F	x	
3	0	0	4	3	F	x	
4	0	0	5	4	F	x	
5	0	0	6	5	F	x	
6	0	0	7	6	F	x	
7	0	0	1	0	1	x	The HPLMN of the MS

DCS 1 800 only – end

PCS 1 900 only – begin

Cell	MCC1	MCC2	MCC3	MNC1	MNC2	MNC3	LAC	
1	0	0	2	0	F	F	x	
2	0	0	3	2	F	F	x	
3	0	0	4	3	F	F	x	
4	0	0	5	4	F	F	x	
5	0	0	6	5	F	F	x	
6	0	0	7	6	F	F	x	
7	0	0	1	0	1	1	x	The HPLMN of the MS

GSM 1900 only - end

Any Multiband MS - begin

Cell	MCC1	MCC2	MCC3	MNC1	MNC2	LAC	
1	0	0	2	0	F	x	
2	0	0	3	2	F	x	
3	0	0	4	3	F	x	
4	0	0	5	4	F	x	
5	0	0	2	0	F	x	
6	0	0	7	6	F	x	
7	0	0	8	7	F	x	
8	0	0	1	0	1	x	The HPLMN of the MS

Any Multiband MS - end

NOTE 1: 'x' denotes any value.

NOTE 2: The MS representation of the MCC, MNC on the handset can be manufacturer dependant.

NOTE 3: The NCC values of each cell must be different.

Control channel description and BS options

All:

GSM 400: 8 cells;
 GSM 710: 8 cells;
 GSM 750: 8 cells;
 T-GSM 810: 8 cells;
 GSM 850: 8 cells;
 GSM 900: 8 cells;
 DCS 1 800: 7 cells;
 PCS 1 900: 7 cells;
 Any Multiband MS: 8 cells.

CELL_RESELECT_HYSTERESIS = 010 4dB RXLEV hysteresis
 MS_TXPWR_MAX_CCH = value corresponding to the maximum available output power from MS
 RXLEV_ACCESS_MIN = 30
 ATT = 0 no IMSI attach and detach
 DTX = 0 no discontinuous transmission
 BS_AG_BLK_RES = 1 1 block reserved for access grant
 CCCH_CONF = 001 1 SDCCH combined with the CCCH
 RADIO_LINK_TIMEOUT = 5 10 s time-out
 BS_PA_MFRMS = 010 4 multiframe periods for paging
 T3212 time-out value = H'00

Cell	GSM 900		DCS 1 800	
	level dB μ V _m f ()	BCCH ARFCN	level dB μ V _m f ()	BCCH ARFCN
1	+65	1	+65	520
2	+63	7	+63	580
3	+61	39	+61	610
4	+55	65	+55	702
5	+59	66	+59	703
6	+57	85	+57	830
7	+55	97	+55	885
8	+53	124		

Cell	GSM 450		DCS 480	
	level dB μ Vemf()	BCCH ARFCN	level dB μ Vemf()	BCCH ARFCN
1	+65	259	+65	306
2	+63	261	+63	308
3	+61	267	+61	314
4	+55	268	+55	315
5	+59	281	+59	328
6	+57	288	+57	335
7	+55	291	+55	338
8	+53	293	+53	340

Cell	Multiband 900/1800		PCS 1 900	
	level dB μ Vemf()	BCCH ARFCN	level dB μ Vemf()	BCCH ARFCN
1	+65	520	+65	512
2	+63	7	+63	520
3	+61	39	+61	580
4	+55	702	+55	610
5	+59	66	+59	702
6	+57	85	+57	703
7	+55	885	+55	800
8	+53	124		

Cell	Multiband 450/900		Multiband 480/900	
	level dB μ Vemf()	BCCH ARFCN	level dB μ Vemf()	BCCH ARFCN
1	+65	1	+65	1
2	+63	261	+63	308
3	+61	267	+61	314
4	+55	65	+55	65
5	+59	281	+59	328
6	+57	288	+57	335
7	+55	124	+55	124
8	+53	293	+53	340

Cell	Multiband 450/1800		Multiband 480/1800	
	level dB μ Vemf()	BCCH ARFCN	level dB μ Vemf()	BCCH ARFCN
1	+65	520	+65	520
2	+63	261	+63	308
3	+61	267	+61	314
4	+55	702	+55	702
5	+59	281	+59	328
6	+57	288	+57	335
7	+55	885	+55	885
8	+53	293	+53	340

Cell	GSM 710 or GSM 750 or T-GSM 810		GSM0 850	
	Level dB μ Vemf()	BCCH ARFCN	level dB μ Vemf()	BCCH ARFCN
1	+65	438	+65	128
2	+63	444	+63	134
3	+61	456	+61	166
4	+55	472	+55	192
5	+59	473	+59	193
6	+57	489	+57	212
7	+55	497	+55	224
8	+53	511	+53	251

Cell	GSM 850/1900	
	level dB μ V _{emf} ()	BCCH ARFCN
1	+65	512
2	+63	134
3	+61	166
4	+55	610
5	+59	193
6	+57	212
7	+55	810
8	+53	251

For testing an E-GSM Mobile station (see PICS/PIXIT), the BCCH ARFCN of cell 7 at GSM 900 column shall be 985 (instead of 97). For testing an R-GSM Mobile station (see PICS/PIXIT), the BCCH ARFCN of cell 7 at GSM 900 column shall be 965 (instead of 97).

NOTE 4: The SIM should contain a PLMN-Selector that contains only the HPLMN of the MS, and an empty forbidden PLMN list.

26.3.2 MS indication of available PLMNs

26.3.2.1 Test purpose

To verify that a MS can present the available PLMNs to the user when asked to do so in manual mode according to the requirements of 3GPP TS 05.08 and 3GPP TS 02.11.

26.3.2.2 Method of test

- The MS is switched on, equipped with a SIM containing default values except for those values listed under subclause 26.3.1 (initial conditions).
- The MS is put into manual network selection mode (see PIXIT).

26.3.2.3 Test requirements

- On entering manual network selection mode, the MS shall present a list of available PLMNs in all its bands of operation (MCC and MNC values, or any other valid indications, see PIXIT), within 2 minutes. Any PLMN shall only be presented once. The list shall include the MCC and MNC of:

GSM 400, GSM 710, GSM 750, T-GSM 810, GSM 850 and GSM 900: cells 1 to 7, but not of cell 8.

DCS 1 800: cells 1 to 6, but not of cell 7.

PCS 1 900: cells 1 to 6, but not of cell 7.

Multiband: cells 2, 3, 4, 6, 7 and 1 or 5 (cell 1 and 5 have the same MCC and MNC), but not of cell 8.

26.3.3 MS will send only if BSS is "on air"

26.3.3.1 Test purpose

To verify that the MS will not produce any RF transmission if no BSS is received.

26.3.3.2 Method of test

- The RF-signal for the BCCHs of:
 - GSM 400, GSM 710, GSM 750, T-GSM 810, GSM 850 and GSM 900: cell 1 to 8 is switched off.
 - DCS 1 800: cell 1 to 7 is switched off.
 - PCS 1 900: cell 1 to 7 is switched off.
 - Any Multiband: cell 1 to 8 is switched off.
- The SS shall wait 20 s to allow the MS to detect the loss of cells.

- c) By MMI, an attempt to originate a call is made.
- d) By MMI, an attempt to originate an emergency call is made.

26.3.3.3 Test requirements

26.3.3.3.1 General test requirements

- 1) The MS must not give "service indication".
- 2) In steps c) and d) the MS shall not produce any RF output.

26.3.3.3.2 Test Procedures

26.3.3.3.2.1 Test Procedure 1

For MS not supporting speech (see PICS) perform steps a, b, and c.

26.3.3.3.2.2 Test Procedure 2

For MS supporting speech (see PICS) perform steps a, b, c and d.

26.3.4 Manual mode of PLMN selection

26.3.4.1 Conformance requirements

In manual mode, the MS can try to obtain normal service on any available VPLMN and it shall try to obtain normal service on a VPLMN if and only if the user makes a manual selection of this VPLMN.

Reference

3GPP TS 03.22 subclause 3.1.

26.3.4.2 Test purpose

To check that in manual mode the MS is able to obtain normal service on a PLMN which is neither the better nor a preferred PLMN and that it tries to obtain service on VPLMN if and only if the user selects it manually.

26.3.4.3 Method of test

Initial conditions

System Simulator:

2 cells, defaults parameter unless otherwise specified.

The SS transmits 2 BCCH carriers in the supported band(s) of the mobile station (for a multiband MS carrier A and B shall be in different bands) with the initial following parameters:

		level (dB μ Vemf)
carrier A	PLMN 1	38
carrier B	PLMN 2	33

Mobile Station:

The MS is "idle updated" on PLMN1 (HPLMN) and is in manual mode.

The preferred PLMN list does not contain PLMN2, it contains PLMN 3.

Specific PICS statements:

- Support of multiband functionality (Type_MB_Simul)

PIXIT Statements:

- Description of the manual PLMN selector.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

For the different networks and during the whole test, "IMSI attach" flag is set in the BCCH data.

Carrier A is turned off. The MS does not attempt a location updating during 2 minutes.

Carrier A is turned back on with a different MCC-MNC (indicating PLMN 3) and with a higher level (48 dBmVemf) than PLMN 2. The MS does not attempt a location updating during 2 minutes.

PLMN 2 is selected manually. The MS performs a location updating on PLMN 2. Carrier B is turned off. The MS does not attempt a location updating during 2 minutes.

Maximum duration of test

10 minutes.

Expected Sequence

Step	Direction	Message	Comments
1 2	SS		carrier A is turned off wait 2 min: the MS shall not send any CHANNEL REQUEST messages during this time
3 4	SS		carrier A is turned on with a different MNC-NCC (PLMN3) and with a high level (48dBmVemf) wait 2 min: the MS shall not send any CHANNEL REQUEST messages during this time
5 6 7 8 9 10	MS MS -> SS SS -> MS MS -> SS SS -> MS SS -> MS	CHANNEL REQUEST IMMEDIATE ASSIGNMENT LOCATION UPDATING REQUEST LOCATION UPDATING ACCEPT CHANNEL RELEASE	PLMN 2 selected manually on carrier B
11 12	SS		carrier B is turned off wait 2 min: the MS shall not send any CHANNEL REQUEST messages during this time

Specific message contents

None.

26.4 Lower layer failures in layer 3 testing

26.4.1 Introduction

The text in this subclause is intended to develop a standardized way of creating lower layer failures whilst testing the performance of Layer 3 signalling.

There are two groups of lower layer failures:

- 1) Detected by analysis of reception at Layer 1 (3GPP TS 05.08, 3GPP TS 04.08 / 3GPP TS 44.018),
- 2) Data link layer failures.

References

3GPP TS 04.08 / 3GPP TS 44.018, 3GPP TS 04.06, 3GPP TS 05.08

26.4.2 Layer 1 reception failures

The absence of reception of correct frames on the SACCH until the S counter reaches value 0 will be interpreted as a Layer 1 failure.

26.4.3 Data link layer failures

Many kinds of error cases can be caused in Layer 2. For example too many "T200 - time-out/retrying" - pairs.

NOTE 1: All types of data link failures are indicated similarly to the RR layer (Release Indication).

NOTE 2: All types of L1 failures are indicated similarly to each layer (Abort Indication, Error Indication).

26.4.4 Lower layer failures, used for the tests in clause 25

For L3 testing different lower layer failures are performed:

- 1) T100 time-out in Layer 1.
- 2) Too many T200 time-outs consecutively in Layer 2.

26.5 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions

26.5.1 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions / unknown protocol discriminator

An MS ignores messages with unknown protocol discriminator. This allows for the introduction of new messages which will be ignored by MS of earlier phases.

26.5.1.1 Conformance requirements

If the mobile station receives a standard L3 message with a protocol discriminator different from those specified in table 9.2/3GPP TS 04.07, the mobile station shall ignore the message.

References

3GPP TS 04.07, subclause 11.2.1.

26.5.1.2 Test purpose

To verify that a MS supporting TCH and the call control protocol ignores a message containing an undefined protocol discriminator in the special case of a message coded otherwise like a CC STATUS ENQUIRY message received by the MS having a mobile terminating call in CC-state U10, "active".

26.5.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has been paged and an RR connection has been established.

If the MS supports the call control protocol, the test may alternatively be performed with the MS having a mobile terminating call in the CC-state U10, "active".

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

Same as in the initial conditions.

Test Procedure

The SS sends a message to the MS which is coded like a CC STATUS ENQUIRY message relating to the active call except for the fact that the protocol discriminator of the message is undefined.

Maximum duration of test

11 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	UNKNOWN MESSAGE	The SS waits between 5 s and 10 s verifying during this period that the MS does not send a L3 message on the main signalling link.
2	SS		

Specific message contents

UNKNOWN MESSAGE

Information element	Value/remark
Protocol discriminator	0000
TI flag	transaction originated by SS
TI value	TI value of the active call if the test is performed in state U10 otherwise the value is arbitrary.
Message Type	H'34

26.5.2 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions / TI and skip indicator

26.5.2.1 TI and skip indicator / RR

The MS ignores RR messages with skip indicator different to 0. This allows for the introduction of new RR messages which will be ignored by MS of earlier phases, especially on the downlink CCCH and BCCH.

26.5.2.1.1 TI and skip indicator / RR / Idle Mode

26.5.2.1.1.1 Conformance requirements

A radio resource message received with skip indicator different from 0000 shall be ignored.

Reference(s):

3GPP TS 04.08 / 3GPP TS 24.008, subclause 10.3.1.

26.5.2.1.1.2 Test purpose

To verify that the MS ignores an RR message with skip indicator different from H'0 in the special case of a PAGING REQUEST TYPE 1 message received in the MM-state "idle, updated" and in RR-idle mode.

26.5.2.1.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode. It has a valid TMSI.

Test Procedure

For every binary value x in the range 0001 - 0110 (binary) and for binary value x = 1 000, the following procedure is performed: The SS sends a PAGING REQUEST TYPE 1 message to the MS with skip indicator set to x. It is verified that the MS does not answer to the paging request message.

Maximum duration of test

5 s for each execution.

Expected sequence

The sequence is executed for execution counter k = 1, 2, 3, 4, 5, 6, 8.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	The value of the skip indicator IE is the binary encoding of k.
2	SS		During 3 s the SS verifies that the MS does not send any message on the RACH.

Specific message contents

None.

26.5.2.1.2 TI and skip indicator / RR / RR-Connection established

26.5.2.1.2.1 Conformance requirements

A radio resource message received with skip indicator different from H'0 shall be ignored.

Reference(s):

3GPP TS 04.08 / 3GPP TS 24.008, subclause 10.3.1.

26.5.2.1.2.2 Test purpose

To verify that the MS ignores RR messages with skip indicator different from H'0 in the case of a message being received during the RR-connection establishment in the MM-state "idle, updated" / "wait for network command" and in RR-connected mode.

26.5.2.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, max retrans = 2.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode. It has a valid TMSI.

Test Procedure

The SS sends a PAGING REQUEST TYPE 1 message to the MS with skip indicator set to H'0. The first CHANNEL REQUEST message will be answered with an IMMEDIATE ASSIGNMENT addressing the MS but with skip indicator set to H'1. Transmission of the second CHANNEL REQUEST message verifies that the MS has ignored the IMMEDIATE ASSIGNMENT message.

The second CHANNEL REQUEST message is answered by an IMMEDIATE ASSIGNMENT REJECT message addressing the MS but with skip indicator set to H'2 and a reject time set to 255 s. Transmission of the third CHANNEL REQUEST message verifies that the MS has ignored the IMMEDIATE ASSIGNMENT REJECT message.

The third CHANNEL REQUEST message from the MS will be answered with a correct IMMEDIATE ASSIGNMENT addressing the MS and having skip indicator set to H'0.

In the RR-Connected mode messages such as CIPHERING MODE COMMAND, HANDOVER COMMAND, ASSIGNMENT COMMAND and CHANNEL RELEASE are sent with the skip indicator <> H'0 and it is checked that the MS does not take any action on these commands.

Maximum duration of test

40 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	The value of the skip indicator IE is H'0
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	skip indicator set to H'1
4	MS -> SS	CHANNEL REQUEST	
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	skip indicator = H'2, reject time = 255 s
6	MS -> SS	CHANNEL REQUEST	Cause, answer to paging
7	SS -> MS	IMMEDIATE ASSIGNMENT	skip indicator = H'0
8	MS -> SS	PAGING RESPONSE	RR connection established
9	SS -> MS	AUTHENTICATION REQUEST	
10	MS -> SS	AUTHENTICATION RESPONSE	
11	SS -> MS	CIPHERING MODE COMMAND	skip indicator = H'3
12	SS		the SS neither starts ciphering nor deciphering with IMSI requested
13	SS -> MS	IDENTITY REQUEST	to check the MS still uses unciphered mode
14	MS -> SS	IDENTITY RESPONSE	
15	SS -> MS	ASSIGNMENT COMMAND	skip indicator = H'4
16	SS		SS checks no SABM is sent by the MS on the new channel
17	SS -> MS	HANDOVER COMMAND	skip indicator = H'5
18	SS		During 3 s the SS verifies that the MS does not send a handover failure or RR STATUS message on the old channel
19	SS -> MS	CHANNEL RELEASE	skip indicator = H'6
20	SS -> MS	IDENTITY REQUEST	with IMSI requested
21	MS -> SS	IDENTITY RESPONSE	to check the RR connection is still established
22	SS -> MS	CHANNEL RELEASE	skip indicator = H'0
23	SS		The SS checks that the layer 2 connection is released

Specific message contents

None.

26.5.2.2 TI and skip indicator / MM

The MS ignores MM messages with skip indicator different to 0. This allows for the introduction of new MM messages which will be ignored by MS of earlier phases.

26.5.2.2.1 Conformance requirements

A mobility management message received with skip indicator different from 0000 shall be ignored.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 10.3.1.

26.5.2.2.2 Test purpose

To verify that the MS ignores an MM message with skip indicator different from H'0 in the special case of an IDENTITY REQUEST message received.

26.5.2.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a mobile terminating call in CC-state U10, "active", or alternatively, the MS has been paged and an RR connection has been established.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

Same as in the initial conditions.

Test Procedure

For every binary value x in the range 0001 - 0110 and for the binary value x = 1 000, the following procedure is performed: The SS sends an IDENTITY REQUEST message to the MS with skip indicator set to x. It is verified during 5 s that the MS does not answer to the IDENTITY REQUEST message.

Maximum duration of test

15 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	IDENTITY REQUEST	Skip indicator IE has value H'1.
2	SS		The SS starts verifying that the MS does not send any L3 message on the main signalling link. This verification continues until step 16 of this test sequence.
3	SS		The SS waits 1 second.
4	SS -> MS	IDENTITY REQUEST	Skip indicator IE has value H'2.
5	SS		The SS waits 1 second.
6	SS -> MS	IDENTITY REQUEST	Skip indicator IE has value H'3.
7	SS		The SS waits 1 second.
8	SS -> MS	IDENTITY REQUEST	Skip indicator IE has value H'4.
9	SS		The SS waits 1 second.
10	SS -> MS	IDENTITY REQUEST	Skip indicator IE has value H'5.
11	SS		The SS waits 1 second.
12	SS -> MS	IDENTITY REQUEST	Skip indicator IE has value H'6.
13	SS		The SS waits 1 second.
14	SS -> MS	IDENTITY REQUEST	Skip indicator IE has value H'8.
15	SS		The SS waits 5 s.
16	SS		The SS stops verifying that the MS does not send any L3 message on the main signalling link.

Specific message contents

None.

26.5.2.3 TI and skip indicator / CC

26.5.2.3.1 Conformance requirements

- a) Whenever any call control message except SETUP or RELEASE COMPLETE is received specifying a transaction identifier with a value different from 111, which is not recognized as relating to an active call or to a call in progress, the receiving entity shall send a RELEASE COMPLETE message with cause value #81 "invalid transaction identifier value" using the received transaction identifier value and remain in the Null state.
- b1) When a RELEASE COMPLETE message is received specifying a transaction identifier with a value different from 111, which is not recognized as relating to an active call or to a call in progress, the MM-connection associated with that transaction identifier shall be released.
- b2) When a SETUP message is received with a transaction identifier flag set to "1", this message shall be ignored.
- b3) When a SETUP message is received specifying a transaction identifier which is recognized as relating to an active call or to a call in progress, this SETUP message shall be ignored.
- c) When a CC message with a TI value = 111 is received, this message shall be ignored.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.3.

26.5.2.3.2 Test purpose

- a) To verify that the MS having a mobile terminating call in CC-state U10, "active", on receipt of a DISCONNECT message which includes a transaction identifier with a value different from 111, which is not recognized as relating to an active call or a call in progress, sends a RELEASE COMPLETE message with cause value #81 and referring to the latter TI without changing the state of the active call (this is verified by use of the status enquiry procedure).
- b) To verify that the MS having a mobile terminating call in CC-state U10, "active", on receipt of a:
 - b1) RELEASE COMPLETE message which includes a transaction identifier with a value different from 111, which is not recognized as relating to an active call or a call in progress, or a
 - b2) SETUP message with TI flag referring to a transaction originated by the MS (in the special case where the TI value is equal to the TI value relating to the active call), or a

b3) SETUP message with TI referring to the active call, ignores that message without changing the state of the active call (this is verified by use of the status enquiry procedure).

c) To verify that the MS ignores a CC message with a TI value of 111.

26.5.2.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a mobile terminating call in CC-state U10, "active". No other call is active or in progress.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a mobile terminating call in CC-state U10, "active". No other call is active or in progress.

Test Procedure

The SS sends a DISCONNECT message to the MS with a TI not relating to the active call. The MS shall respond with a RELEASE COMPLETE message including cause value #81 and specifying the same transaction. By means of the status enquiry procedure the SS checks that the CC-state of the active call did not change.

Then the SS sends the following call control messages to the MS:

- a RELEASE COMPLETE message, where the TI does not refer to the active call;
- a SETUP message with TI flag set to 1;
- a SETUP message with TI referring to the active call;
- a DISCONNECT message with a TI value of 111.

Each time the SS verifies that the MS does not respond to the message and each time the SS verifies by means of the status enquiry procedure that the CC-state of the active call has not been changed.

Maximum duration of test

40 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	TI flag = 0; TI does not refer to the active call.
2	MS -> SS	RELEASE COMPLETE	TI flag = 1; TI value is equal to TI value received in step 1; Cause IE indicates cause value #81.
3	SS -> MS	STATUS ENQUIRY	TI refers to the active call.
4	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10
5	SS -> MS	RELEASE COMPLETE	TI flag = 0; TI does not refer to the active call.
6	SS		The SS verifies during 5 s that the MS does not send any L3 message on the main signalling link.
7	SS -> MS	STATUS ENQUIRY	TI refers to the active call.
8	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10
9	SS -> MS	SETUP	TI flag = 1; TI value is equal to TI value of the active call.
10	SS		The SS verifies during 5 s that the MS does not send any L3 message on the main signalling link.
11	SS -> MS	STATUS ENQUIRY	TI refers to the active call.
12	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10
13	SS -> MS	SETUP	TI flag = 0; TI refers to the active call.
14	SS		The SS verifies during 5 s that the MS does not send any L3 message on the main signalling link.
15	SS -> MS	STATUS ENQUIRY	TI refers to the active call.
16	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10
17	SS -> MS	DISCONNECT	TI flag = 0; TI value is 111.
18	SS		The SS verifies during 5 s that the MS does not send any L3 message on the main signalling link.
19	SS -> MS	STATUS ENQUIRY	TI refers to the active call.
20	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10

Specific message contents

None.

26.5.3 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions / undefined or unexpected message type

26.5.3.1 Undefined or unexpected message type / undefined message type / CC

26.5.3.1.1 Conformance requirements

If the Mobile Station receives a message with message type not defined for the PD, it shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #97 "message type non-existent or not implemented".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.4; 3GPP TS 04.07, subclause 11.2.4.

26.5.3.1.2 Test purpose

To verify that a MS supporting the call control protocol for at least one BC, having a mobile terminating call in CC-state U10, "active", on receipt of a message with CC protocol discriminator and an arbitrary undefined message type, returns a STATUS message with cause value #97 to the peer CC entity without changing the state of the active call (this is verified by use of the status enquiry procedure).

26.5.3.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a mobile terminating call in CC-state U10, "active".

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a mobile terminating call in CC-state U10, "active".

Test Procedure

The SS sends a message to the MS the PD of which refers to call control, the TI of which refers to the active call, and the message type of which is undefined in the call control protocol (however bit 7 of the message type is "0"). The SS then checks that the MS responds with a STATUS message specifying cause value #97. The SS then sends a STATUS ENQUIRY message to the MS and verifies that the MS responds with a STATUS message specifying cause value #30 and call state U10, "active".

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	see comments	PD = "call control; call related SS messages" TI is that of the active call Message type is undefined for call control, bit 7 of the message type is "0"
2	MS -> SS	STATUS	Cause IE indicates cause value #97.
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10

Specific message contents

None.

26.5.3.2 Undefined or unexpected message type / undefined message type / MM

26.5.3.2.1 Conformance requirements

If the Mobile Station receives a message with message type not defined for the PD, it shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #97 "message type non-existent or not implemented".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.4.

26.5.3.2.2 Test purpose

To verify that a MS supporting the call control protocol for at least one BC, having a mobile terminating call in CC-state U10, "active", on receipt of a message with MM protocol discriminator and message type undefined for the mobility management protocol, returns an MM STATUS message with reject cause value #97 without changing the state of the active call (this is verified by use of the status enquiry procedure.) This is tested in the special case where the CC TI has value 0 (so that it has the same encoding as the skip indicator when sent from the SS) and where the message type has the same encoding as DISCONNECT in CC.

26.5.3.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a mobile terminating call in CC-state U10, "active". The TI of that mobile terminating call has value 0.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a mobile terminating call in CC-state U10, "active".

Test Procedure

The SS sends a message to the MS the PD of which refers to mobility management, the skip indicator of which is "0000", and the message type of which is "0000 0000". The SS then checks that the MS responds with an MM STATUS message specifying reject cause value #97. The SS then sends a STATUS ENQUIRY message to the MS and verifies that the MS responds with a STATUS message specifying cause #30 and call state U10, "active".

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	see comments	PD = "mobility management messages" Skip indicator = "0000" Message type = "0000 0000" rest of the message is H'02 H'E0 H'90
2	MS -> SS	MM STATUS	Reject cause IE indicates reject cause value #97.
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10

Specific message contents

None.

26.5.3.3 Undefined or unexpected message type / undefined message type / RR

26.5.3.3.1 Conformance requirements

If the Mobile Station receives a message with message type not defined for the PD, it shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #97 "message type non-existent or not implemented".

Reference(s)

3GPP TS 04.08 / 3GPP TS 44.018, subclause 8.4.

26.5.3.3.2 Test purpose

To verify that an MS in RR connected mode on receipt of a message with RR protocol discriminator and message type undefined for the RR protocol, returns an RR STATUS message with reject cause value #97 without changing its state (this is checked by observing that the MS does not send L3 messages).

26.5.3.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has been paged and an RR connection has been established.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in "idle updated" state.

Test Procedure

The SS sends a message to the MS the PD of which refers to radio resources management, the skip indicator of which is "0000", and the message type of which is "0010 1010". The SS then checks that the MS responds with an RR STATUS message specifying reject cause value #97. The SS then verifies during 5 s that the MS does not send a L3 message on the main signalling link but continues sending L2 fill frames on the main signalling link. Then the SS sends a SETUP message to the MS. This message specifies a BC that is supported by the MS, if there exists any; if the MS does not support any BC, the SETUP message specifies an arbitrary BC. The SS then verifies that the MS responds with a CALL CONFIRMED message if the SETUP had specified a BC supported by the MS, and that the MMS responds with a RELEASE COMPLETE message otherwise. Then the SS sends a CHANNEL RELEASE to the MS and waits for the disconnection of the main signalling link.

Maximum duration of test

15 s.

Expected sequence

Step	Direction	Message	Comments
1	SS->MS	see comments	PD = "radio resources management messages" Skip indicator = "0000" Message type = "0010 0101" rest of the message is H'02 H'E0 H'90
2	MS->SS	RR STATUS	RR cause IE indicates RR cause value #97.
3	SS		During 5 s the SS verifies that the MS does not send a L3 message on the main signalling link but still continues to send L2 fill frames on the main signalling link.
4	SS->MS	SETUP	If the MS supports at least one BC (p = Y), the SETUP specifies a bearer capability supported by the MS. Otherwise (p = N) the SETUP message specifies any bearer capability.
A5	MS->SS	CALL CONFIRMED	This message shall be sent by the MS if p = Y.
B5	MS->SS	RELEASE COMPLETE	This message shall be sent by the MS if p = N.
6	SS->MS	CHANNEL RELEASE	The SS waits for disconnection of the main signalling link.

Specific message contents

None.

26.5.3.4 Undefined or unexpected message type / unexpected message type / CC

26.5.3.4.1 Conformance requirements

If the Mobile Station receives a message not consistent with the protocol state, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #98 "Message type not compatible with protocol state".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.4.

26.5.3.4.2 Test purpose

To verify that a MS supporting the call control protocol for at least one BC, having a call in CC-state U10, "active", on receipt of an inopportune CC message, returns a STATUS message with reject cause value #98 without changing the state of the active call (this is verified by use of the status enquiry procedure.) This is tested in the special case where the inopportune CC message is a CALL PROCEEDING message relating to the active call.

26.5.3.4.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

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

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

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

Test Procedure

The SS sends a CALL PROCEEDING message to the MS. The SS then checks that the MS responds with a STATUS message specifying reject cause value #98. The SS then sends a STATUS ENQUIRY message to the MS and verifies that the MS responds with a STATUS message specifying cause #30 and call state U10, "active".

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CALL PROCEEDING	
2	MS -> SS	STATUS	Cause IE indicates cause value #98.
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	Tl refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10

Specific message contents

None.

26.5.4 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions / unforeseen information elements in the non-imperative message part

26.5.4.1 Unforeseen information elements in the non-imperative message part / duplicated information elements

26.5.4.1.1 Conformance requirements

If an information element with format T, TV, or TLV is repeated in a message in which repetition of the information element is not specified, only the contents of the information element appearing first shall be handled and all subsequent repetitions of the information element shall be ignored.

References

3GPP TS 04.08 / 3GPP TS 24.008 / 3GPP TS 44.018, subclause 8.6.3.

26.5.4.1.2 Test purpose

To verify that the MS ignores an unforeseen second occurrence of an information element with format T, TV, or TLV in the special case of the mobile identity IE which has format TLV in the LOCATION UPDATING ACCEPT message.

26.5.4.1.3 Method of test

Initial conditions

System Simulator:

2 cells A and B belonging to different location areas, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode, listening to the BCCH/CCCH of cell A. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode, listening to the BCCH/CCCH of cell B. It does not have a valid TMSI.

Test Procedure

The RF level of cell A is lowered until the MS selects cell B (according to the cell-reselection procedures of 3GPP TS 05.08). The MS shall establish an RR connection and initiate the normal location updating procedure (using TMSI). The SS responds to the location update request with the LOCATION UPDATING ACCEPT message containing the mobile identity IE specifying the IMSI of the MS followed by an additional mobile identity IE specifying the TMSI that was assigned to the MS in the initial conditions (i.e. duplication of information element).

The SS then pages the MS using the PAGING REQUEST TYPE 1 message including the TMSI which was previously used in the LOCATION UPDATE ACCEPT message. The SS then verifies during 5 s that the MS does not answer to paging. The SS then pages the MS with its IMSI. The SS verifies that the MS responds on cell B by initiating the immediate assignment procedure using the CHANNEL REQUEST message.

Maximum duration of test

20 s.

Expected sequence

During 3 s the SS verifies that the MS does not send any message on the RACH.

Step	Direction	Message	Comments
1	SS		The RF level of cell A is lowered until the MS selects cell B.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	Mobile identity IE specifies the TMSI of the MS.
5	SS -> MS	LOCATION UPDATING ACCEPT	(see below)
6	SS -> MS	CHANNEL RELEASE	
7	SS		The SS waits at least 5 s to give the MS time to become pageable
8	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity 1 IE specifies the TMSI of the MS. Mobile identity 2 is omitted.
9	SS		The SS waits at least 5 s During that period the SS verifies that the MS does not send any message on the RACH.
10	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity 1 IE specifies the IMSI of the MS. Mobile identity 2 is omitted.
11	MS -> SS	CHANNEL REQUEST	Establishment cause = answer to paging.
12	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Specific message contents

LOCATION UPDATING ACCEPT

Information element	value/remark
location area identification	LAI of cell B
Mobile identity	coded TLV, specifies the IMSI of the MS
Type of identity	IMSI
Odd/even indication	corresponding to IMSI
Identity digit 1 etc.	corresponding to IMSI
Mobile identity (duplication)	coded TLV
Type of identity	TMSI of the MS
Odd/even indication	corresponding to TMSI
Identity digit 1 etc.	corresponding to TMSI

26.5.5 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions / non-semantical mandatory IE errors

26.5.5.1 Non-semantical mandatory IE errors / RR

26.5.5.1.1 Non-semantical mandatory IE errors / RR / missing mandatory IE error

26.5.5.1.1.1 Non-semantical mandatory IE errors / RR / missing mandatory IE error / special case

The MS shall accept a CHANNEL RELEASE message whether it contains an RR cause or not. This allows for the shortening of the message in the future.

26.5.5.1.1.1.1 Conformance requirements

When on receipt of a message a "missing mandatory IE" error is diagnosed the MS shall proceed as follows: If the message is a CHANNEL RELEASE message, the actions taken shall be the same as specified for a normal RR-connection release.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.1.1.1.2 Test purpose

To verify that the MS in RR connected mode releases the connection upon receipt of a CHANNEL RELEASE message with missing RR cause (which is "mandatory" in that message).

26.5.5.1.1.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode. It has a valid TMSI.

Test Procedure

A mobile terminating RR connection is established. Then the SS sends a CHANNEL RELEASE message in which the RR cause IE is missing. It is verified that the MS releases the main signalling link by sending a L2 DISC frame. The main signalling link release is then completed.

Maximum duration of test

10 s.

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	CHANNEL RELEASE	The mandatory RR cause IE is missing (the message consists only of protocol discriminator, skip indicator, and message type).
6	MS -> SS		The main signalling link is released (this is observed by a L2 DISC frame sent from the MS to the SS).

Specific message contents

None.

26.5.5.1.1.2 Non-semantic mandatory IE errors / RR / missing mandatory IE error / general case

In the general case, the MS has to report an RR message with missing mandatory IE by the use of an RR STATUS message, but otherwise to ignore it. This is a recovery mechanism for unforeseen states.

26.5.5.1.1.2.1 Conformance requirements

When on receipt of a message a "missing mandatory IE" error is diagnosed the MS shall proceed as follows: If the message is not one of the messages listed in subclauses 8.5.1, 8.5.2, and 8.5.3 of 3GPP TS 04.08 / 3GPP TS 24.008, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #96 "invalid mandatory information".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.1.1.2.2 Test purpose

To verify that the MS in RR connected mode ignores a ciphering mode command message in which the ciphering mode setting IE and cipher response IE are missing except for the fact that it returns a RR STATUS message.

26.5.5.1.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in RR-connected mode.

Test Procedure

A mobile terminating RR connection is established. Then the SS sends a ciphering mode command message in which the ciphering mode setting IE and cipher response IE are missing. The SS verifies that the MS does not start ciphering and returns a RR STATUS message.

Maximum duration of test

10 s.

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	The mandatory ciphering mode setting IE and cipher response IE are missing.
6	MS -> SS	RR STATUS	RR cause IE specifies RR cause value #96.

Specific message contents

None.

26.5.5.1.2 Non-semantic mandatory IE errors / RR / comprehension required

26.5.5.1.2.1 Conformance requirements

When an RR message containing an IE unknown in the message, but encoded as "comprehension required" (see subclause 10.5 of 3GPP TS 04.08 / 3GPP TS 24.008) is received, the MS shall proceed as follows: When the message is not one of the messages listed in 3GPP TS 04.08 subclauses 8.5.1, 8.5.2 and 8.5.3, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a RR STATUS message with cause value #96 "invalid mandatory information".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.1.2.2 Test purpose

To verify that the MS having an RR-connection established ignores a HANDOVER COMMAND message containing in the non-imperative part an IE encoded as comprehension required except for the fact that it returns a RR STATUS message with cause # 96 "invalid mandatory information".

26.5.5.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has an MT call in state U10, "active"; or alternatively, the MS has been paged and an RR-connection has been established.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

As in the initial conditions.

Test Procedure

The SS sends a HANDOVER command message containing in the non-imperative part an IE encoded as comprehension required. The SS verifies that the MS returns a RR STATUS message with cause value #96 without changing the dedicated channel.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	HANDOVER COMMAND	See below.
2	MS -> SS	RR STATUS	Sent on the old channel. RR cause IE specifies RR cause value #96.

Specific message contents

HANDOVER COMMAND

Information element	value/remark
cell description	as required
channel description	as required
handover reference	as required
power command	as required
comprehension required IEI	0000 0000
length	0000 0001
unrecognized IE contents	xxxx xxxx

26.5.5.2 Non-semantic mandatory IE errors / MM

The MS shall ignore MM messages with syntactically incorrect mandatory IE. This allows to use reserved values in later phases.

26.5.5.2.1 Non-semantic mandatory IE errors / MM / syntactically incorrect mandatory IE

26.5.5.2.1.1 Conformance requirements

When an MM message containing a syntactically incorrect mandatory IE is received, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a MM STATUS message with cause value #96 "invalid mandatory information".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.2.1.2 Test purpose

To verify that an MS supporting at least one BC, having a CC entity in state U10, "active", ignores an MM message with syntactically incorrect IE except for the fact that it sends an MM STATUS message with reject cause #96. This is tested in the special case of an IDENTITY REQUEST message in which the (mandatory) identity type IE specifies a reserved value for the type of identity; that the MS otherwise ignores the message is checked by means of the status enquiry procedure.

26.5.5.2.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a mobile terminating call in the CC-state U10, "active".

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a mobile terminating call in the CC-state U10, "active".

Test Procedure

The SS sends an IDENTITY REQUEST message in which the (mandatory) identity type IE specifies a reserved value for the type of identity. The SS verifies that the MS returns an MM STATUS message specifying cause value #96 but does not change its state (this is verified by use of the status enquiry procedure).

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	IDENTITY REQUEST	The identity type IE is encoded as "1111" (so that the type of identity contains the reserved value "111").
2	MS -> SS	MM STATUS	Reject cause IE indicates reject cause value #96.
3	SS -> MS	STATUS ENQUIRY	TI refers to the active call.
4	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10.

Specific message contents

None.

26.5.5.2.2 Non-semantic mandatory IE errors / MM / syntactically incorrect mandatory IE

26.5.5.2.2.1 Conformance requirement(s)

When an MM message containing a syntactically incorrect mandatory IE is received, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns an MM STATUS message with cause value #96 "invalid mandatory information".

Reference(s)

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.2.2.2 Test purpose

To verify that an MS having been paged and having an RR connection established ignores an MM message with syntactically incorrect IE except for the fact that it sends an MM STATUS message with reject cause #96. This is tested in the special case of an IDENTITY REQUEST message in which the (mandatory) *identity type* IE specifies a reserved value for the type of identity; the fact that the MS otherwise ignores the message is checked by testing that it answers as usual to an incoming SETUP message.

26.5.5.2.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has been paged; an RR connection has been established.

The MS has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen final state of the MS

The MS is in the MM-state "idle updated" listening to the BCCH/CCCH of the cell. It has a valid TMSI.

Test Procedure

The SS sends an IDENTITY REQUEST message in which the (mandatory) identity type IE specifies a reserved value for the type of identity. The SS verifies that the MS returns an MM STATUS message specifying cause value #96 but does not change its state; this is verified as follows:

The SS sends a SETUP message to the MS. This message specifies a BC that is supported by the MS, if there exists any; if the MS does not support any BC, the SETUP message specifies an arbitrary BC. The SS then verifies that the MS responds with a CALL CONFIRMED message if the SETUP had specified a BC supported by the MS, and that the MS responds with a RELEASE COMPLETE message otherwise.

Then the SS sends a CHANNEL RELEASE to the MS and waits for the disconnection of the main signalling link.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	IDENTITY REQUEST	The identity type IE is encoded as "1111" (so that the type of identity contains the reserved value "1111").
2	MS -> SS	MM STATUS	Reject cause IE indicates reject cause value #96.
3	SS -> MS	SETUP	If the MS supports at least one BC (p = Y), the SETUP specifies a bearer capability supported by the MS. Otherwise (p = N) the SETUP message specifies any bearer capability.
A4	MS -> SS	CALL CONFIRMED	This message shall be sent by the MS if p = Y.
B4	MS -> SS	RELEASE COMPLETE	This message shall be sent by the MS if p = N.
5	SS -> MS	CHANNEL RELEASE	The SS waits for disconnection of the main signalling link.

Specific message contents

None.

26.5.5.2.3 Non-semantic mandatory IE errors / MM / comprehension required

The "comprehension required" mechanism allows for the introduction of essential new information elements into messages, such that a message is ignored and a report is sent if the new information element is not understood.

26.5.5.2.3.1 Conformance requirements

When an MM message containing an IE unknown in the message, but encoded as "comprehension required" (see subclause 10.5 of 3GPP TS 04.08 / 3GPP TS 24.008) is received, the MS shall ignore the message except for the fact that, if an RR-connection exists, it returns an MM STATUS message with cause value #96 "invalid mandatory information".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.2.3.2 Test purpose

To verify that the MS on receipt of an MM message containing an IE unknown in the message, but encoded as "comprehension required" ignores the message except for the fact that it returns an MM STATUS message with cause value #96 "invalid mandatory information"; this in the special case of the MM message being a LOCATION UPDATING ACCEPT responding to a LOCATION UPDATING REQUEST from the MS.

26.5.5.2.3.3 Method of test

Initial conditions

System Simulator:

The SS simulates two cells, A and B, belonging to different location areas, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" listening to the BCCH/CCCH of cell A. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" listening to the BCCH/CCCH of cell B. It has a valid TMSI.

Test Procedure

The Rf level of cell A is lowered until the MS selects cell B. The SS verifies that the MS establishes an RR connection and performs the normal location updating procedure using its TMSI. The SS responds to the location updating request with the LOCATION UPDATING ACCEPT message containing an optional information element coded as "comprehension required". The SS verifies that the MS returns the MM STATUS message with cause #96 in response to the LOCATION UPDATING ACCEPT. The SS then waits for the MS to abort the RR-connection. The SS verifies that the MS establishes a new RR connection and starts a new location updating procedure.

On receipt of the new LOCATION UPDATING REQUEST, the SS sends a correctly coded LOCATION UPDATING ACCEPT allocating a new TMSI.

The SS verifies that the MS sends a TMSI REALLOCATION COMPLETE message. The SS then initiates the RR connection release.

Maximum duration of test

30 s.

Expected sequence

Step	Direction	Message	Comments
1	SS		The RF level of cell A is lowered until the MS selects cell B.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	The mobile identity IE specifies the TMSI of the MS.
5	SS -> MS	LOCATION UPDATING ACCEPT	See below.
6	MS -> SS	MM STATUS	Reject cause IE specifies reject cause value #96.
7	MS		The MS aborts the RR connection (it initiates release of L2 on SAPI 0) using the L2 DISC / UA exchange.
8	MS -> SS	CHANNEL REQUEST	
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	The mobile identity IE specifies the IMSI of the MS.
11	SS -> MS	LOCATION UPDATING ACCEPT	see below
12	MS -> SS	TMSI REALLOCATION COMPLETE	
13	SS -> MS	CHANNEL RELEASE	The RR connection is released.

Specific message contents

LOCATION UPDATING ACCEPT - first occurrence

Information element	value/remark
Location area identification	LAI of cell B
Comprehension required IE length	0000 0000 1
unrecognized IE contents	xxxx xxxx (arbitrary octet)

LOCATION UPDATING ACCEPT - second occurrence

Information element	value/remark
Location area identification	specifies LAI of cell B
Mobile Identity	specifies a TMSI

26.5.5.3 Non-semantical mandatory IE errors / CC

26.5.5.3.1 Non-semantical mandatory IE errors / CC / missing mandatory IE

26.5.5.3.1.1 Non-semantical mandatory IE errors / CC / missing mandatory IE / disconnect message

26.5.5.3.1.1.1 Conformance requirements

When on receipt of a message a "missing mandatory IE" error is diagnosed, the MS shall proceed as follows: If the message is a DISCONNECT message, a RELEASE message shall be returned with cause value # 96 "invalid mandatory information" and normal call clearing applies.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.3.1.1.2 Test purpose

To verify that the MS having an MT call in state U10, "active", on receipt of a DISCONNECT message in which the mandatory cause IE is missing shall return a RELEASE message with cause value #96 "invalid mandatory information".

26.5.5.3.1.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has an MT call in the CC-state U10, "active".

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

The SS sends a DISCONNECT message in which the (mandatory) cause IE is missing. The SS verifies that the MS returns a RELEASE message specifying cause value #96. The SS then sends a RELEASE COMPLETE message and performs the RR connection release.

Maximum duration of test

15 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	The mandatory cause IE is missing.
2	MS -> SS	RELEASE	The cause IE indicates cause value #96
3	SS -> MS	RELEASE COMPLETE	
4	SS -> MS	CHANNEL RELEASE	The RR connection is released.

Specific message contents

None.

26.5.5.3.1.2 Non-semantical mandatory IE errors / CC / missing mandatory IE / general case

26.5.5.3.1.2.1 Conformance requirements

When on receipt of a message a "missing mandatory IE" error is diagnosed, the MS shall proceed as follows: If the message is not a SETUP, RELEASE, DISCONNECT, RELEASE COMPLETE, HOLD REJECT or RETRIEVE REJECT message, it shall ignore the message except for the fact that it returns a STATUS message specifying cause value #96.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.5.

26.5.5.3.1.2.2 Test purpose

To verify that the MS having an MT call in state U10, "active", on receipt of a STATUS message in which the mandatory cause IE and call state IE are missing shall ignore the message except for the fact that it return a STATUS message with cause value #96 "invalid mandatory information" (that the MS does not change state is checked by use of the status enquiry procedure).

26.5.5.3.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has an MT call in the CC-state U10, "active".

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has an MT call in the CC-state U10, "active".

Test Procedure

The SS sends a STATUS message in which the mandatory cause IE and call state IE are missing. The SS verifies that the MS returns a STATUS message with cause value #96 "invalid mandatory information". Then the SS sends a STATUS ENQUIRY message and checks that the MS returns a STATUS message indicating cause value #30 and call state U10, "active".

Maximum duration of test

15 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	STATUS	The mandatory cause IE and call state IE are missing.
2	MS -> SS	STATUS	The cause IE indicates cause value #96
3	SS -> MS	STATUS ENQUIRY	TI refers to the active call.
4	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U10

Specific message contents

None.

26.5.5.3.2 Non-semantic mandatory IE errors / CC / comprehension required

26.5.5.3.2.1 Conformance requirements

When a CC message containing an IE unknown in the message, but encoded as "comprehension required" (see 3GPP TS 04.08 / 3GPP TS 24.008, subclause 10.5) is received, the MS shall proceed as follows: When the message is not one of the messages listed in 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 8.5.1, 8.5.2 and 8.5.3, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a STATUS message with cause value #96 "invalid mandatory information".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 8.5 and 10.5.

26.5.5.3.2.2 Test purpose

To verify that an MS supporting the call control protocol for at least one BC having a call control entity in state U3 ignores a CONNECT message containing in the non-imperative part an IE encoded as comprehension required except for the fact that it returns a STATUS message with cause value #96 "invalid mandatory information".

26.5.5.3.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a call control entity in CC state U3.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a call control entity in CC state U3.

Test Procedure

The SS sends a CONNECT message containing an optional information element coded as "comprehension required". The SS verifies that the MS returns a STATUS message specifying cause value #96 "invalid mandatory information". The SS checks by use of the status enquiry procedure that the MS did not change the state.

Maximum duration of test

5 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CONNECT	See below.
2	MS -> SS	STATUS	TI refers to the call in progress; cause IE indicates cause value #96.
3	SS -> MS	STATUS ENQUIRY	TI refers to the call in progress.
4	MS -> SS	STATUS	TI refers to the call in progress; Cause IE indicates cause value #30. Call state IE indicates state U3.

Specific message contents

CONNECT

Information element	value/remark
Unknown IEI	0000 0000
length	1
unknown IE contents	xxxx xxxx (arbitrary octet)

26.5.6 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions / unknown IE, comprehension not required

26.5.6.1 Unknown information elements in the non-imperative message part / MM

26.5.6.1.1 Unknown IE, comprehension not required / MM / IE unknown in the protocol

26.5.6.1.1.1 Conformance requirements

The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 8.6.1, 8.6.2 and 10.5.

26.5.6.1.1.2 Test purpose

To verify that the MS on receipt of an MM message containing an IE unknown in the message and unknown in the MM protocol which is not encoded as "comprehension required" ignores that IE; this in the special case of the MM message being a LOCATION UPDATING ACCEPT responding to a LOCATION UPDATING REQUEST from the MS.

26.5.6.1.1.3 Method of test

Initial conditions

System Simulator:

The SS simulates two cells, A and B, belonging to different location areas, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" listening to the BCCH/CCCH of cell B. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" listening to the BCCH/CCCH of cell A. It has a valid TMSI.

Test Procedure

The RF level of cell B is lowered until the MS selects cell A. The SS verifies that the MS establishes an RR connection and performs the normal location updating procedure using its TMSI. The SS responds to the location updating request with the LOCATION UPDATING ACCEPT message containing an optional information element not coded as "comprehension required" the IE of which is unknown in the MM protocol. The LOCATION UPDATING ACCEPT message contains a new TMSI in the mobile identity IE which is placed after the unknown IE. The MS shall send the TMSI REALLOCATION COMPLETE message.

Maximum duration of test

20 s.

Expected sequence

Step	Direction	Message	Comments
1	SS		The RF level of cell B is lowered until the MS selects cell A.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	The mobile identity IE specifies the TMSI of the MS.
5	SS -> MS	LOCATION UPDATING ACCEPT	See below.
6	MS -> SS	TMSI REALLOCATION COMPLETE	
7	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific message contents

LOCATION UPDATING ACCEPT

Information element	value/remark
Location area identification	LAI of cell A
Unknown IEI	1010 xxx0 (where x is arbitrary)
Mobile Identity IEI	
length	5
Type of identity	TMSI
Identity	4 octets of "new" TMSI

26.5.6.1.2 Unknown IE, comprehension not required / MM / IE unknown in the message

26.5.6.1.2.1 Conformance requirements

The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclauses 8.6.1, 8.6.2 and 10.5.

26.5.6.1.2.2 Test purpose

To verify that the MS on receipt of an MM message containing an IE unknown in the message, but known in the MM protocol, which is not encoded as "comprehension required" ignores that IE; this in the special case of the MM message being a LOCATION UPDATING ACCEPT responding to a LOCATION UPDATING REQUEST from the MS.

26.5.6.1.2.3 Method of test

Initial conditions

System Simulator:

The SS simulates two cells, A and B, belonging to different location areas, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" listening to the BCCH/CCCH of cell B. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" listening to the BCCH/CCCH of cell A. It has a valid TMSI.

Test Procedure

The RF level of cell B is lowered until the MS selects cell A. The SS verifies that the MS establishes an RR connection and performs the normal location updating procedure using its TMSI. The SS responds to the location updating request with the LOCATION UPDATING ACCEPT message containing an optional information element not coded as "comprehension required" the IEI of which is unknown in the message but is used as the location area identification IEI in other messages of the MM protocol. The LOCATION UPDATING ACCEPT message contains a new TMSI in the mobile identity IE which is placed after the unknown IE. The MS shall send the TMSI REALLOCATION COMPLETE message.

Maximum duration of test

20 s.

Expected sequence

Step	Direction	Message	Comments
1	SS		The RF level of cell B is lowered until the MS selects cell A.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	LOCATION UPDATING REQUEST	The mobile identity IE specifies the TMSI of the MS.
5	SS -> MS	LOCATION UPDATING ACCEPT	See below.
6	MS -> SS	TMSI REALLOCATION COMPLETE	
7	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific message contents

LOCATION UPDATING ACCEPT

Information element	value/remark
Location area identification	LAI of cell A
Unknown IEI	0001 0011
length	2
unknown IE contents	xxxx xxxx xxxx xxxx (2 arbitrary octets)
Mobile Identity IEI	
length	5
Type of identity	TMSI
Identity	4 octets of "new" TMSI

26.5.6.2 Unknown information elements in the non-imperative message part / CC

26.5.6.2.1 Unknown information elements in the non-imperative message part / CC / Call establishment

26.5.6.2.1.1 Conformance requirements

The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.6.1.

26.5.6.2.1.2 Test purpose

To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of the CC message being a CALL PROCEEDING message received by the MS in state U1.

26.5.6.2.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a call control entity in CC state U1.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a call control entity in CC state U3.

Test Procedure

The SS sends a CALL PROCEEDING message containing an optional information element not coded as "comprehension required" the IEI of which is unknown in the message, but used for a called party BCD number IE in other messages of the protocol. The SS verifies by use of the status enquiry procedure that the MS did not change the state.

Maximum duration of test

30 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CALL PROCEEDING	See below.
2	SS -> MS	STATUS ENQUIRY	TI refers to the call in progress.
3	MS -> SS	STATUS	TI refers to the active call; Cause IE indicates cause value #30. Call state IE indicates state U3.

Specific message contents

CALL PROCEEDING

Information element	value/remark
Unknown IE length unknown IE contents	0101 1110 1 xxxx xxxx (arbitrary octet)

26.5.6.2.2 Unknown information elements in the non-imperative message part / CC / disconnect

26.5.6.2.2.1 Conformance requirements

The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.6.1.

26.5.6.2.2.2 Test purpose

To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of a DISCONNECT message received by the MS in state U10.

26.5.6.2.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a call control entity in CC state U10.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS has a call control entity in CC state U19.

Test Procedure

The SS sends a DISCONNECT message containing an optional information element not coded as "comprehension required" the IEI of which is unknown in the message, but used for a connected number IE in other messages of the protocol. The SS verifies that the MS responds with a RELEASE message; the SS verifies by use of the status enquiry procedure that the MS has entered state U19.

Maximum duration of test

5 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	See below. Cause IE indicates cause value #30. Call state IE indicates state U19.
2	MS -> SS	RELEASE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	

Specific message contents

DISCONNECT

Information element	value/remark
Unknown IEI	0100 1100
length	1
unknown IE contents	xxxx xxxx (arbitrary octet)

26.5.6.2.3 Unknown information elements in the non-imperative message part / CC / release

26.5.6.2.3.1 Conformance requirements

The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.6.1.

26.5.6.2.3.2 Test purpose

To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of a RELEASE message received by the MS having sent in state U10 a DISCONNECT message.

26.5.6.2.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a call control entity in CC state U10.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

The MS is made to send a DISCONNECT message. The SS responds with a RELEASE message containing an optional information element not coded as "comprehension required" the IEI of which is unknown in the message, but used for a high layer compatibility IE in other messages of the protocol. The SS verifies that the MS responds with a RELEASE COMPLETE message; the SS then releases the RR connection.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate call clearing.
2	MS -> SS	DISCONNECT	
3	SS -> MS	RELEASE	See below.
4	MS -> SS	RELEASE COMPLETE	
5	SS -> MS	CHANNEL RELEASE	The RR connection is released.

Specific message contents

RELEASE

Information element	value/remark
Unknown IE	0111 1101
length	1
unknown IE contents	1 arbitrary octet

26.5.6.2.4 Unknown information elements in the non-imperative message part / CC / release complete

26.5.6.2.4.1 Conformance requirements

The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 8.6.1.

26.5.6.2.4.2 Test purpose

To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of a RELEASE COMPLETE message received by the MS in state U19.

26.5.6.2.4.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has a call control entity in CC state U10.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

The SS sends a DISCONNECT message. The SS verifies that the MS responds with a RELEASE message. The SS answers with a RELEASE COMPLETE message containing an optional information element not coded as "comprehension required" the IEI of which is unknown in the message, but used for an auxiliary states IE in other messages of the protocol. The SS verifies that the MS releases the link after some time.

Maximum duration of test

20 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	
2	MS -> SS	RELEASE	
3	SS -> MS	RELEASE COMPLETE	
4	MS		See below. The MS aborts the RR connection (it initiates release of L2 on SAPI 0)

Specific message contents

RELEASE COMPLETE

Information element	value/remark
Unknown IEI	0010 0100
length	1
unknown IE contents	1 arbitrary octet

26.5.6.3 Unknown IE in the non-imperative message part, comprehension not required / RR

26.5.6.3.1 Conformance requirements

The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".

References

3GPP TS 04.08 / 3GPP TS 44.018, subclauses 8.6.1, 8.6.2 and 10.5.

26.5.6.3.2 Test purpose

To verify that the MS ignores an IE which is unknown in a message for Radio Resource Management in the special cases of CIPHERING MODE COMMAND, ASSIGNMENT COMMAND and CHANNEL RELEASE.

26.5.6.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in the RR-idle mode. It has a valid TMSI.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in the RR-idle mode. It has a valid TMSI.

Test Procedure

In the normal call establishment the CIPHERING MODE COMMAND and ASSIGNMENT COMMAND contain additional IEs unknown in the message which are not encoded as "comprehension required", and therefore should be ignored by the MS. After sending an ASSIGNMENT COMPLETE, the subsequent CHANNEL RELEASE received by the MS also contains an IE unknown in a message which is not encoded as "comprehension required". The MS should ignore this IE.

Maximum duration of test

10 s.

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	See specific message contents
6	MS -> SS	CIPHERING MODE COMPLETE	
7	SS -> MS	ASSIGNMENT COMMAND	See specific message contents
8	MS -> SS	ASSIGNMENT COMPLETE	On the dedicated channel
9	SS -> MS	CHANNEL RELEASE	See specific message contents
10	SS		The SS checks the release of the main signalling link at layer 2 level.

Specific message contents

None.

Step 5: CIPHERING MODE COMMAND

Cipher mode setting	
- algorithm identifier	cipher with A5/1
- SC	start ciphering
Cipher Response	IMEI shall not be included
Unknown IE (type 2)	1001 0010

Step 7: ASSIGNMENT COMMAND

Channel Description	TCH/F + ACCHs
Channel Type	arbitrarily selected, but not zero
Timeslot number	arbitrarily selected
Training sequence code	RF hopping channel
Hopping	0
MAIO	0
HSN	arbitrarily selected
Power Command	1101 1010
First Unknown IE (Type 2)	For GSM 450 mobiles, range 128 encodes ARFCNs 267 and 275. For GSM 480 mobiles, range 128 encodes ARFCNs 315 and 322. For GSM 710 mobiles, range 128 encodes ARFCNs 470 and 490. For GSM 750 mobiles, range 128 encodes ARFCNs 470 and 490. For T-GSM 810 mobiles, range 128 encodes ARFCNs 470 and 490. For GSM 850 mobiles, range 128 encodes ARFCNs 160 and 180. For PGSM and EGSM mobiles, bit map 0 encodes ARFCNs 30 and 50. For DCS 1 800 and PCS 1 900 mobiles, the variable bit map format encodes ARFCNs 650 and 750.
Cell Channel Description	
Second Unknown IE (Type 4)	0110 1001
- IEI	2
- length	xxxx xxxx xxxx xxxx, where x is arbitrarily coded.
- contents	For GSM450 mobiles, indicates ARFCN 275 only. For GSM 480 mobiles, indicates ARFCN 322 only. For GSM 710 mobiles, indicates ARFCN 490 only. For GSM 750 mobiles, indicates ARFCN 490 only. For T-GSM 810 mobiles, indicates ARFCN 490 only. For GSM 850 mobiles, indicates ARFCN 180 only. For PGSM and EGSM mobiles, indicates ARFCN 50, only. For DCS 1 800 and PCS 1 900 mobiles, indicates ARFCN 750, only.
Mobile Allocation	

Step 9: CHANNEL RELEASE

RR Cause	normal event
Unknown IE (type 4)	0111 0010
- IEI	5
- length	xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx, where x is arbitrarily coded.
- contents	

26.5.7 Handling of unknown, unforeseen, and erroneous protocol data, and of parallel transactions / spare bits

26.5.7.1 Spare bits / RR

26.5.7.1.1 Spare bits / RR / paging channel

26.5.7.1.1.1 Conformance requirements

The MS shall ignore the value of spare bits.

References

3GPP TS 04.08 / 3GPP TS 44.018, subclause 10.5.

26.5.7.1.1.2 Test purpose

To verify that the MS in the MM-state "idle, updated" and in RR-idle mode ignores the value of spare bits in the special case of the spare bits occurring in the P1 Rest Octets IE of a PAGING REQUEST TYPE 1 message. That the spare bits are ignored is checked by addressing the MS in that PAGING REQUEST message and verifying that the MS responds to that paging.

26.5.7.1.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

The SS sends a PAGING REQUEST TYPE 1 message containing at least one octet in the P1 rest octets IE that is different from 0010 1011.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	See below.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Specific message contents

PAGING REQUEST TYPE 1

Information element	Value/remark
L2 pseudo length	k+3 where k is the sum of the length of the mobile identity 1 IE
Page Mode	Normal paging
Channels needed for Mobiles 1 and 2	
Channel (first)	Any channel
Channel (second)	(spare)
Mobile identity 1	IMSI or TMSI of MS under test
Mobile identity 2	Omitted
P1 rest octets	not all octets are "0010 1011"

26.5.7.1.2 Spare bits / RR / BCCH

26.5.7.1.2.1 Conformance requirements

The MS shall ignore the value of spare bits.

References

3GPP TS 04.08 / 3GPP TS 44.018, subclause 10.5.

26.5.7.1.2.2 Test purpose

To verify that the MS in the MM-state "idle, updated" and in RR-idle mode ignores the value of spare bits in the special case where these spare bits are contained in the SI3 and SI4 messages. That the MS ignores the value of the spare bits is checked by changing the LAI in those message and observing the MS initiating a location update though the spare bits do not all have the default value.

26.5.7.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

The SS simulates a BCCH where continuously for at least 30 s at least one octet of the SI3 Rest Octets IE in all SYSTEM INFORMATION TYPE 3 messages and at least one octet of the SI4 Rest Octets IE in all SYSTEM INFORMATION TYPE 4 messages is different from 0010 1011 and the location area identification IE denotes a location area different from the current location area held by the MS. The SS verifies that the MS sends a CHANNEL REQUEST message on the RACH including the establishment cause "location updating". The SS responds with an IMMEDIATE ASSIGNMENT REJECT message.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS		The SS starts sending modified SYSTEM INFORMATION TYPE 3 and SYSTEM INFORMATION TYPE 4 messages (as defined below) continuously for at least 30 s on the BCCH. Establishment cause = "location updating (SDCCH needed). This message may be received during the 30 s.
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	

Specific message contents

SYSTEM INFORMATION TYPE 3

Information element	value/remark
L2 pseudo length	18
cell identity	as required
location area identification	denoting a new location area
control channel description	as required, but with the spare bits arbitrarily selected and at least one spare bit set to 1.
cell options	as required, but with (spare) bit 8 set to 1
cell selection parameters	as required
RACH control parameters	as required
SI3 rest octets	at least one octet is different from "0010 1011"

SYSTEM INFORMATION TYPE 4

Information element	value/remark
L2 pseudo length	12
location area identification	denoting a new location area
cell selection parameters	as required
RACH control parameters	as required
SI4 rest octets	at least one octet is different from "0010 1011"

26.5.7.1.3 Spare bits / RR / AGCH

26.5.7.1.3.1 Conformance requirements

The MS shall ignore the value of spare bits.

References

3GPP TS 04.08 / 3GPP TS 44.018, subclause 10.5.

26.5.7.1.3.2 Test purpose

To verify that the MS in the MM-state "idle, updated" and in RR-idle mode ignores the value of spare bits in the special case of the spare bits occurring in the Page Mode IE, the Spare Half Octet IE, the Channel Description IE, the Timing Advance IE, the IA Rest Octet IE, and in the IAR Rest Octet IE.

26.5.7.1.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

The SS sends an IMMEDIATE ASSIGNMENT message containing arbitrary spare bits in the Page Mode IE, in the Spare Half Octet IE, in the Channel Description IE, in the Timing Advance IE, and in the IA Rest Octet IE.

It is checked that the MS answers on the dedicated channel with a PAGING RESPONSE message and releases the main signalling link after a CHANNEL RELEASE message.

After a new paging of the MS an IMMEDIATE ASSIGNMENT REJECT is sent to test the spare bits in the IAR Rest Octet IE.

The MS is then paged again to check the idle state.

Maximum duration of test

20 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Addressing the MS under test
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	see below
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CHANNEL RELEASE	
6	SS		The SS checks that the MS releases the main signalling link and waits 10 s for a cell reselection of the MS
7	SS -> MS	PAGING REQUEST TYPE 1	Addressing the MS under test
8	MS -> SS	CHANNEL REQUEST	
9	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	normal, waiting time = 0, except the IAR Rest Octet IE (see below)
10	SS		The SS waits six seconds
11	SS -> MS	PAGING REQUEST TYPE 1	Addressing the MS under test
12	MS -> SS	CHANNEL REQUEST	To check that the MS has reached the idle state after the IMMEDIATE ASSIGNMENT REJECT

Specific message contents

IMMEDIATE ASSIGNMENT

Information element	Value/remark
L2 pseudo length	sum of the length of all IE except L2 pseudo length and IA Rest Octets
Protocol Discriminator	RR
Skip Indicator	0000
Message Type	Immediate Assignment
Page mode	xx00 (where "xx" is arbitrary, with at least 1 bit set to 1)
Dedicated mode or TBF	x000 (where "x" is set to 1)
Channel description	normal, no hopping, the two spare bits before ARFCN are chosen arbitrarily with at least one bit set to 1.
Request reference	normal (derived from the CHANNEL REQUEST)
Timing advance	xx00 0000 (where "xx" is arbitrary, with at least 1 bit set to 1)
Mobile allocation	chosen so that, together with the channel description
Length	0
IA rest octets	
first octet	00xx xxxx (where "xx xxxx" is arbitrary but different to 10 1011)
other octets	xxxx xxxx (where "xxxx xxxx" is arbitrary but different to 0010 1011)

IMMEDIATE ASSIGNMENT REJECT

Information element	Value/remark
L2 pseudo length	19
Page mode	normal
Spare half octet	xxxx (where "xxxx" is arbitrary, with at least 1 bit is set to 1)
Request reference 1	addressing the MS under test
Wait indication 1	0 s
...	Other Request References and Wait Indications arbitrary
IAR rest octets	
Octet 1 to 3	xxxx xxxx (where "xxxx xxxx" is arbitrary but different to 0010 1011)

26.5.7.1.4 Spare bits / RR / Connected Mode

26.5.7.1.4.1 Conformance requirements

The MS shall ignore the value of spare bits.

References

3GPP TS 04.08 / 3GPP TS 44.018, subclause 10.5.

26.5.7.1.4.2 Test purpose

To verify that the MS in the MM-state "MM-Connection active" and in RR-Connected mode ignores the value of spare bits in the special case of the spare bits occurring in the Cell Channel Description IE and in the Power Command IE.

26.5.7.1.4.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, except:

GSM 450 mobiles are assigned to ARFCN 293 in step 10.

GSM 480 mobiles are assigned to ARFCN 340 in step 10.

GSM 710, GSM 750 and T-GSM 810 mobiles are assigned to ARFCN 511 in step 10.

GSM 850 mobiles are assigned to ARFCN 251 in step 10.

PGSM and EGSM mobiles are assigned to ARFCN 124 in step 10.

DCS 1 800 and PCS 1 900 mobiles are assigned to ARFCN 801 in step 10.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

In the procedure of a normal call establishment the ASSIGNMENT COMMAND will be modified to test the spare bits in the Cell Channel Description IE and in the Power Command IE.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Addressing the MS under test
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CIPHERING MODE COMMAND	
6	MS -> SS	CIPHERING MODE COMPLETE	
7	SS -> MS	SETUP	
8	MS -> SS	CALL CONFIRMED	
A9	MS -> SS	ALERTING	
B9	MS ->SS	CONNECT	
10	SS -> MS	ASSIGNMENT COMMAND	see below on the dedicated channel The SS checks that the MS release the main signalling link
11	MS -> SS	ASSIGNMENT COMPLETE	
12	SS -> MS	CHANNEL RELEASE	
13	SS		

Specific message contents

ASSIGNMENT COMMAND

For GSM 450 mobiles

Information element	Value/remark
Channel Description	normal, hopping HSN=63, MAIO=0
Power Command	xxx0 0111 (where "xxx" is arbitrary, with at least 1 bit set to 1)
Cell Channel Description octet 2	10xx 110? (where "xx" is arbitrary, with at least 1 bit set to 1) Bit 1 of octet 2 and all of octets 3 to 17 (inclusive)
Mobile Allocation	indicate ARFCN 293 only (using the Range 128 format). indicates ARFCN 293 only

For GSM 480 mobiles

Information element	Value/remark
Channel Description	normal, hopping HSN=63, MAIO=0
Power Command	xxx0 0111 (where "xxx" is arbitrary, with at least 1 bit set to 1)
Cell Channel Description octet 2	10xx 110? (where "xx" is arbitrary, with at least 1 bit set to 1) Bit 1 of octet 2 and all of octets 3 to 17 (inclusive)
Mobile Allocation	indicate ARFCN 340 only (using the Range 128 format). indicates ARFCN 340 only

For GSM 710 or GSM 750 or T-GSM 810 mobiles

Information element	Value/remark
Channel Description Power Command	normal, hopping HSN=63, MAIO=0 xxx0 0111 (where "xxx" is arbitrary, with at least 1 bit set to 1)
Cell Channel Description Octet 2	10xx 110? (where "xx" is arbitrary, with at least 1 bit set to 1) Bit 1 of octet 2 and all of octets 3 to 17 (inclusive) indicate ARFCN 511 only (using the Range 128 format).
Mobile Allocation	indicates ARFCN 511 only

For GSM 850 mobiles

Information element	Value/remark
Channel Description Power Command	normal, hopping HSN=63, MAIO=0 xxx0 0111 (where "xxx" is arbitrary, with at least 1 bit set to 1)
Cell Channel Description Octet 2	10xx 110? (where "xx" is arbitrary, with at least 1 bit set to 1) Bit 1 of octet 2 and all of octets 3 to 17 (inclusive) indicate ARFCN 251 only (using the Range 128 format).
Mobile Allocation	Indicates ARFCN 251 only

For PGSM and EGSM mobiles

Information element	Value/remark
Channel Description Power Command	normal, hopping HSN=63, MAIO=0 xxx0 0111 (where "xxx" is arbitrary, with at least 1 bit set to 1)
Cell Channel Description octet 2	00xx 1000 (where "xx" is arbitrary, with at least 1 bit set to 1)
octet 3 to 17 (inclusive)	all bits set to zero
Mobile Allocation	indicates ARFCN 124 only

For DCS 1 800 or PCS 1 900 mobiles

Information element	Value/remark
Channel Description Power Command	normal, hopping, HSN=63, MAIO=0 xxx0 0111 (where "xxx" is arbitrary, with at least 1 bit set to 1)
Cell Channel Description octet 2	10xx 111? (where "xx" is arbitrary, with at least 1 bit set to 1). Bit 1 of octet 2 and all of octets 3 to 17 (inclusive) indicate ARFCN 801 only (using the variable bit map format).
Mobile Allocation	indicates ARFCN 801 only

26.5.7.2 Spare bits / MM

26.5.7.2.1 Conformance requirements

The MS shall ignore the value of spare bits.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 10.5.

26.5.7.2.2 Test purpose

To verify that the MS in the MM-state "wait net cmd" and in RR-Connected mode ignores the value of spare bits in the special case of the spare bits occurring in the Cipher Key Seq. Number IE or in the Identity Type IE.

26.5.7.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Specific PICS statements:

-

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

After the establishment of the RR-connection, in the AUTHENTICATION REQUEST message the spare bits of the Ciphering Key Sequence Number and of the Spare Half Octet IE will be randomly chosen. The spare bits of the Identity Type IE and the Spare Half Octet IE in the IDENTITY REQUEST message will also be chosen arbitrarily.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	Addressing the MS under test
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	see below
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	see below with the right TMSI
7	SS -> MS	IDENTITY REQUEST	
8	MS -> SS	IDENTITY RESPONSE	
9	SS -> MS	CHANNEL RELEASE	The SS checks that the MS release the main signalling link
10	SS		

Specific message contents

AUTHENTICATION REQUEST

Information element	Value/remark
Ciphering Key Sequence Number	x000 (where "x" is set to 1)
Spare Half Octet	xxxx (where "xxxx" is arbitrary, with at least 1 bit set to 1)
Auth. Parameter RAND	standard value

IDENTITY REQ

Information element	Value/remark
Identity Type	x100 (where "x" is set to 1)
Spare Half Octet	xxxx (where "xxxx" is arbitrary, with at least 1 bit set to 1)

26.5.7.3 Spare bits / CC

26.5.7.3.1 Conformance requirements

The MS shall ignore the value of spare bits.

References

3GPP TS 04.08 / 3GPP TS 24.008, subclause 10.5.

26.5.7.3.2 Test purpose

To verify that the MS in the MM-state "connection established" and in RR-Connected mode ignores the value of spare bits in the special case of the spare bits occurring in the Calling Party BCD Number IE, Calling Party Subaddress IE, Called Party Subaddress IE, Cause IE and Progress Indicator IEs.

26.5.7.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Specific PICS statements:

- Support of speech (TSPC_AddInfo_Full_rate_version_1, TSPC_AddInfo_Half_rate_version_1)

PIXIT Statements:

-

Foreseen Final State of the MS

The MS is in the MM-state "idle, updated" and in RR-idle mode.

Test Procedure

After the establishment of the MM-connection, in the SETUP message the spare bits of the Calling Party BCD Number, Calling Party Subaddress and Called Party Subaddress will be arbitrarily chosen and also in the DISCONNECT message the spare bits of the Progress Indicator IE and of the Cause IE will be arbitrarily chosen.

Maximum duration of test

10 s.

Expected sequence

Step	Direction	Message	Comments	
1	SS -> MS	PAGING REQUEST TYPE 1	Addressing the MS under test	
2	MS -> SS	CHANNEL REQUEST		
3	SS -> MS	IMMEDIATE ASSIGNMENT		
4	MS -> SS	PAGING RESPONSE		
5	SS -> MS	AUTHENTICATION REQUEST		
6	MS -> SS	AUTHENTICATION RESPONSE		
7	SS -> MS	CIPHERING MODE COMMAND		
8	MS -> SS	CIPHERING MODE COMPLETE		
9	SS -> MS	SETUP		see below
10	MS -> SS	CALL CONFIRMED		
A11	MS -> SS	CONNECT		
B11	MS -> SS	ALERTING		
B12	MS -> SS	CONNECT		
13	SS -> MS	ASSIGNMENT COMMAND	see below If PICS TSPC_AddInfo_Full_rate_version_1 OR TSPC_AddInfo_Half_rate_version_1 is set to TRUE, path 'A' will be followed else path 'B' will be followed. with actual call state U12	
14	MS -> SS	ASSIGNMENT COMPLETE		
15	SS -> MS	CONNECT ACKNOWLEDGE		
16	SS -> MS	DISCONNECT		
17A	SS -> MS	STATUS ENQUIRY		
18A	MS -> SS	STATUS		
19A	SS -> MS	RELEASE		
20A	MS -> SS	RELEASE COMPLETE		
17B	MS -> SS	RELEASE		
18B	SS -> MS	RELEASE COMPLETE		After step 18B test will move to step 21.
21	SS -> MS	CHANNEL RELEASE		

Specific message contents

SETUP

Information element	Value/remark
Calling Party BCD Number	
IEI	
length	3
octet 3	0000 0000
octet 3a	100x xx00 (where "x" is chosen arbitrarily, with at least one bit set to 1)
octet 4	0000 0001
Calling Party Subaddress	
IEI	
length	3
octet 3	1000 0xxx (where "x" is chosen arbitrarily, with at least one bit set to 1)
octet 4	0101 0000 (AFI: request IA5 character)
octet 5	0000 0001
Called Party Subaddress	
IEI	
length	3
octet 3	1000 0xxx (where "x" is chosen arbitrarily, with at least one bit set to 1)
octet 4	0101 0000 (AFI: request IA5 character)
octet 5	0000 0001

DISCONNECT

Information element	Value/remark
Cause	
Length	2
octet 3	111x0000 (where "x" is set to 1)
octet 4	1000 0001
Progress Indicator	
IEI	
Length	2
octet 3	111x0000 (where "x" is set to 1)
progress description	8 (in band info now available)

26.5.8 Default contents of messages

Default requirements for messages that are not mentioned in this subclause are given in subclause 26.8.4.

CHANNEL RELEASE

Information element	Value/remark
RR cause	Normal event

CHANNEL REQUEST

DISCONNECT (SS -> MS)

Information element	Value/remark
Cause	
Coding standard	Standard defined for the GSM PLMNS
Location	user
Cause value	#16

IDENTITY REQUEST

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

IMMEDIATE ASSIGNMENT

Information element	Value/remark
L2 pseudo length	n, where n is the L2 pseudo length of the message
Page mode	arbitrary
Spare half octet	0000
Channel description	a valid description of an SDCCH + SACCH
Request reference	Corresponding to the last CHANNEL REQUEST received from the MS
Timing advance	arbitrary
Mobile allocation	chosen so that, together with the channel description IE, it describes a valid SDCCH + SACCH
Starting time	Omitted
IA rest octets	m octets, each coded as H'2B, where m = 22 - n

IMMEDIATE ASSIGNMENT REJECT

Information element	Value/remark
L2 pseudo length	19
Page mode	arbitrary
Spare half octet	0000
Request reference 1	corresponding to the last CHANNEL REQUEST received from the MS
Wait indication 1	0 s
Request reference 2	arbitrary
Wait indication 2	0 s
Request reference 3	arbitrary
Wait indication 3	0 s
Request reference 4	arbitrary
Wait indication 4	0 s
IA rest octets	3 octets, each coded as H'2B

PAGING REQUEST TYPE 1

Information element	Value/remark
L2 pseudo length	n where n is the sum of the mobile identity 1 IE and 3
Page Mode	Normal paging
Channels needed for Mobiles 1 and 2	
Channel (first)	Any channel
Channel (second)	(spare)
Mobile identity 1	IMSI or TMSI of MS under test
Mobile identity 2	Omitted
P1 rest octets	m octets, each coded as H'2B, where m = 22 - n

PAGING RESPONSE

RELEASE COMPLETE (MS -> SS)

No default requirements defined for this message.

RELEASE COMPLETE (SS -> MS)

Information element	Value/remark
Cause	
Coding standard	Standard defined for the GSM PLMNS
Location	user
Cause value	#16

STATUS (MS -> SS)

Information element	Value/remark
Cause	
Length	length of cause IE
Coding standard	Standard defined for the GSM PLMNS
Location	user
Cause value	as defined in test
Call state	as defined in test

STATUS ENQUIRY (SS -> MS)

Information element	Value/remark
Transaction identifier	relating to the active call

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)

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.1.1.2.

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.

Specific PICS statements

- MS supports SDCCH only (TSPC_AddInfo_SDCCHOnly)
- MS supports GSM HR (TSPC_AddInfo_HalfRate)

PIXIT statements

-

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 (Signalling).

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

Maximum Duration of Test

6 s 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	Channel Type: see below Shall be sent on the correct channel
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

IMMEDIATE ASSIGNMENT

K=1, SDCCH test: Channel Type = SDCCH/8.

K=2, TCH/F (Signalling) test: Channel Type = Bm + ACCHs.

K=3, TCH/H (Signalling) 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 clause 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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 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.

Specific PICS statements

-

PIXIT statements

-

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 s.

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 1.
5	MS -> SS	PAGING RESPONSE	
6	SS -> MS	CHANNEL RELEASE	
7	-----	-----	The SS waits 12 s 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 2.
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 s.
15	SS		The SS sets CCCH_CONF to non-combined.
16	SS		The SS waits 40 s 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 chosen from {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 3.
21	MS -> SS	PAGING RESPONSE	
22	SS -> MS	CHANNEL RELEASE	

Specific Message Contents

NOTE 1: 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 2: 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 3: 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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.1.1.3 and 3GPP TS 04.13 subclause 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.

Specific PICS statements

-

PIXIT statements

-

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 s. 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 s.

Immediately afterwards the SS changes the power levels so the MS selects cell B. After 20 s 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	n CHANNEL REQUESTs (n being arbitrarily chosen from the set {1, 2 ... 8}) are sent, all with
2	MS -> SS	CHANNEL REQUEST	
.	.	.	Establish. Cause = "Answer to paging"
1+n	MS -> SS	CHANNEL REQUEST	
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 1. 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	
k+1	MS -> SS	CHANNEL REQUEST	(note 2). Establish. 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	
k+3	-----	-----	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 3 rd Wait Indication is 255 s.
k+4	SS -> MS	PAGING REQUEST TYPE 1	
k+5	MS -> SS	CHANNEL REQUEST	Raise power level of cell B, lower power level of cell A until the MS selects cell B. Sent once, 20 s after the change of levels. Establish. Cause = "Answer to paging".
k+6	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
NOTE 1: 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 2: 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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.1.1.2

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.

Specific PICS statements

-

PIXIT statements

-

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 s 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 s.

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	Establish. 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 s.
4	MS -> SS	CHANNEL REQUEST	Establish. Cause = "Answer to paging".
5	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	
6	SS		SS waits for 6 s.
7	SS -> MS	PAGING REQUEST TYPE 1	
8	MS -> SS	CHANNEL REQUEST	Establish. 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 s.
10	MS -> SS	CHANNEL REQUEST	Establish. 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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.1.1.3

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.

Specific PICS statements

-

PIXIT statements

-

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 s.

Between 0,75 s and 1,25 s 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 s.

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 s.
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.

26.6.1.6 Immediate assignment after immediate assignment reject

26.6.1.6.1 Conformance requirement

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

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

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

Reference

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

26.6.1.6.2 Test purpose

To verify that the MS, if configured for LAP, activates the implicit reject timer when it reads a CCCH block that indicates that implicit reject condition is indicated.

To verify that the MS does not make any access attempt when the implicit reject timer is active

To verify that the MS, if configured for LAP, when waiting for a response to its initial or subsequent access attempt, detects an implicit reject condition but does not detect an access response within the allowed access response time window, will abort its access attempt and start the implicit reject timer.

26.6.1.6.3 Method of test

Initial conditions

System Simulator:

1 cell;

Mobile Station:

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

The MS is configured for “low access priority”

Specific PICS statements

-

PIXIT statements

-

Foreseen final state of the MS

"idle, updated", with TMSI allocated.

Test Procedure

The MS initiates the location updating procedure. The SS issues a paging message that is not addressed to the MS but contains an indication that implicit reject is active. The MS reads the implicit rejection flag and starts timer T3234.

When the timer expires the MS wait until the reception of an indication that implicit reject is no longer active. The MS sends the CHANNEL REQUEST message to indicate location updating. The SS sends an IMMEDIATE ASSIGNMENT message which includes the implicit reject flag. The MS abort the immediate assignments procedure and starts timer T3234.

When timer T3234 expires the MS performs a successful location updating procedure.

Maximum duration of test

7 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	MS		Make the MS perform the location updating procedure
2	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Identity does not contain TMSI of MS but with the Implicit Reject CS bit set to "1".
3	SS		Make sure that the MS does not make any mobile originated access attempt while timer T3234 (random value drawn from the following set: {10.0, 10.1, 10.2, ...200.0} seconds) is active.
4	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Identity does not contain TMSI of MS but with the Implicit Reject CS bit set to "0".
5	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
6	SS -> MS	IMMEDIATE ASSIGNMENT	The Implicit Reject CS bit set to "1".
7	SS		Make sure that the MS does not make any mobile originated access attempt while timer T3234 (random value drawn from the following set: {10.0, 10.1, 10.2, ...200.0} seconds) is active.
8	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
9	SS -> MS	IMMEDIATE ASSIGNMENT	
10	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal
11	SS -> MS	LOCATION UPDATING ACCEPT	
12	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the MS is in service.

Specific message contents

None.

26.6.1.7 Immediate assignment after immediate assignment reject

26.6.1.7.1 Conformance requirement

For a mobile originated access attempt, a mobile station configured for EAB shall perform a preliminary access barring check (see sub-clause 3.3.1.4). If the preliminary access barring check indicates network access is barred then access to the network is not allowed. Otherwise, the mobile station shall proceed according to the remainder of this sub-clause.

The preliminary access barring check shall indicate network access is barred if all of the following conditions are satisfied:

- the establishment cause for the request received from the MM sublayer is not "emergency call".
- the SYSTEM INFORMATION TYPE 21 message is broadcast in the cell and includes EAB information;

- the mobile station is a member of a subcategory of mobile stations targeted by the EAB information;
- the EAB Authorization Mask sent in the EAB information indicates the mobile station's access class is not authorized;
- the mobile station is not a member of any of the authorized special access classes (i.e. an Access Class in the range 11-15) permitted by the network;

Otherwise, the preliminary access barring check shall indicate network access is not barred.

A network operator can also restrict some MSs to access the network for location registration, although via common access class control or domain specific access class control the MSs are permitted to access the network for other purposes. Therefore, for each access to the network the mobile station shall determine from the information received via the system information broadcast whether access is allowed or not:

- For paging response the mobile station shall evaluate the control information for common access control (as specified in 3GPP TS 44.018 [84], 3GPP TS 44.060 [76], and 3GPP TS 25.331 [23c]), domain specific access control (as specified in 3GPP TS 25.331 [23c]), and the specific control information for paging response (as specified in 3GPP TS 25.331 [23c]; see "Paging Permission with Access Control").
- For generic location updating, GPRS attach and routing area updating procedures the mobile station shall evaluate the control information for:
 - common access control (as specified in 3GPP TS 44.018 [84], 3GPP TS 44.060 [76], and 3GPP TS 25.331 [23c]);
 - domain specific access control (as specified in 3GPP TS 25.331 [23c]);
 - specific control information for location registration (as specified in 3GPP TS 25.331 [23c]; see "Paging Permission with Access Control"); and
 - EAB as specified in 3GPP TS 44.018 [84] and 3GPP TS 44.060 [76].

Reference

3GPP TS 44.018 subclauses 3.3.1.1.1, 3.3.1.4. 3GPP TS 24.008 subclause 4.1.1.5

26.6.1.7.2 Test purpose

To verify that Extended Access class Barring can be activated in the MS.

To verify that the MS does not perform location updating, GPRS attach or routing area updating if the network broadcast EAB and EA B is enabled in the MS.

26.6.1.7.3 Method of test

Initial conditions

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II.

The SYSTEM INFORMATION TYPE 3 message indicates that the SYSTEM INFORMATION TYPE 21 is sent on the BCCH by setting the SYSTEM INFORMATION 21 Indicator in the SI3 Rest Octet IE.

The SYSTEM INFORMATION TYPE 21 is sent on the BCCH. The SI 21 Rest Octets information element is configured with: EAB Authorization Mask set to "xxxxxxxx1" and EA B Subcategory set to "00".

Mobile Station:

The MS is in "idle, updated" state on cell A, with a TMSI allocated.

The MS is configured for "Extended Access Barring"

The MS belong to access class 0

Specific PICS statements

- MS operation mode B (TSPC_operation_mode_B).
- MS operation mode C (TSPC_operation_mode_C).
- Automatic GPRS attach procedure at switch on or power on (TSPC_AddInfo_on_auto_GPRS_AP).

PIXIT statements

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Test Procedure

The MS, configured for Extended Access Class barring reads the system information block 21. The MS initiates the location updating procedure and the SS verifies that no access attempt is made by the MS. The SS sends SYSTEM INFORMATION TYPE 21 is sent on the BCCH with the SI 21 Rest Octets information element in configured with EAB Authorization Mask set to "000000000". The MS successfully performs the location updating procedure and is powered off.

The SS then reactivates EAB by configuring the SI 21 Rest Octets IE configured with EAB Authorization Mask set to "xxxxxxxx1" in the SYSTEM INFORMATION TYPE 21 and the MS is powered on. The SS verifies that the MS does not make any access attempts. The SS deactivates EAB and the SS verifies that the MS performs a GPRS attach.

The SS then reactivates EAB again. The RF level of cell A is lowered until cell B is preferred by the MS but the SS verifies that the MS does not perform the routing area update procedure. The SS deactivates EAB and verifies that the MS successfully perform the routing area update procedure.

Maximum duration of test

10 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The following messages are sent and shall be received on cell A
2	SS		Make the MS perform the location updating procedure
3	SS -> MS	SYSTEM INFORMATION TYPE 21	Verify that the MS does not access the network within 1 minute The SI 21 Rest Octets information element is configured with EAB Authorization Mask set to "0000000000" and the SS waits for 30 seconds to allow the MS to read the modified system information.
4	MS		Make the MS perform the location updating procedure
5	MS -> SS	CHANNEL REQUEST	"Establishment cause": Location updating.
6	SS -> MS	IMMEDIATE ASSIGNMENT	
7	MS -> SS	LOCATION UPDATING REQUEST	"location updating type" = normal
8	SS -> MS	LOCATION UPDATING ACCEPT	
9	SS -> MS	CHANNEL RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	MS		The MS is switched off or power is removed (see PICS).
11	SS	SYSTEM INFORMATION TYPE 21	The SI 21 Rest Octets information element is configured with EAB Authorization Mask set to "xxxxxxx1" and EAB Subcategory set to "00". The following messages are sent and shall be received on cell A.
12	SS		The SS activates cell A but not cell B.
13	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 28.
14	MS		The MS is powered up or switched on and initiates an attach (see PICS).
15	SS		Verify that the MS does not access the network within 1 minute
16	SS -> MS	SYSTEM INFORMATION TYPE 21	The SI 21 Rest Octets information element is configured with EAB Authorization Mask set to "0000000000" and the SS waits for 30 seconds to allow the MS to read the modified system information.
17	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach'
18	SS -> MS	ATTACH ACCEPT	Mobile identity = IMSI Attach result = 'GPRS only attached'
19	MS -> SS	ATTACH COMPLETE	Mobile identity = P-TMSI-2 P-TMSI-2 signature
20	SS	SYSTEM INFORMATION TYPE 21	Routing area identity = RAI-1 The SI 21 Rest Octets information element is configured with EAB Authorization Mask set to "xxxxxxx1" and EAB Subcategory set to "00".
21	SS		The following messages are sent and shall be received on cell B.
22	SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the MS. Verify that the MS does not access the network within 30 seconds
23	SS -> MS	SYSTEM INFORMATION TYPE 21	The SI 21 Rest Octets information element is configured with EAB Authorization Mask set to "0000000000"
24	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating'
25	SS -> MS	ROUTING AREA UPDATING ACCEPT	P-TMSI-2 signature Routing area identity = RAI-1 Update result = 'RA updated'
26	MS -> SS	ROUTING AREA UPDATING COMPLETE	Mobile identity = P-TMSI-1 P-TMSI-1 signature
27	MS		Routing area identity = RAI-4 The MS is switched off or power is removed (see PICS).

28	MS		The MS is set in MS operation mode B (see PICS), reset the RF level of Cell A to default state, deactivate Cell B and the test is repeated from step 11 to step 27.
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Specific message contents

SYSTEM INFORMATION TYPE 3 broadcast by Cell A and B:

Same as default content except

Information Element	Value/remark
SI 3 Rest Octets	
SYSTEM INFORMATION 21 Indicator	H (SYSTEM INFORMATION TYPE 21 message is available)
SI21_POSITION	0 (SYSTEM INFORMATION TYPE 21 message is sent on BCCH Nom)

SYSTEM INFORMATION TYPE 21 broadcast by Cell A initially and in steps 11 and 20:

Same as default content except

Information Element	Value/remark
SI 21 Rest Octets	
EAB Authorization Mask	'xxxxxxxx1' (MSs configured for EAB and a member of Access Class 0 are barred)
EAB Subcategory	'00' (applicable to all mobile stations configured for EAB)

SYSTEM INFORMATION TYPE 21 broadcast by Cell A in step 3 and 16 and by Cell B in step 23:

Same as default content except

Information Element	Value/remark
SI 21 Rest Octets	
EAB Authorization Mask	'0000000000' (MSs configured for EAB are authorized)
EAB Subcategory	'00' (applicable to all mobile stations configured for EAB)

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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.2, 3GPP TS 05.02 subclause 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_BLKES_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.

Specific PICS statements

-

PIXIT statements

-

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 minutes.

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	Establish. Cause = "Answer to paging".
3	MS -> SS	CHANNEL REQUEST	Establish. 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 s 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	Establish. Cause = "Answer to paging".
9	MS -> SS	CHANNEL REQUEST	Establish. 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 s to allow the MS to perform cell reselection.
13	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains TMSI of another MS, 2 nd Mobile Ident contains IMSI of MS.
14	MS -> SS	CHANNEL REQUEST	Establish. Cause = "Answer to paging".
15	MS -> SS	CHANNEL REQUEST	Establish. 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 s to allow the MS to perform cell reselection.
19	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains TMSI of another MS, 2 nd Mobile Ident contains TMSI of MS.
20	MS -> SS	CHANNEL REQUEST	Establish. Cause = "Answer to paging".
21	MS -> SS	CHANNEL REQUEST	Establish. 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 s 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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 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_BLKES_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.

Specific PICS statements

-

PIXIT statements

-

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 s 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 s 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 s 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 s 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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 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_BLKES_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.

Specific PICS statements

-

PIXIT statements

-

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	Establish. Cause = "Answer to paging".
3	MS -> SS	CHANNEL REQUEST	Establish. 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 s 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	Establish. Cause = "Answer to paging".
9	MS -> SS	CHANNEL REQUEST	Establish. 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 s 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	Establish. Cause = "Answer to paging".
15	MS -> SS	CHANNEL REQUEST	Establish. 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 s 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	Establish. Cause = "Answer to paging".
21	MS -> SS	CHANNEL REQUEST	Establish. 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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.2.1; 3GPP TS 05.02, subclause 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_BLKES_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.

Specific PICS statements

-

PIXIT statements

-

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 s.

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 s. page mode = normal.
6	SS SS -> MS	IMMEDIATE ASSIGNMENT	SS waits for 5 s. 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 s. page mode = normal.
12	SS	--	SS waits for 5 s.
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 s page mode = normal.
18	SS	--	SS waits for 5 s.
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 s page mode = normal.
24	SS	--	SS waits for 5 s
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 s.

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_BLK_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_BLK_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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.2.1; 3GPP TS 05.02, subclause 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_BLK_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.

Specific PICS statements

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PIXIT statements

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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 s (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 s 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 s (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 s.

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 s.
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 s after step 5.
8	MS -> SS	CHANNEL REQUEST	
9	MS -> SS	CHANNEL REQUEST	
10	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 0 s.
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 s.
15	SS -> MS	PAGING REQUEST TYPE 1	Sent on the new paging subchannel of the MS. Not sent before 5 s after step 10.
16	MS -> SS	CHANNEL REQUEST	
17	MS -> SS	CHANNEL REQUEST	
18	SS -> MS	IMMEDIATE ASSIGNMENT REJECT	Wait indication = 0 s.
19	SS -> MS	PAGING REQUEST TYPE 2	Sent on the new paging subchannel of the MS. Not sent before 5 s 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_BLKRES	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_BLKRES	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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 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_BLK_RES > 0, a legal combination of CCCH_CONF, BS_AG_BLK_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.

Specific PICS statements

-

PIXIT statements

-

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 s.

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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.2.1; 3GPP TS 05.02, subclause 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_BLKES_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.

Specific PICS statements

-

PIXIT statements

-

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 s.

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. 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.
3	SS -> MS	PAGING REQUEST TYPE 3	
4	SS -> MS	PAGING REQUEST TYPE 1	
5	MS -> SS	CHANNEL REQUEST	The MS is addressed in this "next but one subblock". Page mode set to "paging reorganization".
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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.3.2, 3GPP TS 05.02 subclause 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 subclause 6.5.2 of recommendation 3GPP TS 05.02, this means that:

$(\text{IMSI mod } 1000) \bmod (\text{BS_CC_CHANS} \times N)$ is greater or equal to N , where
 $N = \text{BS_PA_MFRMS} \times (9 - \text{BS_AG_BLKS_RES})$.

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

Specific PICS statements

-

PIXIT statements

-

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	Establish. 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.

26.6.2.6 Paging / EAB active

26.6.2.6.1 Conformance requirements

Upon receipt of a paging request message, or other message containing information to trigger the establishment of a RR connection, and if access to the network is allowed, the addressed mobile station shall, when camped on a cell as specified in 3GPP TS 23.022, initiate the immediate assignment procedure as specified in sub-clause 3.3.1. The establishment of the main signalling link is then initiated by use of an SABM with information field containing the PAGING RESPONSE message (see sub-clause 3.1.5). The MM sublayer in the mobile station is informed that the RR entity has entered the dedicated mode.

For a mobile originated access attempt, a mobile station configured for EAB shall perform a preliminary access barring check (see sub-clause 3.3.1.4). If the preliminary access barring check indicates network access is barred then access to the network is not allowed. Otherwise, the mobile station shall proceed according to the remainder of this sub-clause.

References

3GPP TS 44.018, subclause 3.3.2 and 3.3.1.1.1

26.6.2.6.2 Test purpose

To verify that the MS, configured for Extended Access class Barring, responds to paging messages when EAB is being broadcast by the network.

26.6.2.6.3 Method of test

Initial Conditions

System Simulator:

1 cell, Max-Retrans = 2

The SYSTEM INFORMATION TYPE 21 is sent on the BCCH. The SI 21 Rest Octets information element is configured with: EAB Authorization Mask set to "xxxxxxxx1" and EAB Subcategory set to "00".

Mobile Station:

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

The MS is configured for "Extended Access Barring"

The MS belong to access class 0

Specific PICS statements

-

PIXIT statements

-

Foreseen Final State of the MS

"Idle, updated", with TMSI allocated.

Test Procedure

The SS waits until all system information messages, including SYSTEM INFORMATION TYPE 21, is sent. The SI 21 Rest Octets information element is configured with: EAB Authorization Mask set to "xxxxxxxx1" and EAB Subcategory set to "00" in SYSTEM INFORMATION TYPE 21.

The SS pages the MS with PAGING REQUEST TYPE 1 messages on the paging subchannel which corresponds to the MS's IMSI. The MS shall answer to the paging by sending CHANNEL REQUEST.. The SS responds by assigning a channel, and the MS shall then send a correct PAGING RESPONSE. The SS then releases the channel.

Maximum Duration of Test

2 minutes.

Expected Sequence

Step	Direction	Message	Comments
1			The SS waits until it has sent all system information messages
2	SS -> MS	PAGING REQUEST TYPE 1	1st Mobile Ident contains TMSI of MS.
3	MS -> SS	CHANNEL REQUEST	Establ. Cause = "Answer to paging".
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	PAGING RESPONSE	Mobile Ident: TMSI.
6	SS -> MS	CHANNEL RELEASE	
7	SS		During 1 second, the SS checks that the MS does not produce any Layer 3 messages.

Specific Message Contents

SYSTEM INFORMATION TYPE 3 broadcast in the cell:

Same as default content except

Information Element	Value/remark
SI 3 Rest Octets	
SYSTEM INFORMATION 21 Indicator	H (SYSTEM INFORMATION TYPE 21 message is available)
SI21_POSITION	0 (SYSTEM INFORMATION TYPE 21 message is sent on BCCH Nom)

SYSTEM INFORMATION TYPE 21 broadcast by Cell A initially and in steps 11 and 20:

Same as default content except

Information Element	Value/remark
SI 21 Rest Octets	
EAB Authorization Mask	'xxxxxxxx1' (MSs configured for EAB and a member of Access Class 0 are barred)
EAB Subcategory	'00' (applicable to all mobile stations configured for EAB)

26.6.3 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 subclause 3.4.1.2 of 3GPP TS 04.08 / 3GPP TS 44.018.

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

26.6.3.1 Measurement / no neighbours

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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.1.2, 3GPP TS 05.08 subclause 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							
		Serving	Neighbour						
		S1	N1	N2	N3	N4	N5	N6	N7
Level		-60	-85	-80	-75	-55	-50	-45	-40
Ncc		1	1	1	1	1	1	1	1
Bcc		3	5	7	1	3	5	7	1
ARFCN	GSM 450	260	264	268	272	276	280	284	288
	GSM 480	307	311	315	319	323	327	331	335
	GSM 710	439	445	451	457	463	469	475	481
	GSM 750	439	445	451	457	463	469	475	481
	T-GSM 810	439	445	451	457	463	469	475	481
	GSM 850	129	135	141	147	153	159	165	171
	GSM 900	002	008	014	020	026	032	038	044
	DCS 1 800	514	530	602	665	762	686	549	810
PCS 1 900	514	530	602	665	762	686	549	810	
Cell Identity		0001H	0002H	0003H	0004H	0005H	0006H	0007H	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).

Specific PICS statements

-

PIXIT statements

-

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

DCS 1 800 or PCS 1 900 begin:

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	1 024 range
- BCCH Allocation Sequence number	1
- EXT IND	k = 1. Information Element carries the complete BA. k = 2. Information Element carries only a part of the BA.
- W(i)	null.

Band	NCD Format
GSM 450	Range 128
GSM 480	Range 128
GSM 710	Range 128
GSM 750	Range 128
T-GSM810	Range 128
GSM 850	Range 128
GSM 900	Bitmap 0
DCS 1 800	Range 1 024
PCS 1 900	Range 1 024

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	1 024 range
- BCCH Allocation Sequence number	1
- EXT IND	Information Element carries only a part of the BA.
- W(i)	DCS 1 800 or PCS 1 900: null. Other bands: Only channel 500 belongs to the BCCH allocation

DCS 1 800 or PCS 1 900 begin:

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

DCS 1 800 or PCS 1 900 end: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 or PCS 1 900 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. When the Indication is set to 'Not Valid', then NOTE 1 applies to ALL fields of the Measurement Results IE.

26.6.3.2 Measurement / all neighbours present

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

3GPP TS 04.08 / 3GPP TS 44.018, subclause 3.4.1.2, 3GPP TS 05.08 subclause 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								
	Serving	Neighbour							
	S1	N1	N2	N3	N4	N5	N6	N7	
Level	-60	-85	-80	-75	-55	-50	-45	-40	
Ncc	1	1	1	1	1	1	1	1	
Bcc	3	5	7	1	3	5	7	1	
ARFCN	GSM 450	260	264	268	272	276	280	284	288
	GSM 480	307	311	315	319	323	327	331	335
	GSM 710	439	445	451	457	463	469	475	481
	GSM 750	439	445	451	457	463	469	475	481
	T-GSM810	439	445	451	457	463	469	475	481
	GSM 850	129	135	141	147	153	159	165	171
	GSM 900	002	008	014	020	026	032	038	044
	DCS 1 800	514	530	602	665	762	686	549	810
	PCS 1 900	514	530	602	665	762	686	549	810
	Cell Identity	0001H	0002H	0003H	0004H	0005H	0006H	0007H	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).

Specific PICS statements

-

PIXIT statements

-

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 and 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 s 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

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	See table below
- BCCH Allocation Sequence	1
- EXT IND	$k = 1$. Information Element carries complete BA.
	$k = 2$. Information Element carries only a part of the BA.
- BCCH Allocation ARFCN	See table below

Band	SYSTEM INFORMATION TYPE 5		
	Format Identifier	BCCH Allocation ARFCN $k = 1$	BCCH Allocation ARFCN $k = 2$
GSM 450	Variable bitmap	259, 260, 261, 262, 263, 264, 265, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292	
GSM 480	Variable bitmap	306, 307, 308, 309, 310, 311, 312, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339	
GSM 710	Range 128	439, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 453, 454, 455, 456, 457, 458, 459, 460, 461, 463, 465, 466, 467, 469, 471, 472, 473, 475, 477, 481	
GSM 750	Range 128	439, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 453, 454, 455, 456, 457, 458, 459, 460, 461, 463, 465, 466, 467, 469, 471, 472, 473, 475, 477, 481	
T-GSM810	Range 128	439, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 453, 454, 455, 456, 457, 458, 459, 460, 461, 463, 465, 466, 467, 469, 471, 472, 473, 475, 477, 481	
GSM 850	Range 128	129, 135, 141, 147, 153, 159, 165, 171	
GSM 900	Bitmap 0	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, 44	
DCS 1 800	Range 1 024	514, 530, 549, 602, 665, 686, 762, 810	549, 602, 665, 686, 810.
PCS 1 900	Range 1 024	514, 530, 549, 602, 665, 686, 762, 810	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	1 024 range
- BCCH Allocation Sequence number	1
- EXT IND	Information Element carries only a part of the BA.
- $W(i)$	DCS 1 800 or PCS 1 900: Channel 20, 514, 530, 549, 762 belong to the BCCH allocation.
	Other bands: Channel 0 and 800 belong to the BCCH allocation..

DCS 1 800 or PCS 1 900 begin:

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

DCS 1 800 or PCS 1 900 end:

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

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. When the Indication is set to 'Not Valid', then NOTE 1 applies to ALL fields of the Measurement Results IE.

26.6.3.3 Measurement / barred cells and non-permitted NCCs

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

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.1.2, 3GPP TS 05.08 subclause 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							
		Serving	Neighbour						
		S1	N1	N2	N3	N4	N5	N6	N7
	Level dBm	-60	-85	-80	-75	-55	-50	-45	-40
	NCC	1	1	1	2	3	4	1	1
	BCC	3	5	7	1	3	5	7	1
	Cell Identity	0001H	0002H	0003H	0004H	0005H	0006H	0007H	0008H
A R F C N	GSM 450	260	264	268	272	276	280	284	288
	GSM 480	307	311	315	319	323	327	331	335
	GSM 710	439	445	451	457	463	469	475	481
	GSM 750	439	445	451	457	463	469	475	481
	T-GSM810	439	445	451	457	463	469	475	481
	GSM 850	129	135	141	147	153	159	165	171
	GSM 900	002	008	014	020	026	032	038	044
	DCS 1 800	514	530	602	665	762	686	549	810
PCS 1 900	514	530	602	665	762	686	549	810	

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).

Specific PICS statements

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PIXIT statements

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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 and 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

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	1024 range
- BCCH Allocation Sequence	1
- EXT IND	k = 1. Information Element carries complete BA.
- BCCH Allocation ARFCN	k = 2. Information Element carries only a part of the BA. only channel numbers from the table below belong to the BCCH allocation..

	Format	BA ARFCNs K=1	BA ARFCNs K=2
GSM 450	Range 128	260, 268, 272, 284 and 288	260, 268, 272, 284 and 288
GSM 480	Range 128	307, 315, 319, 331 and 335	307, 315, 319, 331 and 335
GSM 710	Range 128	439, 451, 457, 475 and 481	439, 451, 457, 475 and 481
GSM 750	Range 128	439, 451, 457, 475 and 481	439, 451, 457, 475 and 481
T-GSM 810	Range 128	439, 451, 457, 475 and 481	439, 451, 457, 475 and 481
GSM 850	Range 128	129, 141, 147, 165 and 171	129, 141, 147, 165 and 171
GSM 900	Bitmap 0	2, 14, 20, 38, and 44	2, 14, 20, 38, and 44
DCS 1 800	Range 1 024	514, 549, 602, 665, 810	549, 602, 810
PCS 1 900	Range 1 024	514, 549, 602, 665, 810	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
- BCCH Allocation Sequence number	1
- EXT IND	Information Element carries only a part of the BA.
- BCCH Allocation ARFCN	DCS 1 800 or PCS 1 900:514, 665. Other bands: 0, 800

DCS 1 800 or PCS 1 900 begin:

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

DCS 1 800 or PCS 1 900 end:

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

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. When the Indication is set to 'Not Valid', then NOTE 2 applies to ALL fields of the Measurement Results IE.

26.6.3.4 Measurement / DTX

26.6.3.4.1 Conformance requirements

After the sending of the HANOVER 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 s 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

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.1.2, 3GPP TS 05.08 subclause 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							
		Serving	Neighbour						
		S1	N1	N2	N3	N4	N5	N6	N7
	Level dBm	-60	-85	-80	-75	-55	-50	-45	-40
	NCC	1	1	1	1	1	1	1	1
	BCC	3	5	7	1	3	5	7	1
	Cell Identity	0001H	0002H	0003H	0004H	0005H	0006H	0007H	0008H
A R F C N	GSM 450	260	264	268	272	276	280	284	288
	GSM 480	307	311	315	319	323	327	331	335
	GSM 710	439	445	451	457	463	469	475	481
	GSM 750	439	445	451	457	463	469	475	481
	T-GSM 810	439	445	451	457	463	469	475	481
	GSM 850	129	135	141	147	153	159	165	171
	GSM 900	002	008	014	020	026	032	038	044
	DCS 1 800	514	530	602	665	762	686	549	810
PCS 1 900	514	530	602	665	762	686	549	810	

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.

Specific PICS statements

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PIXIT statements

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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 and 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

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Neighbour Cells Description - Format Identifier - BCCH Allocation Sequence - BCCH Allocation ARFCN - EXT IND	See table below 1 only channel numbers from the table below belong to the BCCH allocation. $k = 1$. Information Element carries the complete BA. $k = 2$. Information Element carries only a part of the BA.

Band	Format	BCCH Allocation ARFCN $k = 1$	BCCH Allocation ARFCN $k = 2$
GSM 450	Range 128	260, 264, 268, 272, 276, 280, 284, 288	260, 264, 268, 272, 276, 280, 284, 288
GSM 480	Range 128	307, 211, 315, 319, 323, 327, 331, 335	307, 211, 315, 319, 323, 327, 331, 335
GSM 710	Range 128	439, 445, 451, 457, 463, 469, 475, 481	439, 445, 451, 457, 463, 469, 475, 481
GSM 750	Range 128	439, 445, 451, 457, 463, 469, 475, 481	439, 445, 451, 457, 463, 469, 475, 481
T-GSM 810	Range 128	439, 445, 451, 457, 463, 469, 475, 481	439, 445, 451, 457, 463, 469, 475, 481
GSM 850	Range 128	129, 135, 141, 147, 153, 159, 165, 171	129, 135, 141, 147, 153, 159, 165, 171
GSM 900	Bitmap 0	2, 8, 14, 20, 26, 32, 38, 44	2, 8, 14, 20, 26, 32, 38, 44
DCS 1 800	Range 1 024	514, 530, 549, 602, 665, 686, 762, 810.	549, 602, 665, 686, 810
PCS 1 900	Range 1 024	514, 530, 549, 602, 665, 686, 762, 810.	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
- BCCH Allocation Sequence number	1
- EXT IND	Information Element carries only a part of the BA.
- BCCH Allocation ARFCN	DCS 1 800 or PCS 1 900: Channels 514, 530, 762 belong to the BCCH allocation. Other bands: Only channel 500 belongs to the BCCH allocation.

SYSTEM INFORMATION TYPE 6:

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	DCS 1 800 or PCS 1 900: default
PLMN permitted (DCS 1 800 and PCS 1 900 only)	Other bands: 8 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 (note 4)
- 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

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. When the Indication is set to 'Not Valid', then NOTE 1 applies to ALL fields of the Measurement Results IE.

NOTE 3: The DTX_used flag must only be checked from the MEASUREMENT REPORT occurring 2 complete SACCH multiframe after the MS has received SYSTEM INFORMATION TYPE 6. This is necessary to give the MS one SACCH multiframe to apply DTX and the second to transmit the updated MEASUREMENT REPORT.

NOTE 4: The BA_used flag must only be checked from the MEASUREMENT REPORT occurring 1 complete SACCH multiframe after the MS has received SYSTEM INFORMATION TYPE 5 (and SYSTEM INFO TYPE 5BIS in the case of k=2). This is necessary to give the MS one SACCH multiframe to transmit the updated MEASUREMENT REPORT.

26.6.3.5 Measurement / Frequency Formats

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 s the values in the MEASUREMENT REPORT message shall contain measurement results for the cells on which the mobile is allowed to report.

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.1.2, 3GPP TS 05.08 subclause 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	
		Serving	Neighbour
		S1	N1
Level		-60	-85
Ncc		1	1
Bcc		3	5
ARFCN	GSM 450	260	264
	GSM 480	307	311
	GSM 710	439	445
	GSM 750	439	445
	T-GSM 810	439	445
	GSM 850	129	135
	GSM 900	002	008
	DCS 1 800	715	805
	PCS 1 900	715	805
Cell Identity		0001H	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).

Specific PICS statements

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PIXIT statements

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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 and 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 the appropriate measurement results have been obtained as specified in the Specific Message Contents.

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

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	See table below
- BCCH Allocation Sequence	1
- EXT IND	Information Element carries only a part of the BA.
- BCCH Allocation ARFCNs	See table below

Band	k	Format	BCCH Allocation ARFCN
GSM 450	1, 2, 3	Range 128	260, 262 and 264
GSM 480	1, 2, 3	Range 128	307, 309 and 311
GSM 710	1, 2, 3	Range 128	439, 443 and 445
T-GSM 810	1, 2, 3	Range 128	439, 443 and 445
GSM 750	1, 2, 3	Range 128	439, 443 and 445
GSM 850	1	Variable Bitmap	129, 133, 135
GSM 850	2	Range 512	530, 595, 965, 1000, 715, 810, 0
GSM 850	3	Range 256	130, 135, 138
GSM 900	1	Bitmap 0	2, 6, 8
GSM 900	2	Range 512	530, 595, 965, 1000, 715, 815, 0
GSM 900	3	Range 128	3, 8, 10
DCS 1 800	1	Range 1 024	500, 530, 595, 715, 815, 965, 1 000, 0
DCS 1 800	2	Variable Bitmap	965, 1 000, 0, 2, 6, 8
DCS 1 800	3	Range 128	695, 715, 800
PCS 1 900	1	Range 1 024	500, 530, 595, 715, 805, 965, 1 000, 0
PCS 1 900	2	Variable Bitmap	965, 1 000, 0, 2, 6, 8
PCS 1 900	3	Range 128	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
- BCCH Allocation Sequence number	1
- 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

Band	k	Format Identifier	BCCH Allocation ARFCN
GSM 450	1	Range 1 024	500, 530, 595, 965, 1000, 715, 815, 0
GSM 450	2	Range 512	530, 595, 965, 1000, 715, 815, 0
GSM 450	3	Variable Bitmap	965, 1000, 0, 260, 262
GSM 480	1	Range 1 024	500, 530, 595, 965, 1000, 715, 815, 0
GSM 480	2	Range 512	530, 595, 965, 1000, 715, 815, 0
GSM 480	3	Variable Bitmap	965, 1000, 0, 307, 309
GSM 710	1	Range 1 024	500, 530, 595, 965, 1000, 715, 815, 0
GSM 710	2	Range 512	530, 595, 965, 1000, 715, 815, 0
GSM 710	3	Variable Bitmap	965, 1000, 0, 260, 262
GSM 750	1	Range 1 024	500, 530, 595, 965, 1000, 715, 815, 0
GSM 750	2	Range 512	530, 595, 965, 1000, 715, 815, 0
GSM 750	3	Variable Bitmap	965, 1000, 0, 260, 262
T-GSM 810	1	Range 1 024	500, 530, 595, 965, 1000, 715, 815, 0
T-GSM 810	2	Range 512	530, 595, 965, 1000, 715, 815, 0
T-GSM 810	3	Variable Bitmap	965, 1000, 0, 260, 262
GSM 850	1	Range 1 024	500, 530, 595, 965, 1000, 715, 810, 0
GSM 850	2	Range 128	129, 133, 135
GSM 850	3	Range 512	965, 1000, 0, 129, 133
GSM 900	1	Range 1 024	500, 530, 595, 965, 1000, 715, 815, 0
GSM 900	2	Range 512	2, 6, 8
GSM 900	3	Variable Bitmap	965, 1000, 0, 2, 6
DCS 1 800	1	Bitmap 0	2, 6, 8
DCS 1 800	2	Range 512	500, 530, 595, 715, 815, 965
DCS 1 800	3	Range 256	815, 965, 1000, 0, 2, 6
PCS 1 900	1	Bitmap 0	2, 6, 8
PCS 1 900	2	Range 512	500, 530, 595, 715, 805, 965
PCS 1 900	3	Range 256	805, 965, 1000, 0, 2, 6

DCS 1 800 or PCS 1 9 00 begin:

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

DCS 1 800 or PCS 1 9 00 end:

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	Shall correspond to S1 or N1, i.e., value in table below.
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., value in table below.
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

MEASUREMENT REPORT			
Band	k	BCCH_FREQ_NCELL_1	BCCH_FREQ_NCELL_2
GSM 450	1, 2, 3	0 or 2	0 or 2
GSM 480	1, 2, 3	0 or 2	0 or 2
GSM 710	1, 2, 3	0 or 2	0 or 2
GSM 750	1, 2, 3	0 or 2	0 or 2
T-GSM 810	1, 2, 3	0 or 2	0 or 2
GSM 850	1, 2	0 or 2	0 or 2
GSM 850	3	0 or 3	0 or 3
GSM 900	1, 2	0 or 2	0 or 2
GSM 900	3	0 or 3	0 or 3
DCS 1 800	1, 2	6 or 7	6 or 7
DCS 1 800	3	3 or 5	3 or 5
PCS 1 900	1, 2	6 or 7	6 or 7
PCS 1 900	3	3 or 5	3 or 5

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. When the Indication is set to 'Not Valid', then NOTE 1 applies to ALL fields of the Measurement Results IE.

26.6.3.6 Measurement / multiband environment

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

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.1.2, 3GPP TS 05.08 subclause 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							
		Serving	Neighbour						
		S1	N1	N2	N3	N4	N5	N6	N7
Level		-60	-85	-80	-75	-55	-50	-45	-40
Ncc		1	1	1	1	1	1	1	1
Bcc		3	5	7	1	3	5	7	1
ARFCN	GSM 450	260	264	268	272	276	280	284	288
	GSM 480	307	311	315	319	323	327	331	335
	GSM 710	439	445	451	457	463	469	475	481
	GSM 750	439	445	451	457	463	469	475	481
	T-GSM 810	439	445	451	457	463	469	475	481
	GSM 850	129	135	141	147	153	159	165	171
	GSM 900	002	008	014	020	026	032	038	044
	DCS 1 800	514	530	602	665	762	686	549	810
PCS 1 900	514	530	602	665	762	686	549	810	
Cell Identity		0001H	0002H	0003H	0004H	0005H	0006H	0007H	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).

Specific PICS statements

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PIXIT statements

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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 s 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

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 - BCCH Allocation Sequence - BCCH Allocation ARFCN	See table below 0 ARFCN 514, 530, 549, 602, 665, 686, 762, 810

Band	Format	BCCH Allocation ARFCN
GSM 450	Range 512	514, 530, 549, 602, 665, 686, 762, 810
GSM 480	Range 512	514, 530, 549, 602, 665, 686, 762, 810
GSM 710	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
GSM 750	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
T-GSM 810	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
GSM 850	Range 512	514, 530, 549, 602, 665, 686, 762, 810
GSM 900	Range 512	514, 530, 549, 602, 665, 686, 762, 810
DCS 1 800	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
PCS 1 900	Range 128	129, 135, 141, 147, 153, 159, 165, 171

SYSTEM INFORMATION TYPE 3:

as default except:

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

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format Identifier	See table below
- BCCH Allocation Sequence	1
- BCCH Allocation ARFCN	See table below
- EXT IND	Information Element carries the complete BA.

Band	Format	BCCH Allocation ARFCN
GSM 450	Range 128	260, 264, 268, 272, 276, 280, 284 , 288
GSM 480	Range 128	307, 311, 315, 319, 323, 327, 331 , 335
GSM 710	Range 128	439, 445, 451, 457, 463, 469, 475, 481
GSM 750	Range 128	439, 445, 451, 457, 463, 469, 475, 481
T-GSM 810	Range 128	439, 445, 451, 457, 463, 469, 475, 481
GSM 850	Range 128	129, 135, 141, 147, 153, 159, 165 , 171
GSM 900	Bitmap 0	2, 8, 14, 20, 26, 32, 38, 44
DCS 1 800	Range 512	514, 530, 549, 602, 665, 686, 762, 810
PCS 1 900	Range 512	514, 530, 549, 602, 665, 686, 762, 810

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	See table below
- BCCH Allocation Sequence	1
- BCCH Allocation ARFCN	See table below

Band	Format Identifier	BCCH Allocation ARFCN
GSM 450	Range 512	514, 530, 549, 602, 665, 686, 762, 810
GSM 480	Range 512	514, 530, 549, 602, 665, 686, 762, 810
GSM 710	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
GSM 750	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
T-GSM 810	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
GSM 850	Range 512	514, 530, 549, 602, 665, 686, 762, 810
GSM 900	Range 512	514, 530, 549, 602, 665, 686, 762, 810
DCS 1 800	Range 1 024	2, 8, 14, 20, 26, 32, 38, 44
PCS 1 900	Range 128	129, 135, 141, 147, 153, 159, 165, 171

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 See table below.	
NOTE 3: The Measurement Valid Indication shall be set to valid within the second SACCH block at the latest. When the Indication is set to 'Not Valid', then NOTE 1 applies to ALL fields of the Measurement Results IE.	

Band	ARFCNS
GSM 450	260, 272, 276, 280, 284 and 288
GSM 480	307, 319, 323, 327, 331 and 335
GSM 710	439, 445, 451, 457, 463, 469, 475, 481
GSM 750	439, 445, 451, 457, 463, 469, 475, 481
T-GSM 810	439, 445, 451, 457, 463, 469, 475, 481
GSM 850	129, 147, 153, 159, 165 and 171
GSM 900	2, 20, 26, 32, 38 and 44
DCS 1 800	514, 549, 665, 686, 762, 810
PCS 1 900	514, 549, 665, 686, 762, 810

26.6.3.7 Measurement / new cell reporting

26.6.3.7.1 Conformance requirements

The MS shall continuously send MEASUREMENT REPORT messages on every SA CCH blocks and the measurement valid indication shall be set to valid (0) within the second block at the latest. The MS shall report a new strongest cell in the measurement report at the latest 5 s after a new strongest cell (which is part of the BA(SACCH)) has been activated under the following network conditions: Initial serving cell at RXLEV= -70 dBm, with 6 neighbours at RXLEV= -75 dBm. Then the new BCCH carrier is switched on at RXLEV= -60 dBm.

NOTE: Because of test equipment limitations it is acceptable to activate the new carrier to replace one of the 6 neighbours.

References

3GPP TS 04.08 / 3GPP TS 44.018 subclause 3.4.1.2, 3GPP TS 05.08 subclause 7.2.

26.6.3.7.2 Test purpose

To test that, when the SS activates a new strongest neighbour cell, the MS reports that cell with a maximum delay of 5 s.

26.6.3.7.3 Method of test

Initial Conditions

System Simulator:

7 cells with the following settings:

		Transmitter						
		Serving	Neighbour					
		S1	N1	N2	N3	N4	N5	N6
Level		-70	-75	-75	-75	-75	-75	-75
NCC		1	1	1	1	1	1	1
BCC		3	5	7	1	3	5	7
ARFCN	GSM 450	260	264	268	272	276	280	284
	GSM 480	307	311	315	319	323	327	331
	GSM 710	439	445	451	457	463	469	475
	GSM 750	439	445	451	457	463	469	475
	T-GSM 810	439	445	451	457	463	469	475
	GSM 850	129	135	141	147	153	159	165
	GSM 900	002	008	014	020	026	032	038
	DCS 1 800	514	530	602	665	762	686	549
PCS 1 900	514	530	602	665	762	686	549	
Cell Identity		0001H	0002H	0003H	0004H	0005H	0006H	0007H

With the exception of the Cell Allocation, the rest of the parameters for all seven 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).

Specific PICS statements

-

PIXIT statements

-

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

The test is performed in two steps a) and b).

Step a)

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5 & 6 on the SACCH. All 7 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 s in these that measurement results for the 6 strongest carriers have been obtained.

Step b)

The SS replaces neighbour cell N1 with neighbour cell N7 with a signal strength of -60 dBm, in order to have the following new settings:

		Transmitter						
		Serving	Neighbour					
		S1	N1	N2	N3	N4	N5	N6
Level	-70	-60	-75	-75	-75	-75	-75	
Ncc	1	1	1	1	1	1	1	
Bcc	3	1	7	1	3	5	7	
ARFCN	GSM 450	260	288	268	272	276	280	284
	GSM 480	307	335	315	319	323	327	331
	GSM 710	439	481	451	457	463	469	475
	GSM 750	439	481	451	457	463	469	475
	T-GSM 810	439	481	451	457	463	469	475
	GSM 850	129	162	141	147	153	159	165
	GSM 900	002	044	014	020	026	032	038
	DCS 1 800	514	810	602	665	762	686	549
PCS 1 900	514	810	602	665	762	686	549	
Cell Identity	0001H	0008H	0003H	0004H	0005H	0006H	0007H	

With a maximum delay of 5 s, the neighbour cell N7 is included in the measurement report messages.

Maximum Duration of Test

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

Expected Sequence

Since SYSTEM INFORMATION TYPE 5, 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

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
- Format	See table below
- BCCH Allocation Sequence	1
- EXT IND	Information Element carries complete BA.
- BCCH Allocation ARFCN	See table below

Band	BCCH Allocation ARFCNs	Format
GSM 450	259, 261, 262, 263, 264, 265, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292	Variable bitmap
GSM 480	306, 308, 309, 310, 311, 312, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339	Variable bitmap
GSM 710	439, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 453, 454, 455, 456, 457, 458, 459, 460, 461, 463, 465, 466, 467, 469, 471, 472 and 475	Range 128
GSM 750	439, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 453, 454, 455, 456, 457, 458, 459, 460, 461, 463, 465, 466, 467, 469, 471, 472 and 475	Range 128
T-GSM 810	439, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 453, 454, 455, 456, 457, 458, 459, 460, 461, 463, 465, 466, 467, 469, 471, 472 and 475	Range 128
GSM 850	129, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 143, 144, 145, 146, 147, 148, 149, 150, 151, 153, 155, 156, 157, 159, 161, 162 and 165	Range 128
GSM 900	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, 44	Bitmap 0
DCS 1 800	514, 530, 549, 602, 665, 686, 762, 810.	Range 1 024
PCS 1 900	514, 530, 549, 602, 665, 686, 762, 810.	Range 1 024

DCS 1 800 or PCS 1 900 begin:

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

DCS 1 800 or PCS 1 900 end:

MEASUREMENT REPORT: Step a)

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 correspond to S1 or N1 or N2 or N3 or N4 or N5 or N6
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 or N2 or N3 or N4 or N5 or N6
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See note 1
BCCH_FREQ_NCELL_3	Shall correspond to S1 or N1 or N2 or N3 or N4 or N5 or N6
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See note 1
BCCH_FREQ_NCELL_4	Shall correspond to S1 or N1 or N2 or N3 or N4 or N5 or N6
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	See note 1
BCCH_FREQ_NCELL_5	Shall correspond to S1 or N1 or N2 or N3 or N4 or N5 or N6
BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
RXLEV_NCELL_6	See note 1
BCCH_FREQ_NCELL_6	Shall correspond to S1 or N1 or N2 or N3 or N4 or N5 or N6
BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

MEASUREMENT REPORT: Step b)

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 correspond to S1 or N2 or N3 or N4 or N5 or N6 or N7
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 N2 or N3 or N4 or N5 or N6 or N7
BSIC_NCELL_2	Corresponds to that of BCCH_FREQ_NCELL_2
RXLEV_NCELL_3	See note 1
BCCH_FREQ_NCELL_3	Shall correspond to S1 or N2 or N3 or N4 or N5 or N6 or N7
BSIC_NCELL_3	Corresponds to that of BCCH_FREQ_NCELL_3
RXLEV_NCELL_4	See note 1
BCCH_FREQ_NCELL_4	Shall correspond to S1 or N2 or N3 or N4 or N5 or N6 or N7
BSIC_NCELL_4	Corresponds to that of BCCH_FREQ_NCELL_4
RXLEV_NCELL_5	See note 1
BCCH_FREQ_NCELL_5	Shall correspond to S1 or N2 or N3 or N4 or N5 or N6 or N7
BSIC_NCELL_5	Corresponds to that of BCCH_FREQ_NCELL_5
RXLEV_NCELL_6	See note 1
BCCH_FREQ_NCELL_6	Shall correspond to S1 or N2 or N3 or N4 or N5 or N6 or N7
BSIC_NCELL_6	Corresponds to that of BCCH_FREQ_NCELL_6

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. When the Indication is set to 'Not Valid', then NOTE 1 applies to ALL fields of the Measurement Results IE.

NOTE 3: Cell S1 shall be included in the Measurement Report sent by the MS.

26.6.3.8 Enhanced Measurement /all neighbours present

26.6.3.8.1 Conformance requirements

When in dedicated mode or group transmit mode, the mobile station regularly sends either MEASUREMENT REPORT or ENHANCED MEASUREMENT REPORT messages to the network.

The Mobile Station shall use ENHANCED MEASUREMENT REPORT messages instead of MEASUREMENT REPORT messages if that is indicated by the parameter REPORT_TYPE and if at least one BSIC is allocated to each BA (list) frequency

For Enhanced Measurement Reporting, cells shall be reported if they are among the at least 6 strongest carriers, and BSIC is successfully decoded and valid (see sub-clause 10.1.1) or, if indicated by the parameter INVALID_BSIC_REPORTING, with known and allowed NCC part. The neighbour cells shall be reported according to the priority defined in sub-clause 8.4.8.1. For other radio access technology/mode, RXLEV is replaced by the relevant measurement quantity (see sub-clause 8.1.5);

For report with the ENHANCED MEASUREMENT REPORT message, the Neighbour Cell list is the concatenation of the GSM Neighbour Cell list and the 3G Neighbour Cell list (if any).

References

3GPP TS 04.08 / 3GPP TS 44.018, sub-clause 3.4.1.2; 3.4.1.2.1.3, 3GPP TS 05.08 sub-clause 10.1.4.1

26.6.3.8.2 Test purpose

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

26.6.3.8.3 Method of test

Initial Conditions

System Simulator:

7 cells with the following settings:

	Transmitter							
	Serving	Neighbour						
	S1	N1	N2	N3	N4	N5	N6	
Level	-60	-85	-80	-75	-55	-50	-45	
Ncc	1	1	1	1	1	1	1	
Bcc	3	5	7	1	3	5	7	
ARFCN	GSM 450	260	264	268	272	276	280	284
	GSM 480	307	311	315	319	323	327	331
	GSM 710	439	445	451	457	463	469	475
	GSM 750	439	445	451	457	463	469	475
	T-GSM810	439	445	451	457	463	469	475
	GSM 850	129	135	141	147	153	159	165
	GSM 900	002	008	014	020	026	032	038
	DCS 1 800	514	530	602	665	762	686	549
	PCS 1 900	514	530	602	665	762	686	549
Cell Identity	0001H	0002H	0003H	0004H	0005H	0006H	0007H	

One UTRAN FDD CELL, N7 with following parameters:

UARFCN=10700 (Downlink UE receive, Node B transmit)

Parameter	Unit	UTRAN FDD Cell
<i>CPICH_Ec/lor</i>	dB	-10
<i>PCCPCH_Ec/lor</i>	dB	-12
<i>SCH_Ec/lor</i>	dB	-12
<i>PICH_Ec/lor</i>	dB	-15
<i>DPCH_Ec/lor</i>	dB	-∞
OCNS		-0.94
\hat{I}_{or}/I_{oc}	dB	10
I_{oc}	dBm/3.84 MHz	-70
<i>CPICH_Ec/lo</i>	dB	-10.4
<i>CPICH_RSCP</i>	dBm	-70
FDD_MULTIRAT_REPORTING	integer	1
Qsearch_P	integer	7 (search always)
3G_SEARCH_PRIO	integer	1
Propagation Condition	AWGN	

Reference

TS 45.008 clause 10.1.4.1

Mobile Station

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

Specific PICS statements

-

PIXIT statements

-

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 6 and MEASUREMENT INFORMATION message on the SACCH. The Report Type parameter on the SACCH indicated ENHANCED MEASUREMENT REPORT. All 7 of the BCCHs "on air" are indicated in the BA and 3G Neighbour Cell Description is indicated in the MEASUREMENT INFORMATION message. The MS shall send ENHANCED MEASUREMENT REPORT back to the SS, and it shall be indicated within 20 s in these that measurement results for the 6 strongest carriers.

Maximum Duration of Test

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

Expected Sequence

Since SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 6 and MEASUREMENT INFORMATION message are sent continuously on SACCH, a table is not applicable in this test.

Specific Message Contents

SYSTEM INFORMATION TYPE 5:

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Sys Info 5.
Neighbour Cells Description	
Format Identifier	See Table below
BCCH Allocation Sequence	1
BCCH Allocation ARFCN	The channel numbers from the table below belong to the BCCH allocation.

Band	BCCH Allocation ARFCNs	Format Identifier
GSM 450	264, 268, 272, 276, 280, 284	Bitmap 0
GSM 480	311, 315, 319, 323, 327, 331	Bitmap 0
GSM 710	445, 451, 457, 463, 469, 475	Bitmap 0
GSM 750	445, 451, 457, 463, 469, 475	Bitmap 0
T-GSM 810	445, 451, 457, 463, 469, 475	Bitmap 0
GSM 850	135, 141, 147, 153, 159, 165	Bitmap 0
GSM 900	8, 14, 20, 26, 32, 38	Bitmap 0
DCS 1 800	530, 549, 602, 665, 686, 762.	Range 1 024
PCS 1 900	530, 549, 602, 665, 686, 762.	Range 1 024

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 INFORMATION

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Measurement Information (downlink) 00101
BA_IND (BCCH Allocation Sequence)	1
3G_BA_IND	1
Report Type	Enhanced Measurement Report
REPORT_PRIORITY_Description	0
3G UTRAN FDD Neighbour Cells Description	
UARFCN	10700
Absolute_Index_Start_EMR	6
Measurement Parameters	
Multi-band Reporting	0
SERVING_BAND_REPORTING	3
SCALE_ORD	0
XXX_REPORTING_THRESHOLD	1 (priority reporting if rep. value above threshold for 6)
XXX_REPORTING_OFFSET	0 (Note 1)
3G Measurement Parameters	
Qsearch_C	0
3G_SEARCH_PRIO	1
FDD_REP_QUANT	0 (RSCP)
FDD_MULTIRAT_REPORTING	1 (one cell)
FDD_REPORTING_OFFSET	0
FDD_REPORTING_THRESHOLD	1 (priority reporting if rep. value above threshold for 6)

ENHANCED MEASUREMENT REPORT:

Information Element	Value/remark
Protocol Discriminator	RR Management
Message Type	ENHANCED MEASUREMENT REPORT
Measurement Results	
Serving CELL data	
BA_USED	1
3G_BA_USED	1
SCALE	0
BSIC_Seen	0
DTX_used	DTX was not used
RXLEV_VAL	See note 2
RX_QUAL_FULL	100
MEAN_BEP	See note 2
CV_BEP	See note 2
NBR_RCVD_BLOCKS	See note 2
Neighbour CELL reporting	Measurements for the all GSM Cells (including the serving cell) and the UTRAN cell (N7) (Note 2)

NOTE 1: XXX represent the tested band.

NOTE 2: These actual values are not checked.

26.6.3.9 Enhanced Measurement Report / Measurement Parameters

26.6.3.9.1 Conformance requirements

The BA (list) which is the initial basis for the measurements is derived from information received on the BCCH in System Information 2 and optionally 2bis and/or 2ter and on the SACCH in System Information 5 and optionally 5bis and/or 5ter. MEASUREMENT INFORMATION and SI2quater messages may add information for the GSM Neighbour Cell List and provide 3G Neighbour Cell list. The Mobile Station shall use ENHANCED MEASUREMENT REPORT messages instead of MEASUREMENT REPORT messages if that is indicated by the parameter REPORT_TYPE and if at least one BSIC is allocated to each BA (list) frequency.

The network may request the MS to report serving cell and neighbour cell measurements with Enhanced Measurement Report message by the parameter REPORT_TYPE, provided that BSIC for all GSM neighbour cells has been sent to the MS (See 3GPP TS 44.018). This reporting is referred as Enhanced Measurement Reporting.

The MS shall use the SCALE value as indicated by the parameter SCALE_ORD in the MEASUREMENT INFORMATION. The MS shall indicate the used SCALE value in each individual ENHANCED MEASUREMENT REPORT or PACKET ENHANCED MEASUREMENT REPORT message.

References

3GPP TS 44.018 subclauses 3.2.2.1 and 3.4.1.2

3GPP TS 45.008 subclauses 8.4.8

26.6.3.9.2 Test purpose

To test that the MS reports appropriate results using Enhanced Measurement Report message when REPORT_TYPE is set to 0 in Measurement Information (System Information 2quater respectively).

To verify that an MS, in dedicated mode, use the SCALE value as indicated by the parameter SCALE_ORD in the MEASUREMENT INFORMATION.

26.6.3.9.3 Method of test

Initial Conditions

System Simulator:

5 cells with the following settings:

	Transmitter					
	Serving	Neighbour				
	S1	N1	N2	N3	N4	
Level	-60	-85	-80	-75	-55	
Ncc	1	1	1	1	1	
Bcc	3	5	7	1	3	
ARFCN	GSM 450	260	264	268	272	276
	GSM 480	307	311	315	319	323
	GSM 710	439	445	451	457	463
	GSM 750	439	445	451	457	463
	T-GSM 810	439	445	451	457	463
	GSM 850	129	135	141	147	153
	GSM 900	002	008	014	020	026
	DCS 1 800	514	530	602	665	762
PCS 1 900	514	530	602	665	762	
Cell Identity	0001H	0002H	0003H	0004H	0005H	

The parameters for all five cells are the same as the default settings and default SYSTEM INFORMATION TYPE 1 to 4 message contents for cell A with the following exceptions:

- the Cell A location for the serving cell is the same as the default setting for cell A. The Cell Allocations for the neighbour cells only have one entry for the ARFCN of that cell's BCCH.

Mobile Station:

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

Specific PICS statements:

-

PIXIT statements:

-

Foreseen Final State of the MS

Active state of a call (U10).

Test Procedure

Step a)

With the MS having a call in progress, the SS sends SYSTEM INFORMATION TYPE 5, SYSTEM INFORMATION TYPE 6 and MEASUREMENT INFORMATION messages on the SACCH. The Report Type parameter on the SACCH indicates ENHANCED MEASUREMENT REPORT and SERVING_BAND_REPORTING is set to 3. Serving cell and 4 neighbour cells "on air" are indicated in the BA and no 3G Neighbour Cell Description is indicated in the MEASUREMENT INFORMATION message. The MS shall send ENHANCED MEASUREMENT REPORTs back to the SS, and all carriers present in the BA List shall be indicated within 20 s in these that measurement results.

Step b)

Then the SS sends MEASUREMENT INFORMATION message including the request the use of SCALE_ORD parameter. The MS shall send Enhanced Measurement Report back to the SS and indicate the use of SCALE_ORD parameter. The SS checks that the offset is correctly applied by the MS.

Maximum Duration of Test

5 minutes.

Expected Sequence

Since System Information 5, System Information 6 and Measurement Information are sent on SACCH a table is not applicable in this test.

Specific Message Contents

MEASUREMENT INFORMATION (Step a)

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Measurement Information (downlink) 00101
< BA_IND : bit >	Same BA_IND as for S15
< 3G_BA_IND : bit >	0
< MP_CHANGE_MARK : bit >	0
< MI_INDEX : bit (4) >	'0000'B
< MI_COUNT : bit (4) >	'0000'B
< PWRC : bit >	0
< REPORT_TYPE : bit >	0 = enhanced
< REPORTING_RATE : bit >	0
< INVALID_BSIC_REPORTING : bit >	0
0 1 < Real Time Difference Description >	0
0 1 < BSIC Description >:	1
< BSIC Description struct >	According to the cells table in Initial Conditions of the test case
0 1 < REPORT PRIORITY Description >	0
0 1 < Measurement_Parameters Description >	1
0 1 < MULTIBAND_REPORTING >	0
0 1 < SERVING_BAND_REPORTING: bit(2) >	1
< SCALE_ORD >	'11'B
0 1 < 900_REPORTING_OFFSET >	'00'B
0 1 < 1800_REPORTING_OFFSET >	0
0 1 < 400_REPORTING_OFFSET >	0
0 1 < 1900_REPORTING_OFFSET >	0
0 1 < 850_REPORTING_OFFSET >	0

MEASUREMENT INFORMATION (Step b)

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Measurement Information (downlink) 00101
< BA_IND : bit >	Same BA_IND as for S15
< 3G_BA_IND : bit >	0
< MP_CHANGE_MARK : bit >	1
< MI_INDEX : bit (4) >	'0000'B
< MI_COUNT : bit (4) >	'0000'B
< PWRC : bit >	0
< REPORT_TYPE : bit >	0 = enhanced
< REPORTING_RATE : bit >	0
< INVALID_BSIC_REPORTING : bit >	0
0 1 < Real Time Difference Description >	0
0 1 < BSIC Description >:	1
< BSIC Description struct >	According to the cells table in Initial Conditions of the test case
0 1 < REPORT PRIORITY Description >	0
0 1 < Measurement_Parameters Description >	1
0 1 < MULTIBAND_REPORTING >	0
0 1 < SERVING_BAND_REPORTING: bit(2) >	1
< SCALE_ORD >	'11'B
0 1 < 900_REPORTING_OFFSET >	'01'B
0 1 < 1800_REPORTING_OFFSET >	0
0 1 < 400_REPORTING_OFFSET >	0
0 1 < 1900_REPORTING_OFFSET >	0
0 1 < 850_REPORTING_OFFSET >	0

ENHANCED MEASUREMENT REPORT (a):

Information Element	Value/remark
Protocol Discriminator	RR Management
Message Type	ENHANCED MEASUREMENT REPORT
< BA_USED >	0
< BSIC_Seen >	0
< SCALE >	0
0 1 < Serving cell data :	1
< DTX_USED >	0
<i>Serving Data info</i>	<i>Content accuracy not checked (Note 1)</i>
1 <Repeated Invalid_BSIC_Information>	0
0 1 < Bitmap Type Reporting Info flag :	1
Reporting Quantity	<i>RXLEV for all Cells (S1,N1, N2, N3 and N4) present (Note 1)</i>

ENHANCED MEASUREMENT REPORT (b):

Information Element	Value/remark
Protocol Discriminator	RR Management
Message Type	ENHANCED MEASUREMENT REPORT
< 3G_BA_USED >	0
< BA_USED >	0
< BSIC_Seen >	0
< SCALE >	1
0 1 < Serving cell data :	1
< DTX_USED >	0
<i>Serving Data info</i>	<i>Content accuracy not checked (Note 2)</i>
1 <Repeated Invalid_BSIC_Information>	0
0 1 < Bitmap Type Reporting Info flag:	1
Reporting Quantity	<i>RXLEV for all Cells (S1, N1, N2, N3 and N4) present (Note 2)</i>

NOTE 1: The actual values are not checked.

NOTE 2: the RxLev must 10 dB lower than before sending the Measurement Information (b)

26.6.3.10 Enhanced Measurement Report / EMR Reporting after Handover

26.6.3.10.1 Conformance requirements

1. The BA (list) which is the initial basis for the measurements is derived from information received on the BCCH in System Information 2 and optionally 2bis and/or 2ter and on the SACCH in System Information 5 and optionally 5bis and/or 5ter. MEASUREMENT INFORMATION and SI2quater messages may add information for the GSM Neighbour Cell List and provide 3G Neighbour Cell list. The Mobile Station shall use ENHANCED MEASUREMENT REPORT messages instead of MEASUREMENT REPORT messages if that is indicated by the parameter REPORT_TYPE and if at least one BSIC is allocated to each BA (list) frequency
2. When in dedicated mode or group transmit mode, the mobile station regularly sends either MEASUREMENT REPORT or ENHANCED MEASUREMENT REPORT messages to the network. These messages contain measurement results about reception characteristics from the current cell and from neighbour cells.
3. The Mobile Station shall use ENHANCED MEASUREMENT REPORT messages instead of MEASUREMENT REPORT messages if that is indicated by the parameter REPORT_TYPE and if at least one BSIC is allocated to each BA (list) frequency.

References

3GPP TS 44.018 subclauses 3.2.2.1 and 3.4.1.2

3GPP TS 45.008 subclauses 8.4.8

26.6.3.10.2 Test purpose

1. To verify that an MS, in dedicated mode, on a cell A, after receiving a Measurement Information on SACCH with one BSIC allocated to each BA(list) frequency with REPORT_TYPE set to 0 sends ENHANCED MEASUREMENT REPORT.
2. To verify that the MS after switching to a new cell via handover procedure continues to send ENHANCED MEASUREMENT REPORT only after receiving a new Measurement Information.

26.6.3.10.3 Method of test

Initial Conditions

System Simulator:

2 cells, A and B with same LAI default parameters

Mobile Station:

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

Specific PICS statements:

-

PIXIT statements:

-

Test Procedure

With the MS having a call in progress on cell A, the SS sends SYSTEM INFORMATION TYPE 5 & 6 on the SACCH.

The SS sends a Measurement Information with Report Type = 0 to trigger the MS to send Enhanced Measurement Report. Measurement results for cell B shall be indicated there.

The MS is handed over to cell B. The MS sends MEASUREMENT REPORT until it receives the MEASUREMENT INFORMATION. The measurement results for cell A shall be indicated.

Maximum Duration of Test

5 minutes.

Expected Sequence

Step	Direction	Message	Comments
0	MS -> SS		The MS is in the active state of a call on cell A.
1	SS -> MS	MEASUREMENT INFORMATION	
2	MS -> SS	ENHANCED MEASUREMENT REPORT	Measurement results for cell B are present
3	SS -> MS	HANDOVER COMMAND	Contains the parameters for cell B
4	MS -> SS	HANDOVER ACCESS	Repeated on every burst of the uplink main DCCH (and optionally the SACCH) until reception of PHYSICAL INFORMATION.
5	SS -> MS	PHYSICAL INFORMATION	Sent after reception of n HANDOVER ACCESS messages.
6	MS -> SS	SABM	Sent without information field.
7	SS -> MS	UA	
8	MS -> SS	HANDOVER COMPLETE	
9	MS -> SS	MEASUREMENT REPORT	
10	SS -> MS	MEASUREMENT INFORMATION	
11	MS -> SS	ENHANCED MEASUREMENT REPORT	Measurement results for cell A to be reported with in 20 sec of step10.

Specific Message Contents

MEASUREMENT INFORMATION (Step 1)

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Measurement Information (downlink) 00101
< BA_IND : bit >	Same BA_IND as for S15
< 3G_BA_IND : bit >	0
< MP_CHANGE_MARK : bit >	0
< MI_INDEX : bit (4) >	'0000'B
< MI_COUNT : bit (4) >	'0000'B
< PWRC : bit >	0
< REPORT_TYPE : bit >	0 = enhanced
< REPORTING_RATE : bit >	0
< INVALID_BSIC_REPORTING : bit >	0
0 1 < Real Time Difference Description >	0
0 1 < BSIC Description >:	1
< BSIC Description struct >	According to the neighbour cells list of cell A
0 1 < REPORT PRIORITY Description >	0
0 1 < Measurement_Parameters Description >	1
0 1 < MULTIBAND_REPORTING >	0
0 1 < SERVING_BAND_REPORTING:	1
bit(2) >	'11'B
< SCALE_ORD >	'00'B
0 1 < 900_REPORTING_OFFSET >	0
0 1 < 1800_REPORTING_OFFSET >	0
0 1 < 400_REPORTING_OFFSET >	0
0 1 < 1900_REPORTING_OFFSET >	0
0 1 < 850_REPORTING_OFFSET >	0

MEASUREMENT INFORMATION (Step 10)

Information Element	value/remark
Protocol Discriminator	RR management
Message Type	Measurement Information (downlink) 00101
< BA_IND : bit >	Same BA_IND as for S15
< 3G_BA_IND : bit >	0
< MP_CHANGE_MARK : bit >	0
< MI_INDEX : bit (4) >	'0000'B
< MI_COUNT : bit (4) >	'0000'B
< PWRC : bit >	0
< REPORT_TYPE : bit >	0 = enhanced
< REPORTING_RATE : bit >	0
< INVALID_BSIC_REPORTING : bit >	0
0 1 < Real Time Difference Description >	0
0 1 < BSIC Description >:	1
< BSIC Description struct >	According to the neighbour cells list of cell B
0 1 < REPORT PRIORITY Description >	0
0 1 < Measurement_Parameters Description >	1
0 1 < MULTIBAND_REPORTING >	0
0 1 < SERVING_BAND_REPORTING:	1
bit(2) >	'11'B
< SCALE_ORD >	'00'B
0 1 < 900_REPORTING_OFFSET >	0
0 1 < 1800_REPORTING_OFFSET >	0
0 1 < 400_REPORTING_OFFSET >	0
0 1 < 1900_REPORTING_OFFSET >	0
0 1 < 850_REPORTING_OFFSET >	0