
44 Test case requirements for GPRS mobility management

44.1 Applicability, default conditions and default messages

All test cases for GPRS mobility management apply for all GPRS mobiles unless otherwise stated in a specific test. Within each test case, the PICS statement indicates whether the test shall be performed for mobiles that can only operate in mode - class B, only in mode - class C, or in both mode - class B and C. For some procedures, the mobile class is of no importance.

Note that only the layer 3 messages are described in the document. The mapping of the layer 3 messages to lower layers and the use of logical channels is not described in this document.

The default conditions and default message contents not specified in this clause must be set as in “GPRS default conditions”

Below is a list of the RAI values and the corresponding RAC, LAC and MCC used in the test cases:

RAI-1: MCC1/MNC1/LAC1/RAC1 (Used if only one cell)

RAI-2: MCC2/MNC1/LAC1/RAC1

RAI-3: MCC1/MNC1/LAC2/RAC1

RAI-4: MCC1/MNC1/LAC1/RAC2

RAI-5: MCC1/MNC1/LAC1/RAC3

If the mobile station initial condition specifies that the mobile has a valid IMSI but the initial condition does not mention P-TMSI, then that shall be interpreted as that the mobile has no valid P-TMSI.

44.2 Elementary procedures of GPRS mobility management

The tests are based on GSM 04.08.

44.2.1 GPRS attach procedure

This procedure is used to indicate for the network that the IMSI is available for traffic by establishment of a GMM context.

44.2.1.1 Normal GPRS attach

The normal GPRS attach procedure is a GMM procedure used by GPRS MSs of MS operation mode B or C to IMSI attach for GPRS services only.

44.2.1.1.1 GPRS attach / accepted

44.2.1.1.1.1 Conformance requirement

- 1) If the network accepts the GPRS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the MS shall acknowledge the P-TMSI and continue communication with the P-TMSI.
- 2) If the network accepts the GPRS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the MS shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 3) If the network accepts the GPRS attach procedure (signalled by a P-TMSI) from the MS without reallocation of the old P-TMSI, the MS shall continue communication with the old P-TMSI.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.1.2 Test purpose

To test the behaviour of the MS if the network accepts the GPRS attach procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is allocated
- 2) P-TMSI / P-TMSI signature is reallocated
- 3) Old P-TMSI / P-TMSI signature is not changed

44.2.1.1.1.3 Method of test

Initial conditions

System Simulator:
One cell operating in network operation mode III.

Mobile Station:
The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
MS operation mode B Yes/No
MS operation mode C Yes/No
Switch off on button Yes/No
Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

- 1) The MS sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The MS acknowledges the P-TMSI by sending ATTACH COMPLETE message. Further communication MS - SS is performed by the new P-TMSI.
- 2) The MS sends an ATTACH REQUEST message with identity P-TMSI. The SS reallocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI. The MS acknowledges the P-TMSI by sending ATTACH COMPLETE message. Further communication MS - SS is performed by the new P-TMSI. The MS will not answer signalling addressed to the old P-TMSI.
- 3) The MS sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication MS - SS is performed by the old P-TMSI.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 26.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS only attached' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2
7	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
8	MS		The MS is switched off or power is removed (see PICS).
9	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
10	MS		The MS is powered up or switched on and initiates an attach (see PICS).
11	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
12	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
13	MS -> SS	ATTACH COMPLETE	
14	SS -> MS	GMM INFORMATION	Message sent with P-TMSI-1
14b	MS -> SS	GMM STATUS	Message sent in case the MS does not support reception of GMM information message Cause #97
15	SS -> MS	PACKET PAGING REQUEST Or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-2 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).
16	MS		No response from the MS to the request. This is checked for 10 seconds.
17	MS		The MS is switched off or power is removed (see PICS).
18	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
19	MS		The MS is powered up or switched on and initiates an attach (see PICS).
20	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
21	SS -> MS	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'GPRS only attached'

22	SS -> MS	PACKET PAGING REQUEST Or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).
23	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
24	MS		The MS is switched off or power is removed (see PICS).
25	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
26	SS		The SS is set in network operation mode II.
27	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 2 to step 25.

Specific message contents

None.

44.2.1.1.2 GPRS attach / rejected / IMSI invalid / illegal MS

44.2.1.1.2.1 Conformance requirements

- 1) If the network rejects a GPRS attach procedure from the Mobile Station with the cause 'Illegal MS', the Mobile Station shall consider SIM invalid for GPRS services until power is switched off or SIM is removed.
- 2) If the network rejects a GPRS attach procedure from the Mobile Station with the cause 'Illegal MS' the Mobile Station shall delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.2.2 Test purpose

To test the behaviour of the MS if the network rejects the GPRS attach procedure of the MS with the cause 'illegal MS'.

44.2.1.1.2.3 Method of test

Initial conditions

System Simulator:

Three cells (not simultaneously activated), cell A with MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC2/RAC1, cell C in MCC2/MNC1/LAC1/RAC1.

All three cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value 'Illegal MS'. The SS checks that the MS does not perform GPRS attach in the same or another PLMN.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The following messages are sent and shall be received on cell A.
2	SS		The SS is set in MS operation mode C or B (see PICS).
3	MS		The SS is set in network operation mode II or III and activates cell A.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS. Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	SS -> MS	ATTACH REJECT	GMM cause = 'Illegal MS'.
6	SS		The following messages are sent and shall be received on cell B.
7	MS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
8	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	MS		The MS initiates an attach by MMI or by AT command.
10	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
11	SS		The following messages are sent and shall be received on cell C.
12	MS		The SS deactivates cell B and activates cell C. Cell C is preferred by the MS.
13	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	MS		The MS initiates an attach by MMI or by AT command.
15	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
16	MS		If possible (see PICS) switch off is performed. Otherwise the power is removed.
17	MS		The MS is powered up or switched on and initiates an attach (see PICS).
18	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
19	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
20	MS -> SS	ATTACH COMPLETE	
21	MS		The MS is switched off or power is removed (see PICS).
22	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.1.3 GPRS attach / rejected / IMSI invalid / GPRS services not allowed

44.2.1.1.3.1 Conformance requirement

- 1) If the network rejects a GPRS attach procedure from the Mobile Station with the cause 'GPRS services not allowed', the Mobile Station shall consider SIM invalid for GPRS services until power is switched off or SIM is removed.
- 2) If the network rejects a GPRS attach procedure from the Mobile Station with the cause 'GPRS services not allowed' the Mobile Station shall delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.3.2 Test purpose

To test the behaviour of the MS if the network rejects the GPRS attach procedure of the MS with the cause 'GPRS services not allowed' (no valid GPRS-subscription for the IMSI).

44.2.1.1.3.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN) and cell B in MCC2/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

SIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value 'GPRS services not allowed'. The SS checks that the MS does not perform GPRS attach in another PLMN.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 16.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS. Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	SS -> MS	ATTACH REJECT	GMM cause = 'GPRS services not allowed'
6	SS		The following messages are sent and shall be received on cell B.
7	MS		The SS deactivates cell A and activates cell B.
8	MS		Cell B is preferred by the MS.
9	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds). If possible (see PICS) SIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
10	MS		The MS gets the SIM replaced, is powered up or switched on and initiates an attach (see PICS).
11	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
12	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
13	MS -> SS	ATTACH COMPLETE	
14	MS		The MS is switched off or power is removed (see PICS).
15	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
16			The SS deactivates cell B and activates cell A.
17	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 15.

Specific message contents

None.

44.2.1.1.4 GPRS attach / rejected / PLMN not allowed

44.2.1.1.4.1 Conformance requirement

- 1) If the network rejects a GPRS attach procedure from the Mobile Station with the cause 'PLMN not allowed' the Mobile Station shall:
 - 1.1 not perform GPRS attach when switched on in the same routing area or location area.
 - 1.2 not perform GPRS attach when in the same PLMN and when that PLMN is not selected manually.

- 1.3 delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.
- 1.4 store the PLMN in the 'forbidden PLMN' list.
- 2) If the network rejects a GPRS attach procedure from the Mobile Station with the cause 'PLMN not allowed' the Mobile Station shall perform GPRS attach when a new PLMN is entered.
- 3) If the network rejects a GPRS attach procedure from the Mobile Station with the cause 'PLMN not allowed' and if after that the PLMN from which this rejection was received, is manually selected, the Mobile Station shall perform a GPRS attach procedure.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.4.2 Test purpose

To test the behaviour of the MS if the network rejects the GPRS attach procedure of the MS with the cause 'PLMN not allowed'.

44.2.1.1.4.3 Method of test

44.2.1.1.4.3.1 Test procedure 1

Initial conditions

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC1, cell C in MCC1/MNC1/LAC2/RAC1 and cell D in MCC2/MNC1/LAC1/RAC1. All four cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

- Support of GPRS service Yes/No
- MS operation mode C Yes/No
- MS operation mode B Yes/No (only if mode C not supported)
- Switch off on button Yes/No
- Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value 'PLMN not allowed'. The SS checks that the MS does not perform GPRS attach if activated in the same routing area or location area and performs GPRS attach only when a new PLMN is entered.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS MS		The following messages are sent and shall be received on cell A. The MS is set in MS operation mode C or B (see PICS).
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
5	SS -> MS	ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'PLMN not allowed'
6	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
7	SS		The following messages are sent and shall be received on cell B.
8	MS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
9	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
10	SS		The following messages are sent and shall be received on cell C.
11	MS		The SS deactivates cell B and activates cell C. Cell C is preferred by the MS.
12	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	SS		The following messages are sent and shall be received on cell D.
14	MS		The SS deactivates cell C and activates cell D. Cell D is preferred by the MS.
15	MS		The MS initiates an attach automatically, by MMI or by AT command.
16	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
17	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
18	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-2
19	MS		The MS is switched off or power is removed (see PICS).
20	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.1.4.3.2 Test procedure 2

Initial conditions

System Simulator:
One cell operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

- Support of GPRS service Yes/No
- MS operation mode C Yes/No
- MS operation mode B Yes/No (only if mode C not supported)
- Switch off on button Yes/No
- Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value ‘PLMN not allowed’. The subscribers access rights is changed to allow GPRS attach. Then the PLMN from which this rejection was received is manually selected and the SS check that a GPRS attach is performed.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = ‘GPRS attach’ Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS -> MS	ATTACH REJECT	GMM cause = ‘PLMN not allowed’
5	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
6	MS		The current PLMN is selected manually.
7	MS		The MS initiates an attach automatically, by MMI or by AT command.
8	MS -> SS	ATTACH REQUEST	Attach type = ‘GPRS attach’ Mobile identity = IMSI
9	SS -> MS	ATTACH ACCEPT	Attach result = ‘GPRS only attached’ Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	MS -> SS	ATTACH COMPLETE	
11	MS		The MS is switched off or power is removed (see PICS).
12	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, GPRS detach’

Specific message contents

None.

44.2.1.1.5 GPRS attach / rejected / roaming not allowed in this location area

44.2.1.1.5.1 Conformance requirement

- 1) If the network rejects a GPRS attach procedure from the Mobile Station with the cause ‘roaming not allowed in this location area’ the Mobile Station shall:

- 1.1 not perform GPRS attach when in the same location area.
 - 1.2 delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.
 - 1.3 store the LA in the 'forbidden location areas for roaming' list.
 - 1.4 perform GPRS attach when a new location area is entered.
 - 1.5 Periodically search for its HPLMN.
- 2) The mobile station shall reset the list of 'Forbidden location areas for roaming' when switched off or when the SIM is removed.
 - 3) The MS shall be capable of storing at least 6 entries in the list of 'Forbidden location areas for roaming'.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.5.2 Test purpose

Test purpose 1

To test that on receipt of a rejection using the 'roaming not allowed in this location area' cause code, the MS ceases trying to attach on that location area. Successful GPRS attach procedure is possible in other location areas.

Test purpose 2

To test that if the MS is switched off or the SIM is removed the list of 'forbidden location areas for roaming' is cleared.

Test purpose 3

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

Test purpose 4

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

44.2.1.1.5.3 Method of test

44.2.1.1.5.3.1 Test procedure 1

Initial conditions

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC/LAC2/RAC1 and cell C in MCC1/MNC1/LAC1/RAC2.

All three cells are operating in network operation mode III.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value 'Roaming not allowed in this area'. A new attempt for a GPRS attach is not possible. Successful GPRS attach / detach procedures are performed in another location area. A new attempt for a GPRS attach is performed in the 1st location area. This attempt shall not succeed, as the LA is on the forbidden list.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	SS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 19.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS. Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	SS -> MS	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
7	SS		The following messages are sent and shall be received on cell B.
8	SS		The SS Deactivates cell A and activates cell B.
9	MS		Cell B is preferred by the MS.
10	MS -> SS	ATTACH REQUEST	The MS initiates an attach automatically, by MMI or by AT command. Attach type = 'GPRS attach' Mobile identity = IMSI
11	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
12	MS -> SS	ATTACH COMPLETE	
13	MS		The MS initiates a GPRS detach (without power off) by MMI or by AT command .
14	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
15	SS -> MS	DETACH ACCEPT	
16	SS		The following messages are sent and shall be received on cell C.
17	SS		The SS deactivates cell B and activates cell C.
18	MS		Cell C is preferred by the MS. No ATTACH REQUEST sent to SS (SS waits 30 seconds).
19	SS		The SS is set in network operation mode II.
20	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 18.

Specific message contents

None.

44.2.1.1.5.3.2 Test procedure 2

Initial conditions

System Simulator:

One cell operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach updating with the cause value 'Roaming not allowed in this area'. The MS is switched off for 10 seconds and switched on again. The SS check that a GPRS attach is possible on the cell on which the GPRS attach had been rejected.

If SIM removal is possible without switching off: The SS rejects a GPRS attach updating with the cause value 'Roaming not allowed in this area'. The SIM is removed and inserted in the MS. The SS check that a GPRS attach is possible on the cell on which the GPRS attach had been rejected.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS -> MS	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
5	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
6	MS		If possible (see PICS) switch off is performed. Otherwise the power is removed.
7	MS		The MS is powered up or switched on and initiates an attach (see PICS).
8	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
9	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	MS -> SS	ATTACH COMPLETE	
11	MS		The MS is switched off or power is removed (see PICS).
12	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.1.5.3.3 Test procedure 3

Initial conditions

System Simulator:

Six cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC2/RAC1, cell C in MCC1/MNC1/LAC3/RAC1, cell D in MCC1/MNC1/LAC4/RAC1, cell E in MCC1/MNC1/LAC5/RAC1, cell F in MCC1/MNC1/LAC6/RAC1.

All six cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXTI statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value 'Roaming not allowed in this area'. This is done for 6 different location areas. Then the SS checks that the MS does not attempt to perform an attach procedure on the non-allowed location areas.

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

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is set in MS operation mode C or B (see PICS).
4	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
5	SS -> MS	ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'Roaming not allowed in this area'
6	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
7	SS		The following messages are sent and shall be received on cell B.
8	MS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
9	MS		The MS initiates an attach automatically, by MMI or by AT command.
10	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
11	SS -> MS	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
12	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	SS		The following messages are sent and shall be received on cell C.
14	MS		The SS deactivates cell B and activates cell C. Cell C is preferred by the MS.
15	MS		The MS initiates an attach automatically, by MMI or by AT command.
16	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
17	SS -> MS	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
18	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
19	SS		The following messages are sent and shall be received on cell D.
20	MS		The SS deactivates cell C and activates cell D. Cell D is preferred by the MS.
21	MS		The MS initiates an attach automatically, by MMI or by AT command.
22	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
23	SS -> MS	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
24	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
25	SS		The following messages are sent and shall be received on cell E.
26	MS		The SS deactivates cell D and activates cell E. Cell E is preferred by the MS.
27	MS		The MS initiates an attach automatically, by MMI or by AT command.
28	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI

29	SS -> MS	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
30	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
31	SS		The following messages are sent and shall be received on cell F.
32	MS		The SS deactivates cell E and activates cell F. Cell F is preferred by the MS.
33	MS		The MS initiates an attach automatically, by MMI or by AT command.
34	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
35	SS -> MS	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
36	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
37	SS		The following messages are sent and shall be received on cell E.
38	SS		The SS deactivates cell F and activates cell E. Cell E is preferred by the MS.
39	MS		The MS initiates an attach automatically, by MMI or by AT command.
40	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
41	SS		The following messages are sent and shall be received on cell C.
42	SS		The SS deactivates cell E and activates cell C. Cell C is preferred by the MS.
43	MS		The MS initiates an attach automatically, by MMI or by AT command.
44	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
45	SS		The following messages are sent and shall be received on cell A.
46	SS		The SS deactivates cell C and activates cell A. Cell A will be preferred by the MS.
47	MS		The MS initiates an attach automatically, by MMI or by AT command.
48	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).

Specific message contents

None.

44.2.1.1.5.3.4 Test procedure 4

Initial conditions

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (not HPLMN) and cell B in MCC1/MNC1/LAC1/RAC1 (HPLMN). Both cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)
 Switch off on button Yes/No
 Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value ‘Roaming not allowed in this area. Two cells are then available. The cell with the weakest level belongs to the HPLMN. It is checked that the MS returns to its HPLMN.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = ‘GPRS attach’ Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5	SS -> MS	ATTACH REJECT	GMM cause = ‘Roaming not allowed in this area’
6	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
	SS		The following messages are sent and shall be received on cell B.
7	SS		Activate cell B with a lower signal strength than cell A.
8	MS		The RF level of cell A is lowered until cell B is preferred by the MS.
9	MS		The MS initiates an attach automatically, by MMI or by AT command.
10	MS -> SS	ATTACH REQUEST	Attach type = ‘GPRS attach’ Mobile identity = IMSI
11	SS -> MS	ATTACH ACCEPT	Attach result = ‘GPRS only attached’ Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12	MS -> SS	ATTACH COMPLETE	
13	MS		The MS is switched off or power is removed (see PICS).
14	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, GPRS detach’

Specific message contents

None.

44.2.1.1.6 GPRS attach / abnormal cases / access barred due to access class control

44.2.1.1.6.1 Conformance requirement

- 1) The MS shall not perform GPRS attach procedure, but stays in the current serving cell and applies normal cell reselection process.
- 2) The Mobile Station shall perform the GPRS attach procedure when:
 - 2.1 Access is granted.
 - 2.2 Cell is changed.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.6.2 Test purpose

Test purpose 1

To test the behaviour of the MS in case of access class control (access is granted).

Test purpose 2

To test the behaviour of the MS in case of access class control (cell is changed).

44.2.1.1.6.3 Method of test

44.2.1.1.6.3.1 Test procedure 1

Initial conditions

A random access class x(0-15) is selected. The SIM is programmed with this access class x. Communication with mobile stations using access class x is initially indicated to be barred.

System Simulator:

One cell operating in network operation mode III.

Access class x barred.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A GPRS attach procedure is not performed.

The SS indicates that access class x is not barred. A GPRS attach procedure is performed.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The SIM is programmed with access class x.
2	MS		The MS is set in MS operation mode C or B (see PICS). If MS operation mode C not supported, goto step 12.
3	MS		The MS is powered up or switched on and attempts to initiate an attach (see PICS).
4	MS		No ATTACH REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
5	SS		The access class x is not barred anymore.
6	MS		The MS automatically initiates a GPRS attach.
7	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
8	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	MS -> SS	ATTACH COMPLETE	
10	MS		The MS is switched off or power is removed (see PICS).
11	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
12	SS		The SS is set in network operation mode II.
13	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 2 to step 11.

Specific message contents

None.

44.2.1.1.6.3.2 Test procedure 2

Initial conditions

A random access class x(0-15) is selected. The SIM is programmed with this access class x. Communication with mobile stations using access class x is indicated to be barred on cell A.

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 has access class x barred, cell B in MCC1/MNC1/LAC1/RAC1 has access class x not barred.

Both cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-2 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode B not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A GPRS attach procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A GPRS attach procedure is performed.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS SS		The SIM is programmed with access class x. The following messages are sent and shall be received on cell A.
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is set in MS operation mode C or B (see PICS).
4	MS		The MS is powered up or switched on and attempts to initiate an attach (see PICS).
5	MS		No ATTACH REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
6	SS		The following messages are sent and shall be received on cell B.
7	MS		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.
8	MS -> SS	ATTACH REQUEST	The MS automatically initiates an attach. Attach type = 'GPRS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature
9	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
10	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-1
11	MS		The MS is switched off or power is removed (see PICS).
12	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.1.7 GPRS attach / abnormal cases / change of cell into new routing area

44.2.1.1.7.1 Conformance requirement

When a change of cell into a new routing area is performed before ATTACH ACCEPT message is received by the MS, the MS shall abort the GPRS attach procedure and re-initiate it immediately.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.7.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.1.1.7.3 Method of test**Initial conditions**

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 and cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a GPRS attach procedure. The ATTACH ACCEPT message is delayed from the SS. The MS performs a cell reselection to a cell in a new routing area. The MS shall re-initiate a GPRS attach procedure in the new routing area.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	SS		No response to the ATTACH REQUEST message is given by the SS.
			The following messages are sent and shall be received on cell B.
6	SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
7	MS		The MS automatically re-initiates the attach in the new cell.
8	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	SS -> MS	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'GPRS only attached' Routing area identity = RAI-4
10	MS		The MS is switched off or power is removed (see PICS).
11	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.1.8 GPRS attach / abnormal cases / power off

44.2.1.1.8.1 Conformance requirement

When power is switched off before ATTACH ACCEPT message is received by the MS, the MS shall abort the GPRS attach procedure and perform a GPRS detach procedure.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.8.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.1.1.8.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode III.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

- Support of GPRS service Yes/No
- MS operation mode C Yes/No
- MS operation mode B Yes/No
- Switch off on button Yes/No
- Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS is switched off after initiating an attach procedure. A GPRS detach is automatically performed by the MS before power is switched off.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 7.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS		No response to the ATTACH REQUEST message is given by the SS.
5	MS		The MS is powered off and initiates a GPRS detach (with power off) by
6	MS -> SS	DETACH REQUEST	Detach type = 'power switched off, GPRS detach'
7	SS		The SS is set in network operation mode II.
8	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 2 to step 6.

Specific message contents

None.

44.2.1.1.9 GPRS attach / abnormal cases / GPRS detach procedure collision

44.2.1.1.9.1 Conformance requirement

- 1) When a DETACH REQUEST message is received by the MS (any cause except re-attach) while waiting for an ATTACH ACCEPT message, the MS shall terminate the GPRS attach procedure and continue with the GPRS detach procedure.
- 2) When a DETACH REQUEST message is received by the MS (cause re-attach) while waiting for an ATTACH ACCEPT message, the MS shall ignore the GPRS detach procedure and continue with the GPRS attach procedure.

Reference(s):

GSM 04.08 section 4.7.3.1

44.2.1.1.9.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.1.1.9.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXTI statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a GPRS attach procedure. The SS does not answer the GPRS attach procedure, but initiates a GPRS detach procedure (any cause except re-attach). The MS shall terminate the GPRS attach procedure and continue with the GPRS detach procedure.

The MS initiates a GPRS attach procedure. The SS does not answer the GPRS attach procedure, but initiates a GPRS detach procedure (cause re-attach). The MS shall ignore the GPRS detach procedure and continue with the GPRS attach.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS		The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	SS -> MS	DETACH REQUEST	Detach type = 're-attach not required'
6	MS -> SS	DETACH ACCEPT	
7	MS		The MS initiates the attach procedure by MMI or AT command.
8	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	SS		The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
10	SS-> MS	DETACH REQUEST	Detach type = 're-attach required'
11	MS		The MS ignores the DETACH REQUEST message and continue with the attach procedure.
12	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	MS -> SS	ATTACH COMPLETE	
14	MS		The MS is switched off or power is removed (see PICS).
15	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.2 Combined GPRS attach

The combined GPRS attach procedure is a GMM procedure used by GPRS MSs of MS operation mode B to IMSI attach for GPRS or non-GPRS services. In order to use the combined GPRS attach procedure, the network must be in network operation mode I.

44.2.1.2.1 Combined GPRS attach / GPRS and non-GPRS attach accepted

44.2.1.2.1.1 Conformance requirement

- 1) If the network accepts the combined GPRS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the MS shall acknowledge the P-TMSI and continue communication with the P-TMSI.
- 2) If the network accepts the combined GPRS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the MS shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 3) If the network accepts the combined GPRS attach procedure (signalled by a P-TMSI) from the MS without reallocation of the previously used P-TMSI, the MS shall continue communication with the previously used P-TMSI.
- 4) If the network accepts the combined GPRS attach procedure and determines that IMSI shall be used in CS operations, the MS shall continue communication with the IMSI for CS operations.
- 5) If the network accepts the combined GPRS attach procedure and determines that a TMSI shall be used in CS operations, the MS shall continue communication with the TMSI for CS operations.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.1.2 Test purpose

To test the behaviour of the MS if the network accepts the GPRS attach procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is allocated
- 2) P-TMSI / P-TMSI signature is reallocated
- 3) Old P-TMSI / P-TMSI signature is not changed
- 4) Mobile terminating CS call is allowed with IMSI
- 5) Mobile terminating CS call is not allowed with TMSI

44.2.1.2.1.3 Method of test

Initial conditions

System Simulator:
One cell operating in network operation mode I.

Mobile Station:
The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

- 1) The MS sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The MS acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication MS - SS is performed by the new P-TMSI. For CS calls, the IMSI is used.
- 2) The MS is CS paged in order to verify that the IMSI is used for CS calls.
- 3) The MS is GPRS paged in order to verify that the new P-TMSI is used for GPRS services.
- 4) The MS sends an ATTACH REQUEST message with identity P-TMSI. The SS allocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI and a new TMSI. The MS acknowledge the P-TMSI and the TMSI by sending ATTACH COMPLETE message. Further communication MS - SS is performed by the new P-TMSI. For CS calls, the new TMSI is used. The MS is CS paged in order to verify that the new TMSI is used for CS services.
- 5) The MS is GPRS paged in order to verify that the new P-TMSI is used for GPRS services. The MS will not answer signalling addressed to the old P-TMSI.
- 6) The MS sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication MS - SS is performed by the previously used P-TMSI.
- 7) The MS is GPRS paged in order to verify that the previously used P-TMSI is used for GPRS services.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = IMSI Paging order is for RR-connection.
7	MS -> SS	CHANNEL REQUEST	
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	PAGING RESPONSE	Mobile identity = IMSI
10	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
11	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment. Comment: A TBF will be established on lower layers.
12	MS->SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. Comment: The TBF will be released on lower layers.
13	MS		The MS is switched off or power is removed (see PICS).
14	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'
15	MS		The MS is powered up or switched on and initiates an attach (see PICS).
16	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
17	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Routing area identity = RAI-1 Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
18	MS -> SS	ATTACH COMPLETE	
19	SS ->MS	GMM INFORMATION	Message sent with P-TMSI-2
19b	MS -> SS	GMM STATUS	Message sent in case the MS does not support reception of GMM information message Cause #97
20	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = TMSI-1 Paging order is for RR-connection.
21	MS -> SS	CHANNEL REQUEST	
22	SS -> MS	IMMEDIATE ASSIGNMENT	
23	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
24	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
25	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.

26	MS->SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
27	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1
28	MS		Paging order is for TBF establishment.
29	MS		No response from the MS to the request. This is checked for 10 seconds.
30	MS -> SS	DETACH REQUEST	The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'
31	MS		The MS is powered up or switched on and initiates an attach (see PICS).
32	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
33	SS -> MS	ATTACH ACCEPT	TMSI status = valid TMSI available No new mobile identity assigned. TMSI and P-TMSI not included. Attach result = 'Combined GPRS / IMSI attached' P-TMSI-3 signature Routing area identity = RAI-1
34	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
35	MS->SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
36	MS		The MS is switched off or power is removed (see PICS).
37	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.1.2.2 Combined GPRS attach / GPRS only attach accepted**44.2.1.2.2.1 Conformance requirement**

- 1) If the network accepts the combined GPRS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the MS the Mobile Station shall delete the stored TMSI, LAI and CKSN. The Mobile Station shall consider SIM invalid for non-GPRS services until power is switched off or SIM is removed.
- 2) If the network accepts the combined GPRS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the MS, an MS operation mode B MS may perform an MM IMSI attach procedure.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.2.2 Test Purpose**Test purpose 1**

To test the behaviour of the MS if the network accepts the GPRS attach procedure with indication GPRS only, GMM cause 'IMSI unknown in HLR'.

Test purpose 2

To test the behaviour of the MS if the network accepts the GPRS attach procedure with indication GPRS only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

44.2.1.2.2.3 Method of test

44.2.1.2.2.3.1 Test Procedure 1

Initial conditions

System Simulator:
One cell operating in network operation mode I.

Mobile Station:
The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
MS operation mode B Yes/No
Switch off on button Yes/No
Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication MS - SS is performed by the P-TMSI. CS services are not possible.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature GMM cause = 'IMSI unknown in HLR'
5	MS -> SS	ATTACH COMPLETE	
6	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
7	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
8	MS		The MS is switched off or power is removed (see PICS).
9	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.2.2.3.2 Test Procedure 2

Initial conditions

System Simulator:

One cell operating in network operation mode I.

Mobile Station:

The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Automatic MM IMSI attach procedure for MS operation mode B MS Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS sends an ATTACH REQUEST message. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. This procedure is repeated four times. An MS operation mode B MS may then perform an MM IMSI attach procedure (according to the PICS statement). Further communication MS - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. CS services are not possible as an IMSI attach procedure is not performed.

Maximum duration of test

15 minutes.

Expected sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for MS operation mode B MS' is supported or not, the steps 1-22 or 23-53 apply depending on manufacturer (see PICS).

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B and no automatic MM IMSI attach procedure is indicated (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
5	MS -> SS	ATTACH COMPLETE	
7	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
10	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
12	SS		The SS verifies that the time between the requests are T3311 (+/- 10%)
13	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
14	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)

16	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
17	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
19	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
20	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
21	MS		The MS is switched off or power is removed (see PICS).
22	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'. Stop the sequence.
23	MS		Automatic MM IMSI attach procedure is indicated (see PICS).
24	MS		The MS is powered up or switched on and initiates an attach (see PICS).
25	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
26	SS -> MS	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'GPRS only attached' P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
28	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
29	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
31	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

32	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
33	SS		The SS verifies that the time between the requests are T3311 (+/- 10%)
34	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/ LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
35	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
37	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/ LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
38	SS -> MS	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
39	SS		The SS verifies that the time between the requests are T3311 (+/- 10%)
40	MS		An automatic MM IMSI attach procedure is initiated.
41	MS -> SS	CHANNEL REQUEST	
42	SS -> MS	IMMEDIATE ASSIGNMENT	
43	MS -> SS	LOCATION UPDATING REQ	Location updating type = IMSI attach.
44	SS -> MS	LOCATION UPDATING ACC	The SS allocates a new TMSI.
45	MS -> SS	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
46	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
47	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
48	MS -> SS	CHANNEL REQUEST	
49	SS -> MS	IMMEDIATE ASSIGNMENT	
50	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
51	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
52	MS		The MS is switched off or power is removed (see PICS).
53	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.1.2.3 Combined GPRS attach / GPRS attach while IMSI attach

44.2.1.2.3.1 Applicability

This test is only applicable to mobiles that can first operate in mode C and then switch to mode B.

44.2.1.2.3.2 Conformance requirement

If the GPRS MS is already attached for non-GPRS services by the MM specific attach procedure, but wants to perform an attach for GPRS services, the combined GPRS attach procedure is performed.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.3.3 Test Purpose

To test the behaviour of the MS if GPRS attach performed while IMSI attached.

44.2.1.2.3.4 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode I. ATT flag is set.

Mobile Station:

The MS has a valid TMSI-1, P-TMSI-1, P-TMSI signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS attach for non-GPRS services. The MS does not answer to paging orders for GPRS. The MS attach for GPRS services. Paging orders for GPRS are answered.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C (see PICS) and configured not to perform a GPRS attach.
2	MS		The MS is powered up or switched on. No GPRS attach is performed (see PICS).
3	MS -> SS	CHANNEL REQUEST	
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	LOCATION UPDATING REQ	Location updating type = IMSI attach.
6	SS -> MS	LOCATION UPDATING ACC	The SS allocates a new TMSI.
7	MS -> SS	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
8	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
9	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1
10	MS		Paging order is for TBF establishment. No response from the MS to the request. This is checked for 10 seconds.
11	MS		The MS is triggered to perform a GPRS attach (in combination with IMSI attach).
12	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach while IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
13	SS -> MS	ATTACH ACCEPT	TMSI status = valid TMSI available Attach result = 'Combined GPRS / IMSI attached' No new mobile identity assigned. TMSI and P-TMSI not included P-TMSI-2 signature Routing area identity = RAI-1
14	MS -> SS	ATTACH COMPLETE	
15	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1
16	MS -> SS	UPLINK RLC DATA BLOCK	Paging order is for TBF establishment. LLC PDU implicitly indicating paging response.
17	MS		The MS is switched off or power is removed (see PICS).
18	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.1.2.4 Combined GPRS attach / rejected / IMSI invalid / illegal ME

44.2.1.2.4.1 Conformance requirement

- 1) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'Illegal ME', the Mobile Station shall consider SIM invalid for GPRS and non-GPRS services until power is switched off or SIM is removed.
- 2) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'Illegal ME', the Mobile Station shall delete the stored TMSI, LAI, CSKN, RAI, GPRS-CSKN, P-TMSI and P-TMSI signature.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.4.2 Test purpose

To test the behaviour of the MS if the network rejects the combined GPRS attach procedure of the MS with the cause 'Illegal ME'.

44.2.1.2.4.3 Method of test

Initial conditions

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2, cell C in MCC2/MNC1/LAC1/RAC1.

All three cells are operating in network operation mode I.

Mobile Station:

The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

SIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value 'Illegal ME'. The SS checks that the MS does not perform GPRS attach in the same or another PLMN. CS services are not possible as the SIM is blocked for CS services. GPRS services are not possible as the SIM is blocked for GPRS services.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode B (see PICS).
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS. Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	SS -> MS	ATTACH REJECT	TMSI status = valid TMSI available GMM cause 'Illegal ME'.
6	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
7	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
8	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
9	MS		No response from the MS to the request. This is checked for 10 seconds.
10	SS		The following messages are sent and shall be received on cell B.
11	MS		The SS deactivates cell A and activates cell B.
12	MS		Cell B is preferred by the MS.
13	SS -> MS	PACKET PAGING REQUEST	No ATTACH REQUEST sent to the SS (SS waits 30 seconds). Mobile identity = IMSI Paging order is for RR-connection.
14	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
15	SS		The following messages are sent and shall be received on cell C.
16	MS		The SS deactivates cell B and activates cell C.
17	MS		Cell C is preferred by the MS.
18	SS -> MS	PACKET PAGING REQUEST	No ATTACH REQUEST sent to the SS (SS waits 30 seconds). Mobile identity = IMSI Paging order is for TBF establishment.
19	MS		No response from the MS to the request. This is checked for 10seconds.
20	MS		If possible (see PICS) SIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
21	MS		The MS gets the SIM replaced, is powered up or switched on and initiates an attach (see PICS).
22	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
23	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
24	MS -> SS	ATTACH COMPLETE	
25	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.

26	MS -> SS	CHANNEL REQUEST	
27	SS -> MS	IMMEDIATE ASSIGNMENT	
28	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
29	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30	MS		The MS is switched off or power is removed (see PICS).
31	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.1.2.5 Combined GPRS attach / rejected / GPRS services and non-GPRS services not allowed

44.2.1.2.5.1 Conformance requirement

- 1) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'GPRS services and non-GPRS services not allowed', the Mobile Station shall consider SIM invalid for GPRS and non-GPRS services until power is switched off or SIM is removed.
- 2) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'GPRS services and non-GPRS services not allowed', the Mobile Station shall delete the stored TMSI, LAI, CSKN, RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.5.2 Test purpose

To test the behaviour of the MS if the network rejects the combined GPRS attach procedure of the MS with the cause 'GPRS services and non-GPRS services not allowed'.

44.2.1.2.5.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 and cell B in MCC2/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode I.

Mobile Station:

The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a GPRS attach with the cause value 'GPRS services and non-GPRS services not allowed'. The SS checks that the MS does not perform GPRS attach in the same or another PLMN. CS services are not possible as the SIM is blocked for CS services. GPRS services are not possible as the SIM is blocked for GPRS services.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode B (see PICS).
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
5	SS -> MS	ATTACH REJECT	Attach type = 'Combined GPRS / IMSI attach'
6	MS		Mobile identity = P-TMSI-1
7	SS -> MS	PACKET PAGING REQUEST	P-TMSI-1 signature
8	MS		Routing area identity = RAI-1
9	SS -> MS	PACKET PAGING REQUEST	TMSI status = valid TMSI available
10	MS -> SS		GMM cause 'GPRS services and non-GPRS services not allowed'
11	MS		No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS
12	MS		(SS waits 30 seconds).
13	MS		No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS
14	SS -> MS	PACKET PAGING REQUEST	(SS waits 30 seconds).
15	MS		Mobile identity = IMSI
16	SS -> MS	PACKET PAGING REQUEST	Paging order is for RR-connection.
17	MS		The MS shall not initiate an RR connection.
18	MS		This is checked during 3 seconds.
19	MS		Mobile identity = P-TMSI-1
20	MS -> SS	ATTACH REQUEST	Paging order is for TBF establishment.
21	SS -> MS	ATTACH ACCEPT	No response from the MS to the request.
22	MS -> SS	ATTACH COMPLETE	This is checked for 10 seconds
23	SS -> MS	PACKET PAGING REQUEST	Cell B is preferred by the MS.
24	MS -> SS	CHANNEL REQUEST	No ATTACH REQUEST sent to the SS
25	SS -> MS	IMMEDIATE ASSIGNMENT	(SS waits 30 seconds).
26	MS -> SS	PAGING RESPONSE	No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS
27	SS -> MS	CHANNEL RELEASE	(SS waits 30 seconds).

28	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for TBF establishment. LLC PDU implicitly indicating paging response. The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'
29	MS -> SS	UPLINK RLC DATA BLOCK	
30	MS		
31	MS -> SS	DETACH REQUEST	

Specific message contents

None.

44.2.1.2.6 Combined GPRS attach / rejected / GPRS services not allowed

44.2.1.2.6.1 Conformance requirement

- 1) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'GPRS services not allowed', the Mobile Station shall consider SIM invalid for GPRS services until power is switched off or SIM is removed.
- 2) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'GPRS services not allowed' the Mobile Station shall delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.
- 3) A GPRS class B MS shall perform an MM IMSI attach procedure.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.6.2 Test purpose

To test the behaviour of the MS if the network rejects the GPRS attach procedure of the MS with the cause 'GPRS services not allowed'.

44.2.1.2.6.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 and cell B in MCC2/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode I.

Mobile Station:

The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value 'GPRS services not allowed'. The SS checks that the MS does not perform GPRS attach. GPRS services are not possible. An MS operation mode B MS shall perform an MM IMSI attach.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 TMSI status = valid TMSI available
4	SS -> MS	ATTACH REJECT	GMM cause 'GPRS services not allowed'
5	MS		An automatic MM IMSI attach procedure is initiated.
6	MS -> SS	CHANNEL REQUEST	
7	SS -> MS	IMMEDIATE ASSIGNMENT	
8	MS -> SS	LOCATION UPDATING REQ	Location updating type = IMSI attach.
9	SS -> MS	LOCATION UPDATING ACC	The SS allocates TMSI-2.
10	MS -> SS	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
11	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
12	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-2 Paging order is for RR-connection.
13	MS -> SS	CHANNEL REQUEST	
14	SS -> MS	IMMEDIATE ASSIGNMENT	
15	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-2
16	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
17	SS		The following messages are sent and shall be received on cell B.
18	MS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.

19	MS		A location updating procedure is initiated.
20	MS -> SS	CHANNEL REQUEST	
21	SS -> MS	IMMEDIATE ASSIGNMENT	
22	MS -> SS	LOCATION UPDATING REQ	Location updating type = normal.
23	SS -> MS	LOCATION UPDATING ACC	The SS allocates TMSI-1.
24	MS -> SS	TMSI REALLOCATION COMP	
25	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
26	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
27	MS -> SS	CHANNEL REQUEST	
28	SS -> MS	IMMEDIATE ASSIGNMENT	
29	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
30	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for TBF establishment.
32	MS		No response from the MS to the request. This is checked for 10seconds.
33	MS		If possible (see PICS) switch off is performed. Otherwise the power is removed.
34	MS		The MS is powered up or switched on and initiates an attach (see PICS).
35	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
36	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
37	MS -> SS	ATTACH COMPLETE	
38	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-2 Paging order is for RR-connection.
39	MS -> SS	CHANNEL REQUEST	
40	SS -> MS	IMMEDIATE ASSIGNMENT	
41	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-2
42	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
43	MS		The MS is switched off or power is removed (see PICS).
44	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.1.2.7 Combined GPRS attach / rejected / location area not allowed

44.2.1.2.7.1 Conformance requirement

- 1) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'location area not allowed' the Mobile Station shall:
 - 1.1 not perform combined GPRS attach when in the same location area.
 - 1.2 delete the stored LAI, CKSN, TMSI, RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.

- 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
- 2) If the network rejects a combined GPRS attach procedure from the Mobile Station with the cause 'location area not allowed' the Mobile Station shall:
 - 2.1 perform combined GPRS attach when a new location area is entered.
 - 2.2 delete the list of forbidden LAs when power is switched off.

Reference(s):

GSM 04.08 sections 4.7.3.2

44.2.1.2.7.2 Test purpose

To test the behaviour of the MS if the network rejects the combined GPRS attach procedure with the cause 'Location Area not allowed'.

To test that the MS deletes the list of forbidden LAs when power is switched off.

44.2.1.2.7.3 Method of test**Initial conditions**

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2, cell C in MCC1/MNC1/LAC2/RAC1.

All cells are operating in network operation mode I.

Mobile Station:

The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined GPRS attach with the cause value 'Location Area not allowed'. The SS checks that the MS does not perform combined GPRS attach while in the location area, performs GPRS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

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

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is set in MS operation mode B (see PICS).
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	SS -> MS	ATTACH REJECT	TMSI status = valid TMSI available GMM cause 'Location Area not allowed'
6	MS		No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
7	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI
8	MS		Paging order is for RR-connection. The MS shall not initiate an RR connection. This is checked during 3 seconds.
9	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1
10	MS -> SS		Paging order is for TBF establishment. No response from the MS to the request. This is checked for 10 seconds
			The following messages are sent and shall be received on cell B.
11	SS		The SS deactivates cell A and activates cell B.
12	MS		Cell B is preferred by the MS.
13	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
14	MS		No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
15	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI
16	MS		Paging order is for RR-connection. The MS shall not initiate an RR connection. This is checked during 3 seconds.
17	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1
18	MS		Paging order is for TBF establishment. No response from the MS to the request. This is checked for 10seconds.
19	MS		The MS initiates an attach by MMI or AT command.
20			No attach is performed by the MS. This is checked for 10 seconds.
			The following messages are sent and shall be received on cell C.
21	SS		The SS deactivates cell B and activates cell C.
22	MS		Cell C is preferred by the MS.
23	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
24	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-3
25	MS -> SS	ATTACH COMPLETE	
26	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.

27	MS -> SS	CHANNEL REQUEST	
28	SS -> MS	IMMEDIATE ASSIGNMENT	
29	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
30	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for TBF establishment.
32	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
33	MS		The MS is switched off or power is removed (see PICS).
34	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'
35	MS		The following messages are sent and shall be received on cell B. The SS deactivates cell C and activates cell B. Cell B is preferred by the MS.
36	MS		The MS is powered up or switched on and initiates an attach (see PICS).
37	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
38	SS -> MS	ATTACH ACCEPT	TMSI status = valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
39	MS -> SS	ATTACH COMPLETE	
40	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-2 Paging order is for RR-connection.
41	MS -> SS	CHANNEL REQUEST	
42	SS -> MS	IMMEDIATE ASSIGNMENT	
43	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-2
44	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
45	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for TBF establishment.
46	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
47	MS		The MS is switched off or power is removed (see PICS).
48	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.1.2.8 Combined GPRS attach / abnormal cases / attempt counter check / miscellaneous reject causes

44.2.1.2.8.1 Conformance requirement

- 1) When a combined GPRS attach procedure is rejected with the attempt counter less than five, the Mobile Station shall repeat the combined GPRS attach procedure after T3311 timeout.

- 2) When a combined GPRS attach procedure is rejected with the attempt counter five, the Mobile Station shall delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, GPRS CKSN and RAI and start T3302.
- 3) When the T3302 expire, a new combined GPRS attach procedure shall be initiated.

GMM cause codes that can be selected are:

- 'IMSI unknown in HLR'
- 'IMEI not accepted'
- 'Illegal ME'
- 'MS identity cannot be derived by the network'
- 'Network failure'
- 'Congestion'
- 'retry upon entry into a new cell'
- 'Semantically incorrect message'
- 'Invalid mandatory information'
- 'Message type non-existent or not implemented'
- 'Message type not compatible with the protocol state'
- 'Information element non-existent or not implemented'
- 'Conditional IE error'
- 'Message not compatible with the protocol state'
- 'Protocol error, unspecified'

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.8.2 Test purpose

To test the behaviour of the MS with respect to the attempt counter.

44.2.1.2.8.3 Method of test

Initial conditions

System Simulator:
One cell operating in network operation mode I.

Mobile Station:
The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
MS operation mode B Yes/No
Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a combined GPRS attach procedure (attempt counter zero). The SS rejects the attach with a random cause code.

The MS initiates a new combined GPRS attach procedure (attempt counter one) after T3311 expires. The SS rejects the attach with a random cause code.

The MS initiates a new combined GPRS attach procedure (attempt counter two) after T3311 expires. The SS rejects the attach with a random cause code.

The MS initiates a new combined GPRS attach procedure (attempt counter three) after T3311 expires. The SS rejects the attach with a random cause code.

The MS initiates a new combined GPRS attach procedure (attempt counter four) after T3311 expires. The SS rejects the attach with a random cause code.

The MS initiates a new combined GPRS attach procedure with attempt counter five (after T3311 expires). The SS rejects the attach with a random cause code. The MS shall not perform a new successful attach procedure after 15 seconds.

The MS initiates a combined GPRS attach procedure with attempt counter zero after T3302 expires without P-TMSI, P-TMSI signature, GPRS CKSN and RAI.

T3302; set to 10 minutes.

T3311; 15 seconds.

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	SS -> MS	ATTACH REJECT	Random GMM cause
5	SS		The SS verifies that the time between the attach requests is T3311 (+/- 10%)
6	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
7	SS -> MS	ATTACH REJECT	Random GMM cause
8	SS		The SS verifies that the time between the attach requests is T3311 (+/- 10%)
9	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
10	SS -> MS	ATTACH REJECT	Random GMM cause
11	SS		The SS verifies that the time between the attach requests is T3311 (+/- 10%)
12	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	SS -> MS	ATTACH REJECT	Random GMM cause
14	SS		The SS verifies that the time between the attach requests is T3311 (+/- 10%)
15	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
16	SS -> MS	ATTACH REJECT	Random GMM cause
17	MS		No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
18	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI Paging order is for RR-connection.
19	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
20	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for TBF establishment.
21	MS		No response from the MS to the request. This is checked for 10seconds.
22	SS		The SS verifies that the MS does not attempt to attach for T3302 (+/- 10%).
23	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available

24	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS / IMSI attached' Mobile identity P-TMSI-1 P-TMSI signature Mobile identity = TMSI-1 Routing area identity = RAI-1
25	MS -> SS	ATTACH COMPLETE	
26	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
27	MS -> SS	CHANNEL REQUEST	
28	SS -> MS	IMMEDIATE ASSIGNMENT	
29	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
30	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for TBF establishment.
32	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
33	MS		The MS is switched off or power is removed (see PICS).
34	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.1.2.9 Combined GPRS attach / abnormal cases / GPRS detach procedure collision

44.2.1.2.9.1 Conformance requirement

- 1) When a DETACH REQUEST message is received by the MS (any cause except re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the MS shall terminate the combined GPRS attach procedure and continue with the combined GPRS detach procedure.
- 2) When a DETACH REQUEST message is received by the MS (cause re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the MS shall ignore the combined GPRS detach procedure and continue with the combined GPRS attach procedure.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.1.2.9.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.1.2.9.3 Method of test

Initial conditions

System Simulator:
One cell operating in network operation mode I.

Mobile Station:
The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a combined GPRS attach procedure. The SS does not answer the combined GPRS attach procedure, but initiates a combined GPRS detach procedure (any cause except re-attach). The MS shall terminate the combined GPRS attach procedure and continue with the combined GPRS detach procedure. CS services are not possible as an IMSI attach procedure is not performed.

The MS initiates a combined GPRS attach procedure. The SS does not answer the combined GPRS attach procedure, but initiates a combined GPRS detach procedure (cause re-attach). The MS shall ignore the combined GPRS detach procedure and continue with the combined GPRS attach. CS services are also possible.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	SS		The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	SS -> MS	DETACH REQUEST	Detach type = 're-attach not required'
6	MS -> SS	DETACH ACCEPT	
7	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
8	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
9	MS		The MS is attached by MMI or AT command
10	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
11	SS		The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
12	SS -> MS	DETACH REQUEST	Detach type = 're-attach required'
13	MS		The MS ignores the DETACH REQUEST message and continue with the attach procedure
14	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-1 TMSI status = valid TMSI available
15	MS -> SS	ATTACH COMPLETE	
16	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-2 Paging order is for RR-connection.
17	MS -> SS	CHANNEL REQUEST	
18	SS -> MS	IMMEDIATE ASSIGNMENT	
19	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-2
20	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
21	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-2 Paging order is for TBF establishment.
22	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
23	MS		The MS is switched off or power is removed (see PICS).
24	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.2 GPRS detach procedure

This procedure is used to indicate for the network that the IMSI is not available for traffic. The GMM context is removed.

44.2.2.1 MS initiated GPRS detach procedure

44.2.2.1.1 GPRS detach / power off / accepted

44.2.2.1.1.1 Conformance requirement

The MS detaches the IMSI for GPRS services if the MS is switched off.

Reference(s):GSM 04.08 section 4.7.4.1

44.2.2.1.1.2 Test purpose

To test the behaviour of the MS for the detach procedure.

44.2.2.1.1.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a GPRS attach procedure.

The MS sends a DETACH REQUEST message to the SS.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 8.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
4	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
5	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-1
6	MS		The MS is switched off (see PICS).
7	MS -> SS	DETACH REQUEST	Detach type = 'power switched off, GPRS detach'
8	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 2 to step 7.

Specific message contents

None.

44.2.2.1.2 GPRS detach / accepted

44.2.2.1.2.1 Conformance requirement

The MS detaches the IMSI for GPRS services if the MS is ordered to do so with MMI or AT commands.

Reference(s):GSM 04.08 section 4.7.4.1

44.2.2.1.2.2 Test purpose

To test the behaviour of the MS for the detach procedure.

44.2.2.1.2.3 Method of test

Initial conditions

System Simulator:
One cell operating in network operation mode III.

Mobile Station:
The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

- Support of GPRS service Yes/No
- MS operation mode C Yes/No
- MS operation mode B Yes/No
- Switch off on button Yes/No
- Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a GPRS attach procedure and activates a PDP context.

The MS sends a DETACH REQUEST message to the SS.

The SS signal to the MS, but no response is received, as the signalling link is disconnected.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 11.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
4	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'GPRS only attached' Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	MS		The MS initiates a GPRS detach (without power off) by MMI or AT command.
7	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
8	SS -> MS	DETACH ACCEPT	
9	SS -> MS	PACKET PAGING REQUEST Or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).
10	MS		No response from the MS to the request. This is checked for 10 seconds.
11	SS		The SS is set in network operation mode II.
12	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 2 to step 10.

Specific message contents

None.

44.2.2.1.3 GPRS detach / abnormal cases / attempt counter check / procedure timeout

44.2.2.1.3.1 Conformance requirement

- 1) When a T3321 timeout has occurred during a GPRS detach procedure with the attempt counter less than five, the Mobile Station shall repeat the GPRS detach procedure.
- 2) When a T3321 timeout has occurred during a GPRS detach procedure with the attempt counter five, the Mobile Station shall not repeat the procedure.

Reference(s):

GSM 04.08 section 4.7.4.1

44.2.2.1.3.2 Test purpose

To test the behaviour of the MS with respect to the attempt counter.

44.2.2.1.3.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode III.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a GPRS attach procedure.

The MS initiates a GPRS detach procedure (attempt counter zero). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The MS initiates a new GPRS detach procedure (attempt counter one) after T3311 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The MS initiates a new GPRS detach procedure (attempt counter two) after T3311 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The MS initiates a new GPRS detach procedure (attempt counter three) after T3311 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The MS initiates a new GPRS detach procedure (attempt counter four) after T3311 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The MS initiates a new GPRS detach procedure with attempt counter five (after T3311 expires). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

At T3321 timeout in the MS, the MS then deletes the logical link.

The MS performs a new GPRS attach procedure.

T3321; 15 seconds.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 22.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS -> MS	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'GPRS only attached' Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	MS		The MS initiates a GPRS detach (without power off) by MMI or AT command.
7	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
8	SS		No response is given from the SS.
9	SS		The SS verifies that the time between the detach requests is 15 seconds (+/- 10%)
10	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
11	SS		No response is given from the SS.
12	SS		The SS verifies that the time between the detach requests is 15 seconds (+/- 10%)
13	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
14	SS		No response is given from the SS.
15	SS		The SS verifies that the time between the detach requests is 15 seconds (+/- 10%)
16	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
17	SS		No response is given from the SS.
18	SS		The SS verifies that the time between the detach requests is 15 seconds (+/- 10%)
19	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
20	SS		No response is given from the SS.
	SS		The SS verifies that the time between the detach requests is 15 seconds (+/- 10%)
21	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
22	SS		No response is given from the SS.
23	SS		The SS is set in network operation mode II.
24	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 2 to step 22.

Specific message contents

None.

44.2.2.1.4 GPRS detach / abnormal cases / GMM common procedure collision**44.2.2.1.4.1 Conformance requirement**

When any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the MS while waiting for a DETACH ACCEPT message with detach cause different from "power off", the MS shall ignore the GMM common message.

Reference(s):

GSM 04.08 section 4.7.4.1

44.2.2.1.4.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.2.1.4.3 Method of test**Initial conditions**

System Simulator:

One cell operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXTI statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a GPRS attach.

The MS initiates a GPRS detach. The SS initiates a P-TMSI REALLOCATION COMMAND message, a GMM STATUS message and a GMM INFORMATION message. The MS shall ignore the GMM common messages and continue with the GPRS detach procedure.

The SS signal to the MS, but no response is received, as the signalling link is disconnected.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach'
4	SS -> MS	ATTACH ACCEPT	Mobile identity = IMSI Attach result = 'GPRS only attached'
5	MS -> SS	ATTACH COMPLETE	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6	MS		The MS initiates a detach (without power off) by MMI or AT command.
7	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, GPRS detach'
8	SS		The SS sends a P-TMSI REALLOCATION COMMAND message
9	SS -> MS	P-TMSI REALLOCATION COMMAND	
10	MS		The MS ignores the message.
11	SS		The SS sends a GMM STATUS message
12	SS -> MS	GMM STATUS	
13	MS		The MS ignores the message.
14	SS		The SS sends a GMM INFORMATION message
15	SS -> MS	GMM INFORMATION	
16	MS		The MS ignores the message.
17	SS -> MS	DETACH ACCEPT	The SS responds to the DETACH REQUEST
18	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
19	MS		No response from the MS to the request. This is checked for 10 seconds.

Specific message contents

None.

44.2.2.1.5 GPRS detach / power off / accepted

44.2.2.1.5.1 Conformance requirement

The MS detach the IMSI for GPRS and non-GPRS services.

Reference(s):

GSM 04.08 section 4.7.4.1

44.2.2.1.5.2 Test purpose

To test the behaviour of the MS for the detach procedure.

44.2.2.1.5.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
 MS operation mode B Yes/No
 Switch off on button Yes/No
 Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a combined GPRS attach procedure (for GPRS and non-GPRS services).
 The MS sends a DETACH REQUEST message to the SS. The MS then deletes the logical link.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	MS		The MS is switched off (see PICS).
7	MS -> SS	DETACH REQUEST	Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.2.1.6 GPRS detach / accepted / GPRS/IMSI detach

44.2.2.1.6.1 Conformance requirement

The MS detach the IMSI for GPRS and non-GPRS services.

Reference(s):

GSM 04.08 section 4.7.4.1

44.2.2.1.6.2 Test purpose

To test the behaviour of the MS for the detach procedure.

44.2.2.1.6.3 Method of test

Initial conditions

System Simulator:
 One cell operating in network operation mode I.

Mobile Station:
The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
MS operation mode B Yes/No
Switch off on button Yes/No
Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a combined GPRS attach procedure (for GPRS and non-GPRS services).

The MS sends a DETACH REQUEST message to the SS. When the MS receives the DETACH ACCEPT, the MS then deletes the logical link.

The SS signal to the MS, but no response is received, as the signalling link is disconnected.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	MS		The MS initiates a detach (without power off) by MMI or AT command.
7	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, combined GPRS / IMSI detach'
8	SS -> MS	DETACH ACCEPT	
9	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
10	MS		No response from the MS to the request. This is checked for 10 seconds.
11	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR connection.
12	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.

Specific message contents

None.

44.2.2.1.7 GPRS detach / accepted / IMSI detach

44.2.2.1.7.1 Conformance requirement

The MS shall detach for CS services.

Reference(s):

GSM 04.08 section 4.7.4.1

44.2.2.1.7.2 Test purpose

To test the behaviour of the MS for the detach procedure.

44.2.2.1.7.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXTI statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

MMI controlled attach / detach procedures for non-GPRS services Yes/No

Test procedure

The MS performs a combined GPRS attach procedure (for GPRS and non-GPRS services).

The MS performs an GPRS detach (for non-GPRS services).

CS services are not possible.

The MS attach for non-GPRS services by a routing area update procedure and CS services are again possible.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	MS		The MS initiates a detach for non-GPRS services (without power off) (see PICS).
7	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, IMSI detach'
8	MS -> SS	DETACH ACCEPT	
9	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
10	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
11	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR connection.
12	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
13	MS		The MS initiates an attach for non-GPRS services by a RA update procedure (see PICS).
14	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RALA updating' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
15	SS -> MS	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RALA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
16	MS -> SS	ROUTING AREA UPDATE COMPLETE	
17	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR connection.
18	MS -> SS	CHANNEL REQUEST	
19	SS -> MS	IMMEDIATE ASSIGNMENT	
20	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
21	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
22	MS		The MS is switched off or power is removed (see PICS).
23	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.2.1.8 GPRS detach / abnormal cases / change of cell into new routing area

44.2.2.1.8.1 Conformance requirement

When a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the MS, the MS shall abort the GPRS detach procedure and re-initiate it after the routing area update procedure.

Reference(s):

GSM 04.08 section 4.7.4.1

44.2.2.1.8.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.2.1.8.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 and cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a combined GPRS attach procedure (for GPRS and non-GPRS services).

The MS initiates a GPRS detach procedure. The DETACH ACCEPT message is delayed from the SS. The MS performs a cell update into a new routing area.

The Ms shall re-initiate a GPRS detach procedure when the routing area update procedure is finished.

The MS deletes the logical link.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is set in MS operation mode B (see PICS).
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
5	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
6	MS -> SS	ATTACH COMPLETE	
7	MS		The MS initiates a GPRS detach (without power off) by MMI or AT command.
8	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, combined GPRS / IMSI detach'
9	SS		No response to the ATTACH REQUEST message is given by the SS
	SS		The following messages are sent and shall be received on cell B.
10	SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
11	MS		The MS performs a RA update in the new cell.
12	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RALA updating' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	SS -> MS	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RALA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
14	MS -> SS	ROUTING AREA UPDATE COMPLETE	
15	MS -> SS	DETACH REQUEST	The detach is automatically re-attempted. Detach type = 'normal detach, combined GPRS / IMSI detach'
16	MS -> SS	DETACH ACCEPT	

Specific message contents

None.

44.2.2.1.9 GPRS detach / abnormal cases / GPRS detach procedure collision

44.2.2.1.9.1 Conformance requirement

When a DETACH REQUEST is received by the MS while waiting for a DETACH ACCEPT message, the MS shall answer the network initiated GPRS detach procedure.

Reference(s):

GSM 04.08 section 4.7.4.1

44.2.2.1.9.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.2.1.9.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a combined GPRS attach procedure (for GPRS and non-GPRS services).

The MS initiates a GPRS detach. The SS does not answer the detach procedure, but initiates a detach procedure (cause re-attach not required). The MS shall continue with the network initiated detach procedure.

The MS deletes the logical link.

GPRS and CS services are not possible.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	MS		The MS initiates a GPRS detach (without power off) by MMI or AT command.
7	MS -> SS	DETACH REQUEST	Detach type = 'normal detach, combined GPRS / IMSI detach'
8	SS -> MS	DETACH REQUEST	Detach type = 're-attach not required'
9	MS -> SS	DETACH ACCEPT	The MS answers the network initiated detach.
10	SS -> MS	DETACH ACCEPT	The SS answers the MS initiated detach.
11	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
12	MS		No response from the MS to the request. This is checked for 10 seconds.
13	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = TMSI-1 Paging order is for RR connection.
14	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.

Specific message contents

None.

44.2.2.2 Network initiated GPRS detach procedure

44.2.2.2.1 GPRS detach / re-attach not required / accepted

44.2.2.2.1.1 Conformance requirement

The MS detach the IMSI for GPRS services.

Reference(s):

GSM 04.08 section 4.7.4.2

44.2.2.2.1.2 Test purpose

To test the behaviour of the MS for the detach procedure.

44.2.2.2.1.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a GPRS attach procedure.

The SS sends a DETACH REQUEST message to the MS. The MS then deletes the logical link.

The SS signal to the MS, but no response is received, as the signalling link is disconnected.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The SS is set in network operation mode II or III.
2	MS		The MS is set in MS operation mode B or C (see PICS).
3	MS		The MS is powered up or switched on and initiates an attach (see PICS).
4	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach'
5	SS -> MS	ATTACH ACCEPT	Mobile identity = IMSI Attach result = 'GPRS only attached'
6	MS -> SS	ATTACH COMPLETE	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
7	MS		The MS initiates a GPRS detach (without power off) by MMI or AT command.
8	SS -> MS	DETACH REQUEST	Detach type = 're-attach not required'
9	MS -> SS	DETACH ACCEPT	
10	SS -> MS	PACKET PAGING REQUEST Or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).
11	MS		No response from the MS to the request. This is checked for 10 seconds.

Specific message contents

None.

44.2.2.2.2 GPRS detach / rejected / IMSI invalid / GPRS services not allowed

44.2.2.2.2.1 Conformance requirement

- 1) If the network performs a GPRS detach procedure with the cause 'GPRS services not allowed', the Mobile Station shall consider SIM invalid for GPRS services until power is switched off or SIM is removed.
- 2) If the network performs a GPRS detach procedure with the cause 'GPRS services not allowed' the Mobile Station shall delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.

Reference(s):

GSM 04.08 section 4.7.4.2

44.2.2.2.2.2 Test purpose

To test the behaviour of the MS if the network order a GPRS detach procedure with the cause 'GPRS services not allowed' (no valid GPRS-subscription for the IMSI).

44.2.2.2.2.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN) and cell B in MCC2/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

SIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS performs a detach with the cause value 'GPRS services not allowed'. The SS checks that the MS does not perform GPRS attach in another PLMN.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 19.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
5	SS -> MS	ATTACH ACCEPT	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6	MS -> SS	ATTACH COMPLETE	Attach result = 'GPRS only attached'
7	SS -> MS	DETACH REQUEST	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
8	MS -> SS	DETACH ACCEPT	Detach type = 're-attach not required' Cause = 'GPRS services not allowed'
9	SS		The following messages are sent and shall be received on cell B.
10	MS		The SS deactivates cell A and activates cell B.
11	MS		Cell B is preferred by the MS.
12	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds). If possible (see PICS) SIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
13	MS		The MS gets the SIM replaced, is powered up or switched on and initiates an attach (see PICS).
14	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
15	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
16	MS -> SS	ATTACH COMPLETE	
17	MS		The MS is switched off or power is removed (see PICS).
18	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
19			The SS deactivates cell B and activates cell A.
20	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 18.

Specific message contents

None.

44.2.2.2.3 GPRS detach / IMSI detach / accepted

44.2.2.2.3.1 Conformance requirement

The MS detach the IMSI for GPRS services.

Reference(s):

GSM 04.08 section 4.7.4.2

44.2.2.2.3.2 Test purpose

To test the behaviour of the MS for the detach procedure.

44.2.2.2.3.3 Method of test

Initial conditions

System Simulator:
One cell operating in network operation mode I.

Mobile Station:
The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
MS operation mode B Yes/No
Switch off on button Yes/No
Automatic GPRS attach procedure at switch on or power on Yes/No
MMI controlled attach / detach procedures for non-GPRS services Yes/No

Test procedure

The MS performs a combined GPRS attach procedure (for GPRS and non-GPRS services).

The SS sends a DETACH REQUEST message to the MS. The MS then performs an IMSI detach (detach for non-GPRS services).

The SS signal to the MS, but no response is received, as the signalling link is disconnected.

The MS attach for non-GPRS services by a routing area update procedure. Both GPRS and CS services are possible.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	SS		The SS initiates a detach for non-GPRS services.
7	SS -> MS	DETACH REQUEST	Detach type = 'IMSI detach'
8	MS -> SS	DETACH ACCEPT	
9	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
10	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
11	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
12	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
13	MS		The MS initiates an attach for non-GPRS services (see PICS).
14	MS -> SS	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
15	SS -> MS	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updating' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
16	MS -> SS	ROUTING AREA UPDATE COMPLETE	
17	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
18	MS -> SS	CHANNEL REQUEST	
19	SS -> MS	IMMEDIATE ASSIGNMENT	
20	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
21	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
22	MS		The MS is switched off or power is removed (see PICS).
23	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.2.2.4 GPRS detach / re-attach requested / accepted

44.2.2.2.4.1 Conformance requirement

The MS shall deactivate the logical link and re-activate it.

Reference(s):

GSM 04.08 section 4.7.4.2

44.2.2.2.4.2 Test purpose

To test the behaviour of the MS for the detach procedure in case automatic re-attach.

44.2.2.2.4.3 Method of test

Initial conditions

System Simulator:

One cell in operating in network operation mode I.

Mobile Station:

The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS performs a combined GPRS attach procedure (for GPRS and non-GPRS services).

The SS sends a DETACH REQUEST message to the MS with cause re-attach. The MS then detach for GPRS and non-GPRS services. The MS automatically performs a new combined GPRS attach procedure (for GPRS and non-GPRS services) and GPRS and CS services are again possible.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS / IMSI attached' Mobile identity = TMSI-1 Routing area identity = RAI-1 No new P-TMSI and P-TMSI signature assigned
5	MS -> SS	ATTACH COMPLETE	
6	SS		The SS initiates a detach with re-attach.
7	SS -> MS	DETACH REQUEST	Detach type = 're-attach required'
8	MS -> SS	DETACH ACCEPT	
9	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 TMSI status = valid TMSI available
10	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS / IMSI attached' Mobile identity = TMSI-1 Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
11	MS -> SS	ATTACH COMPLETE	
12	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
13	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
14	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
15	MS -> SS	CHANNEL REQUEST	
16	SS -> MS	IMMEDIATE ASSIGNMENT	
17	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
18	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
19	MS		The MS is switched off or power is removed (see PICS).
20	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.2.2.5 GPRS detach / rejected / location area not allowed

44.2.2.2.5.1 Conformance requirement

- 1) If the network performs a GPRS detach procedure with the cause 'location area not allowed' the Mobile Station shall:

- 1.1 not perform combined GPRS attach when in the same location area.

- 1.2 delete the stored LAI, CKSN, TMSI, RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.
 - 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
- 2) If the network performs a GPRS detach procedure with the cause 'location area not allowed' the Mobile Station shall:
- 2.1 perform combined GPRS attach when a new location area is entered.
 - 2.2 delete the list of forbidden LAs when power is switched off.

Reference(s):

GSM 04.08 sections 4.7.4.2

44.2.2.2.5.2 Test purpose

To test the behaviour of the MS if the network orders the GPRS detach procedure with the cause 'Location Area not allowed'.

To test that the MS deletes the list of forbidden LAs when power is switched off.

44.2.2.2.5.3 Method of test**Initial conditions**

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2, cell C in MCC1/MNC1/LAC2/RAC1.

All cells are operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS orders a GPRS detach with the cause value 'Location Area not allowed'. The SS checks that the MS does not perform combined GPRS attach while in the location area, performs GPRS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

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

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is set in MS operation mode B (see PICS).
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
5	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
6	MS -> SS	ATTACH COMPLETE	
7	SS -> MS	DETACH REQUEST	Detach type = 're-attach not required' Cause 'Location Area not allowed'
8	MS -> SS	DETACH COMPLETE	
9	MS		No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS
10	SS -> MS	PACKET PAGING REQUEST	(SS waits 30 seconds). Mobile identity = IMSI
11	MS		Paging order is for RR-connection. The MS shall not initiate an RR connection.
12	SS -> MS	PACKET PAGING REQUEST	This is checked during 3 seconds. Mobile identity = P-TMSI-1
13	MS -> SS		Paging order is for TBF establishment. No response from the MS to the request. This is checked for 10 seconds
14	SS		The following messages are sent and shall be received on cell B.
15	MS		The SS deactivates cell A and activates cell B.
16	MS		Cell B is preferred by the MS.
17	MS		The MS initiates an attach automatically, by MMI or by AT command.
18	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
19	SS -> MS	PACKET PAGING REQUEST	No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds). Mobile identity = IMSI
20	MS		Paging order is for RR-connection. The MS shall not initiate an RR connection.
21	SS -> MS	PACKET PAGING REQUEST	This is checked during 3 seconds. Mobile identity = P-TMSI-1
22			Paging order is for TBF establishment. No response from the MS to the request. This is checked for 10 seconds
23	SS		The following messages are sent and shall be received on cell C.
24	MS		The SS deactivates cell B and activates cell C.
25	MS		Cell C is preferred by the MS.
26	MS -> SS	ATTACH REQUEST	The MS initiates an attach automatically, by MMI or by AT command. Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available

27	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-3
28	MS -> SS	ATTACH COMPLETE	Mobile identity = TMSI-1 Paging order is for RR-connection.
29	SS -> MS	PACKET PAGING REQUEST	
30	MS -> SS	CHANNEL REQUEST	Mobile identity = TMSI-1 After sending of this message, the SS waits for disconnection of the CS signalling link.
31	SS -> MS	IMMEDIATE ASSIGNMENT	
32	MS -> SS	PAGING RESPONSE	
33	SS -> MS	CHANNEL RELEASE	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
34	SS -> MS	PACKET PAGING REQUEST	
35	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
36	MS		The MS is switched off or power is removed (see PICS).
37	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'
38	MS		The following messages are sent and shall be received on cell B. The SS deactivates cell C and activates cell B. Cell B is preferred by the MS. The MS is powered up or switched on and initiates an attach (see PICS).
39	MS		
40	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3 TMSI status = valid TMSI available
41	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
42	MS -> SS	ATTACH COMPLETE	Mobile identity = TMSI-2 Paging order is for RR-connection.
43	SS -> MS	PACKET PAGING REQUEST	
44	MS -> SS	CHANNEL REQUEST	Mobile identity = TMSI-2 After sending of this message, the SS waits for disconnection of the CS signalling link.
45	SS -> MS	IMMEDIATE ASSIGNMENT	
46	MS -> SS	PAGING RESPONSE	
47	SS -> MS	CHANNEL RELEASE	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
48	SS -> MS	PACKET PAGING REQUEST	
49	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
50	MS		The MS is switched off or power is removed (see PICS).
51	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.3 Routing area updating procedure

This procedure is used to update the actual routing area of an MS in the network.

44.2.3.1 Normal routing area updating

The routing area updating procedure is a GMM procedure used by GPRS MSs of MS operation mode B or C that are IMSI attached for GPRS services only.

44.2.3.1.1 Routing area updating / accepted

44.2.3.1.1.1 Conformance requirement

- 1) If the network accepts the routing area updating procedure and reallocates a P-TMSI, the MS shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 2) If the network accepts the routing area updating procedure from the MS without reallocation of the old P-TMSI, the MS shall continue communication with the old P-TMSI.

Reference(s):

GSM 04.08 section 4.7.5.1

44.2.3.1.1.2 Test purpose

To test the behaviour of the MS if the network accepts the routing area updating procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is reallocated
- 2) Old P-TMSI / P-TMSI signature is not changed

44.2.3.1.1.3 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.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

- 1) The MS sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI. The MS acknowledges the new P-TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication MS - SS is performed by the new P-TMSI. The MS will not answer signalling addressed to the old P-TMSI.

- 2) The MS sends a ROUTING AREA UPDATING REQUEST message. The SS accepts the P-TMSI and returns ROUTING AREA UPDATING ACCEPT message without any P-TMSI. Further communication MS - SS is performed by the P-TMSI.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 22.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI
5	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	MS -> SS	ATTACH COMPLETE	
7	SS		The following messages are sent and shall be received on cell B. 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.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
10	MS -> SS	ROUTING AREA UPDATING COMPLETE	
11	SS -> MS	GMM INFORMATION	Message sent with P-TMSI-1
11b	MS -> SS	GMM STATUS	Message sent in case the MS does not support reception of GMM information message Cause #97
12	SS -> MS	PACKET PAGING REQUEST or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-2 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).
13	MS		No response from the MS to the request. This is checked for 10 seconds.
14	SS		The following messages are sent and shall be received on cell A. Set the signal strength of cell A to a lower signal strength than cell B The RF level of cell B is lowered until cell A is preferred by the MS.
15	MS		Cell A is preferred by the MS.
16	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
17	SS -> MS	ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-2 signature Routing area identity = RAI-1
18	SS -> MS	PACKET PAGING REQUEST or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).

19	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
20	MS		
21	MS -> SS	DETACH REQUEST	
22	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 21.

Specific message contents

None.

44.2.3.1.2 Routing area updating / rejected / IMSI invalid / illegal ME**44.2.3.1.2.1 Conformance requirement**

- 1) If the network rejects a routing area updating procedure from the Mobile Station with the cause 'Illegal ME', the Mobile Station shall consider SIM invalid for GPRS services until power is switched off or SIM is removed.
- 2) If the network rejects a routing area updating procedure from the Mobile Station with the cause 'Illegal ME', the Mobile Station shall delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.

Reference(s):

GSM04.08 section 4.7.5.1

44.2.3.1.2.2 Test purpose

To test the behaviour of the MS if the network rejects the routing area updating procedure of the MS with the cause 'Illegal ME'.

44.2.3.1.2.3 Method of test**Initial conditions**

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2, cell C in MCC2/MNC1/LAC1/RAC1.

All three cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

SIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'Illegal ME'. The SS checks that the MS does not perform GPRS attach in the same or another PLMN.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The following messages are sent and shall be received on cell A. The MS is set in MS operation mode C or B (see PICS).
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	SS -> MS	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'GPRS only attached' Routing area identity = RAI-1
6	SS		The following messages are sent and shall be received on cell B. The SS deactivates cell A and activates cell B.
7	MS		Cell B is preferred by the MS.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	SS -> MS	ROUTING AREA UPDATING REJECT	GMM cause = 'Illegal MS'
10	SS -> MS	PACKET PAGING REQUEST Or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-2 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).
11	MS		No response from the MS to the request. This is checked for 10 seconds.
12	SS		The following messages are sent and shall be received on cell C. The SS deactivates cell B and activates cell C.
13	MS		Cell C is preferred by the MS.
14	MS		No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
15	MS		If possible (see PICS) SIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
16	MS		The MS gets the SIM replaced, is powered up or switched on and initiates an attach (see PICS).
17	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS only attached' Mobile identity = IMSI
18	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
19	MS -> SS	ATTACH COMPLETE	
20	MS		The MS is switched off or power is removed (see PICS).
21	MS -> SS	DETACH REQUEST	Message not sent if power is removed.

Specific message contents

None.

44.2.3.1.3 Routing area updating / rejected / MS identity cannot be derived by the network

44.2.3.1.3.1 Conformance requirement

If the network rejects a routing area updating procedure from the Mobile Station with the cause 'MS identity cannot be derived by the network', the Mobile Station shall delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.

Depending on the manufacturer the MS may or may not perform a GPRS attach procedure.

Reference(s):

GSM04.08 section 4.7.5.1

44.2.3.1.3.2 Test purpose

To test the behaviour of the MS if the network rejects the routing area updating procedure of the MS with the cause 'MS identity cannot be derived by the network'.

44.2.3.1.3.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Automatic attach procedure when MS identity cannot be derived by the network Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal routing area updating with the cause value 'MS identity cannot be derived by the network'. The MS detach locally. A new GPRS attach may be performed.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is set in MS operation mode C or B (see PICS).
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS. Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
5	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
6	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-1
7	SS		The following messages are sent and shall be received on cell B.
8	MS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature
10	SS -> MS	ROUTING AREA UPDATING REJECT	Routing area identity = RAI-1 GMM cause = 'MS identity cannot be derived by the network'
11	MS		If an automatic attach procedure by the MS is not possible when the MS identity cannot be derived by the network (see PICS) goto step 19.
12	MS		An Automatic GPRS attach procedure is initiated (see PICS).
13	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = IMSI
14	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
15	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-4
16	MS		The MS is switched off or power is removed (see PICS).
17	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
18			Stop the sequence
19	SS -> MS	PACKET PAGING REQUEST Or PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-2 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II).
20	MS		No response from the MS to the request, as the MS has detached locally. This is checked for 10 seconds.

Specific message contents

None.

44.2.3.1.4 Routing area updating / rejected / location area not allowed

44.2.3.1.4.1 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the Mobile Station with the cause 'location area not allowed' the Mobile Station shall:
 - 1.1 not perform GPRS attach when in the same location area.
 - 1.2 delete the stored RAI, GPRS-CKSN, P-TMSI and P-TMSI signature.
 - 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
- 2) If the network rejects a routing area updating procedure from the Mobile Station with the cause 'location area not allowed' the Mobile Station shall:
 - 2.1 perform GPRS attach when a new location area is entered.
 - 2.2 delete the list of forbidden LAs after switch off (power off).

Reference(s):

GSM 04.08 sections 4.7.5.1

44.2.3.1.4.2 Test purpose

To test the behaviour of the MS if the network rejects the routing area updating procedure of the MS with the cause 'Location Area not allowed'.

To test that the MS deletes the list of forbidden LAs when power is switched off.

44.2.3.1.4.3 Method of test

Initial conditions

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2, cell C in MCC1/MNC1/LAC2/RAC1.

All cells are operating in network operation mode III.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No

SIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'Location Area not allowed'. The SS checks that the MS does not perform GPRS attach while in the location area, performs GPRS attach when a new location area is entered and deletes the list of forbidden LAs when switched off.

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

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell C.
2	SS		The SS activates cell C.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 33.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell C is preferred by the MS.
5	SS -> MS	ATTACH ACCEPT	Attach type = 'GPRS attach' Mobile identity = IMSI
6	MS -> SS	ATTACH COMPLETE	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
7	SS		The following messages are sent and shall be received on cell B.
8	SS		The SS deactivates cell C and activates cell B.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Cell B is preferred by the MS. Update type = 'RA updating' P-TMSI-1 signature
10	SS -> MS	ROUTING AREA UPDATING REJECT	Routing area identity = RAI-3
11	SS -> MS	PACKET PAGING REQUEST Or PAGING REQUEST TYPE 1	GMM cause = 'Location Area not allowed'
12	MS		Mobile identity = P-TMSI-1 Both paging orders are for TBF establishment. PACKET PAGING REQUEST (used for NW mode III) PAGING REQUEST TYPE 1 (used for NW-mode II). No response from the MS to the request. This is checked for 10 seconds.
13	SS		The following messages are sent and shall be received on cell A.
14	MS		The SS deactivates cell B and activates cell A.
15	MS		Cell A is preferred by the MS. No ATTACH REQUEST sent to SS (SS waits 30 seconds)
16	SS		The following messages are sent and shall be received on cell C.
17	MS		The SS deactivates cell B and activates cell C.
18	MS -> SS	ATTACH REQUEST	Cell C is preferred by the MS.
19	SS -> MS	ATTACH ACCEPT	Attach type = 'GPRS attach' Mobile identity = IMSI
20	MS -> SS	ATTACH COMPLETE	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
21	MS		If possible (see PICS) SIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
22	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
23	MS		The MS gets the SIM replaced, is powered up or switched on and initiates an attach (see PICS).

24	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
25	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
26	MS -> SS	ATTACH COMPLETE	
27	SS		The following messages are sent and shall be received on cell A. The SS deactivates cell C and activates cell A. Cell A is preferred by the MS.
28			
29	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
30	SS -> MS	ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Update result = 'RA updated' P-TMSI-2 signature Routing area identity = RAI-1
31	MS		The MS is switched off or power is removed (see PICS).
32	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
33	SS		The SS is set in network operation mode II.
34	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 32.

Specific message contents

None.

44.2.3.1.5 Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes

44.2.3.1.5.1 Conformance requirement

- 1) When a routing area updating procedure is rejected with the attempt counter less than five, the Mobile Station shall repeat the routing area updating procedure after T3330 timeout.
- 2) When a T3330 timeout has occurred during a routing area updating procedure with the attempt counter five, the Mobile Station shall start timer T3302.
- 3) When the T3302 expire, a new routing area updating procedure shall be initiated.

GMM cause codes that can be selected are:

'IMSI unknown in HLR'
 'IMEI not accepted'
 'Illegal ME'
 'MS identity cannot be derived by the network'
 'Network failure'
 'Congestion'
 'retry upon entry into a new cell'
 'Semantically incorrect message'
 'Invalid mandatory information'
 'Message type non-existent or not implemented'
 'Message type not compatible with the protocol state'
 'Information element non-existent or not implemented'
 'Conditional IE error'
 'Message not compatible with the protocol state'
 'Protocol error, unspecified'

Reference(s):

GSM 04.08 section 4.7.5.1

44.2.3.1.5.2 Test purpose

To test the behaviour of the MS with respect to the attempt counter.

44.2.3.1.5.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure (attempt counter zero). The SS rejects the routing area updating procedure with a random cause code.

The MS initiates a new routing area updating procedure (attempt counter one) after T3311 expires. The SS rejects the routing area updating procedure with a random cause code.

The MS initiates a new routing area updating procedure (attempt counter two) after T3311 expires. The SS rejects the routing area updating procedure with a random cause code.

The MS initiates a new routing area updating procedure (attempt counter three) after T3311 expires. The SS rejects the routing area updating procedure with a random cause code.

The MS initiates a new routing area updating procedure (attempt counter four) after T3311 expires. The SS rejects the routing area updating procedure with a random cause code.

The MS initiates a new routing area updating procedure with attempt counter five (after T3311 expires). The SS rejects the routing area updating procedure with a random cause code. The MS shall not perform a new successful routing area updating procedure after T3311 seconds.

The MS initiates a routing area updating procedure with attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, GPRS CKSN and RAI.

T3302; set to 10 minutes.

T3330; 15 seconds.

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
5	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 No new mobile identity assigned. P-TMSI not included. Attach result = 'GPRS only attached' P-TMSI-2 signature Routing area identity = RAI-1
			The following messages are sent and shall be received on cell B.
6	SS		The SS deactivates cell A and activates cell B.
7	SS		Cell B is preferred by the MS.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	SS -> MS	ROUTING AREA UPDATING REJECT	Random GMM cause
10	SS		The SS verifies that the time between the routing area updating requests is 15 seconds (+/- 10%)
11	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
12	SS -> MS	ROUTING AREA UPDATING REJECT	Random GMM cause
13	SS		The SS verifies that the time between the routing area updating requests is 15 seconds (+/- 10%)
14	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
15	SS -> MS	ROUTING AREA UPDATING REJECT	Random GMM cause
16	SS		The SS verifies that the time between the routing area updating requests is 15 seconds (+/- 10%)
17	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
18	SS -> MS	ROUTING AREA UPDATING REJECT	Random GMM cause
19	SS		The SS verifies that the time between the routing area updating requests is 15 seconds (+/- 10%)
20	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
21	SS -> MS	ROUTING AREA UPDATING REJECT	Random GMM cause

22	SS		The SS verifies that the MS does not attempt to attach for 10 minutes (+/- 10%).
23	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating'
24	SS -> MS	ROUTING AREA UPDATING ACCEPT	P-TMSI-2 signature Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
25	MS -> SS	ROUTING AREA UPDATING COMPLETE	
26	MS		The MS is switched off or power is removed (see PICS).
27	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.3.1.6 Routing area updating / abnormal cases / change of cell into new routing area

44.2.3.1.6.1 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the MS shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference(s):

GSM 04.08 section 4.7.5.1

44.2.3.1.6.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.3.1.6.3 Method of test

Initial conditions

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2 and cell C In MCC1/MNC1/LAC1/RAC3.

All cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The MS performs a cell update into a new routing area. The MS shall re-initiate a routing area updating procedure in the new routing area.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	SS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 18.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS. Attach result = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
5	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
6	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-1
7	SS		The following messages are sent and shall be received on cell B.
8	SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature
10	SS		Routing area identity = RAI-1 No response to the ROUTING AREA UPDATING REQUEST message is given by the SS
11	SS		The following messages are sent and shall be received on cell C.
12	SS		The SS deactivates cell B and activates cell C. Cell C is preferred by the MS.
13	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature
14	SS -> MS	ROUTING AREA UPDATING ACCEPT	Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature
15	MS -> SS	ROUTING AREA UPDATING COMPLETE	Routing area identity = RAI-5
16	MS		The MS is switched off or power is removed (see PICS).
17	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
18	SS		The SS is set in network operation mode II.
19	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 17.

Specific message contents

None.

44.2.3.1.7 Routing area updating / abnormal cases / change of cell during routing area updating procedure

44.2.3.1.7.1 Conformance requirement

When a change of cell within a new routing area is performed before the routing area updating procedure is finished, the MS shall perform the cell update before the routing area updating procedure is finished.

Reference(s):

GSM 04.08 section 4.7.5.1

44.2.3.1.7.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.3.1.7.3 Method of test

Initial conditions

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2 and cell C in MCC1/MNC1/LAC1/RAC2.

All three cells are operating in network operation mode III.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The MS performs a cell update within the routing area. The MS then waits for the ROUTING AREA UPDATE ACCEPT message.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS MS		The following messages are sent and shall be received on cell A. The MS is set in MS operation mode C or B (see PICS).
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach result = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
5	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 No new mobile identity assigned. P-TMSI not included. Attach result = 'GPRS only attached' P-TMSI-2 signature Routing area identity = RAI-1
6	SS		The following messages are sent and shall be received on cell B.
7	SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the MS.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature
9	SS		Routing area identity = RAI-1 No response to the ROUTING AREA UPDATING REQUEST message is given by the SS
10	SS		The following messages are sent and shall be received on cell C.
11	SS		The SS deactivates cell B and activates cell C. Cell C is preferred by the MS.
12	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating cell update.
13	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
14	MS -> SS	ROUTING AREA UPDATING COMPLETE	
15	MS		The MS is switched off or power is removed (see PICS).
16	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.3.1.8 Routing area updating / abnormal cases / P-TMSI reallocation procedure collision

44.2.3.1.8.1 Conformance requirement

When a P-TMSI REALLOCATION REQUEST message is received by the MS while waiting for a ROUTING AREA UPDATE ACCEPT message, the MS shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Reference(s):

GSM 04.08 section 4.7.5.1

44.2.3.1.8.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.3.1.8.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 and cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a P-TMSI reallocation procedure. The MS shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	MS		The MS is set in MS operation mode C or B (see PICS).
2	SS		The SS is set in network operation mode II or III and activates cell A.
3	MS		The MS is powered up or switched on and initiates an attach (see PICS). Cell A is preferred by the MS.
4	MS -> SS	ATTACH REQUEST	Attach result = 'GPRS attach' Mobile identity = IMSI
5	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6	MS -> SS	ATTACH COMPLETE	
			The following messages are sent and shall be received on cell B.
7	SS		The SS deactivates cell A and activates cell B.
8	SS		Cell B is preferred by the MS.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-1
10	SS -> MS	P-TMSI REALLOCATION REQUEST	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	MS		The MS ignores the P-TMSI reallocation request.
12	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
13	MS -> SS	ROUTING AREA UPDATING COMPLETE	
14	MS		The MS is switched off or power is removed (see PICS).
15	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.3.2 Combined routing area updating

The combined routing area updating procedure is a GMM procedure used by GPRS MSs of MS operation mode B that are IMSI attached for GPRS and non-GPRS services. In order to use the combined routing area updating procedure, the network must operate in network operation mode I.

44.2.3.2.1 Combined routing area updating / combined RA/LA accepted

44.2.3.2.1.1 Conformance requirement

- 1) If the network accepts the combined routing area updating procedure and reallocates a P-TMSI, the MS shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 2) If the network accepts the combined routing area updating procedure from the MS without reallocation of the old P-TMSI, the MS shall continue communication with the old P-TMSI.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.1.2 Test purpose

To test the behaviour of the MS if the network accepts the combined routing area updating procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is reallocated
- 2) Old P-TMSI / P-TMSI signature is not changed
- 3) Mobile terminating CS call is allowed with IMSI
- 4) Mobile terminating CS call is allowed with TMSI

44.2.3.2.1.3 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 operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

- 1) A combined GPRS attach procedure is performed. The MS sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI, unassigns the TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI and IMSI. The MS acknowledges the new P-TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication MS - SS is performed by the new P-TMSI. For CS calls, the IMSI is used

- 2) The MS is CS paged in order to verify that the IMSI is used for CS calls.
- 3) A combined GPRS attach procedure is performed. The MS sends an ROUTING AREA UPDATING REQUEST message. The SS accepts the P-TMSI signature and returns ROUTING AREA UPDATING ACCEPT message without any P-TMSI and with a new TMSI. The MS acknowledge the new TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication MS-SS is performed by the old P-TMSI. For CS calls, the new TMSI is used.
- 4) The MS is CS paged in order to verify that the TMSI is used for CS calls.

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	SS		The following messages are sent and shall be received on cell B. 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.
7	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1
8	SS -> MS	ROUTING AREA UPDATING ACCEPT	TMSI status = no valid TMSI available Update result = 'Combined RALA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
9	MS -> SS	ROUTING AREA UPDATING COMPLETE	
10	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1
11	MS -> SS	UPLINK RLC DATA BLOCK	Paging order is for TBF establishment. LLC PDU implicitly indicating paging response.
12	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI
13	MS -> SS	CHANNEL REQUEST	Paging order is for RR-connection.
14	SS -> MS	IMMEDIATE ASSIGNMENT	
15	MS -> SS	PAGING RESPONSE	Mobile identity = IMSI
16	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
17	SS		The following messages are sent and shall be received on cell A. The RF level of cell A is increased and the RF level of cell B is lowered until cell A is preferred by the MS.
18	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-1 signature Routing area identity = RAI-4
19	SS -> MS	ROUTING AREA UPDATING ACCEPT	TMSI status = no valid TMSI available Update result = 'Combined RALA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
20	MS -> SS	ROUTING AREA UPDATING COMPLETE	
21	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2
22	MS -> SS	UPLINK RLC DATA BLOCK	Paging order is for TBF establishment. LLC PDU implicitly indicating paging response.
23	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.

24	MS -> SS	CHANNEL REQUEST	Mobile identity = TMSI-1 After sending of this message, the SS waits for disconnection of the CS signalling link. The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'
25	SS -> MS	IMMEDIATE ASSIGNMENT	
26	MS -> SS	PAGING RESPONSE	
27	SS -> MS	CHANNEL RELEASE	
28	MS		
29	MS -> SS	DETACH REQUEST	

Specific message contents

None.

44.2.3.2.2 Combined routing area updating / MS in CS operation at change of RA

44.2.3.2.2.1 Conformance requirement

GPRS MS that is in an ongoing CS transaction at change of routing area shall initiate the routing area updating procedure only after the CS transaction has been released.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.2.2 Test purpose

To test the behaviour of the MS when using the combined routing area updating procedure in cases where the MS is CS connected at change of RA.

44.2.3.2.2.3 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 operating in network operation mode I.

Mobile Station:
The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

- Support of GPRS service Yes/No
- MS operation mode B Yes/No
- Switch off on button Yes/No
- Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A combined GPRS attach procedure is performed. The MS initiates a CS call. The routing area change. MS will not send a ROUTING AREA UPDATE REQUEST message until the CS operation is terminated.

15 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	MS		A CS call is initiated.
7	SS		The following messages are sent and shall be received on cell B. 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.
8	MS		No RA updating procedure is initiated. This is checked for 60 seconds.
9	MS		The CS call is terminated
10	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1
11	SS -> MS	ROUTING AREA UPDATING ACCEPT	TMSI status = no valid TMSI available Update result = 'Combined RALA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
12	MS -> SS	ROUTING AREA UPDATING COMPLETE	
13	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1
14	MS -> SS	UPLINK RLC DATA BLOCK	Paging order is for TBF establishment. LLC PDU implicitly indicating paging response.
15	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
16	MS -> SS	CHANNEL REQUEST	
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	PAGING RESPONSE	Mobile identity = IMSI
19	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
20	MS		The MS is switched off or power is removed (see PICS).
21	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.3.2.3 Combined routing area updating / RA only accepted

44.2.3.2.3.1 Conformance requirement

- 1) If the network accepts the combined GPRS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the MS the Mobile Station shall delete the stored TMSI, LAI and CKSN. The Mobile Station shall consider SIM invalid for non-GPRS services until power is switched off or SIM is removed.
- 2) If the network accepts the combined GPRS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the MS, an MS operation mode B MS may perform an MM IMSI attach procedure.

Reference(s):

GSM 04.08 section 4.7.3.2

44.2.3.2.3.2 Test Purpose

Test purpose 1

To test the behaviour of the MS if the network accepts the routing area updating procedure with indication RA only, GMM cause 'IMSI unknown in HLR'.

Test purpose 2

To test the behaviour of the MS if the network accepts the routing area updating procedure with indication RA only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

44.2.3.2.3.3 Method of test

44.2.3.2.3.3.1 Test Procedure 1

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells operating in network operation mode I.

Mobile Station:

The MS has a valid ITMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the MS sends an ROUTING AREA UPDATE REQUEST message. The SS allocates a P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication MS - SS is performed by the P-TMSI. CS services are not possible.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	SS		The following messages are sent and shall be received on cell B.
7	MS -> SS	ROUTING AREA UPDATING REQUEST	The SS deactivates cell A and activates cell B. Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'IMSI unknown in HLR'
9	MS -> SS	ROUTING AREA UPDATING COMPLETE	
10	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.
11	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
12	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
13	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
14	MS		The MS is switched off or power is removed (see PICS).
15	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.3.2.3.3.2 Test Procedure 2

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Automatic MM IMSI attach procedure for MS operation mode B MS Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the MS sends an ROUTING AREA UPDATE REQUEST message . The SS allocates a new P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. An MS operation mode B MS may perform an MM IMSI attach procedure (according to the PICS statement). Further communication MS - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. CS services are not possible unless an IMSI attach procedure is performed.

Maximum duration of test

5 minutes.

Expected sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for MS operation mode B MS' is not supported or not, the steps 1-13 or 14-35 apply depending on manufacturer (see PICS).

Step	Direction	Message	Comments
1	MS		The following messages are sent and shall be received on cell A The MS is set in MS operation mode B and no automatic MM IMSI attach procedure is indicated (see PICS).
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	SS		The following messages are sent and shall be received on cell B. The SS deactivates cell A and activates cell B.
7	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
9	MS -> SS	ROUTING AREA UPDATING COMPLETE	
10	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
11	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
12	MS		The MS is switched off or power is removed (see PICS).
13	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach' Stop the sequence.
14	MS		The following messages are sent and shall be received on cell B Automatic MM IMSI attach procedure is indicated (see PICS).
15	MS		The MS is powered up or switched on and initiates an attach (see PICS).
16	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
17	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
18	MS -> SS	ATTACH COMPLETE	
19	SS		The following messages are sent and shall be received on cell A. The SS deactivates cell B and activates cell A.

20	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
21	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
22	MS -> SS	ROUTING AREA UPDATING COMPLETE	
23	MS -> SS	CHANNEL REQUEST	
24	SS -> MS	IMMEDIATE ASSIGNMENT	
25	MS -> SS	LOCATION UPDATING REQ	Location updating type = IMSI attach.
26	SS -> MS	LOCATION UPDATING ACC	The SS allocates a new TMSI.
27	MS -> SS	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
28	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
30	MS -> SS	CHANNEL REQUEST	
31	SS -> MS	IMMEDIATE ASSIGNMENT	
32	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
33	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
34	MS		The MS is switched off or power is removed (see PICS).
35	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.3.2.4 Combined routing area updating / rejected / PLMN not allowed

44.2.3.2.4.1 Conformance requirement

- 1) If the network rejects a combined routing area updating procedure from the Mobile Station with the cause 'PLMN not allowed' the Mobile Station shall:
 - 1.1. not perform combined GPRA attach when switched on in the same location area or PLMN.
 - 1.2. delete the stored RAI, GPRS-CKSN, P-TMSI, P-TMSI signature, TMSI CKSN and LAI.
 - 1.3. store the PLMN in the 'forbidden PLMN list'.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.4.2 Test purpose

To test the behaviour of the MS if the network rejects the combined routing area updating procedure of the MS with the cause 'PLMN not allowed'.

44.2.3.2.4.3 Method of test

Initial conditions

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2, cell C in MCC1/MNC1/LAC2/RAC1 and cell D in MCC2/MNC1/LAC1/RAC1. All four cells are operating in network operation mode I

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test Procedure

The SS rejects a combined routing area updating with the cause value 'PLMN not allowed'. The SS checks that the MS does not perform GPRS attach if activated in the same PLMN. The SS checks that the MS does not perform IMSI attach if activated in the same PLMN.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = TMSI-1
			The following messages are sent and shall be received on cell B.
7	SS		The SS deactivates cell A and activates cell B.
8	MS		Cell B is preferred by the MS.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined R/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
10	SS -> MS	ROUTING AREA UPDATING REJECT	TMSI status = valid TMSI available GMM cause = 'PLMN not allowed'
11	MS		The MS initiates an attach by MMI or AT command.
12	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
14	MS		No response from the MS to the request. This is checked for 10 seconds.
			The following messages are sent and shall be received on cell C.
15	SS		The SS deactivates cell B and activates cell C.
16	MS		Cell C is preferred by the MS.
17	MS		The MS initiates an attach by MMI or by AT command.
18	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
19	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
20	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
			The following messages are sent and shall be received on cell A.
21	SS		The SS deactivates cell C and activates cell A.
22	MS		Cell A is preferred by the MS.
23	MS		The MS initiates an attach by MMI or by AT command.
24	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
25	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
26	MS		No response from the MS to the request. This is checked for 10 seconds.
			The following messages are sent and shall be received on cell D.
27	SS		The SS deactivates cell A and activates cell D.
28	MS		Cell D is preferred by the MS.

29	MS		The MS initiates an attach automatically, by MMI or by AT command.
30	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
31	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
32	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-2
33	MS		Mobile identity = IMSI
34	MS -> SS	DETACH REQUEST	The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.3.2.5 Combined routing area updating / rejected / roaming not allowed in this location area

44.2.3.2.5.1 Conformance requirement

- 1) If the network rejects a combined routing area updating procedure from the Mobile Station with the cause 'roaming not allowed in this location area' the Mobile Station shall:
 - 1.1 not perform combined GPRS attach when in the same location area.
 - 1.2 delete the stored RAI, GPRS-CKSN, P-TMSI P-TMSI signature, TMSI, CKSN and LAI.
 - 1.3 store the LA in the 'forbidden location areas for roaming'.
 - 1.4 perform combined GPRS attach when a new location area is entered.
- 2) The mobile station shall reset the list of 'Forbidden location areas for roaming' when switched off or when the SIM is removed.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.5.2 Test purpose

Test purpose 1

To test that on receipt of a rejection using the 'Roaming not allowed in this area' cause code, the MS ceases trying a routing area updating procedure on that location area. Successful combined routing area updating procedure is possible in other location areas.

Test purpose 2

To test that if the MS is switched off or the SIM is removed the list of 'forbidden location areas for roaming' is cleared.

44.2.3.2.5.3 Method of test

44.2.3.2.5.3.1 Test procedure 1

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC/LAC2/RAC1.

Both cells are operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXTI statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a combined GPRS attach is not possible. Successful combined GPRS attach procedure is performed in another location area. The MS is mobed back to the 1st location area. A combined routing area updating shall not be performed, as the LA is on the forbidden list.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = IMSI
			The following messages are sent and shall be received on cell B.
7	SS		The SS deactivates cell A and activates cell B.
8	MS		Cell B is preferred by the MS.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined R/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
10	SS -> MS	ROUTING AREA UPDATING REJECT	TMSI status = no valid TMSI available GMM cause = 'Roaming not allowed in this area'
11	MS		The MS initiates an attach by MMI or by AT command.
12	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
14	MS		No response from the MS to the request. This is checked for 10 seconds.
15	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
16	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
			The following messages are sent and shall be received on cell A.
17	SS		The SS deactivates cell B and activates cell A.
18	MS		Cell A is preferred by the MS.
19	MS		The MS initiates an attach automatically, by MMI or by AT command.
20	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
21	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
22	MS -> SS	ATTACH COMPLETE	Mobile identity = TMSI-1
23	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
24	MS -> SS	CHANNEL REQUEST	
25	SS -> MS	IMMEDIATE ASSIGNMENT	
26	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1
27	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
28	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-1 Paging order is for TBF establishment.

29	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
30	SS		The following messages are sent and shall be received on cell B.
31	MS		The SS deactivates cell A and activates cell B. No ROUTING AREA UPDATING REQUEST sent to SS (SS waits 30 seconds).
32	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2
33	MS		Paging order is for TBF establishment. No response from the MS to the request. This is checked for 10 seconds.
34	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI
35	MS		Paging order is for RR-connection. The MS shall not initiate an RR connection. This is checked during 3 seconds.

Specific message contents

None.

44.2.3.2.5.3.2 Test procedure 2

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC/LAC2/RAC1.

Both cells are operating in network operation mode I.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

SIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. The MS is switched off for 10 seconds and switched on again. The SS checks that a combined GPRS attach is possible on the cell on which the previous combined routing area updating had been rejected.

If SIM removal is possible without switching off: The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. The SIM is removed and inserted in the MS. The SS checks that a GPRS attach procedure and routing area updating procedure is possible on the cell on which the routing area updating had previously been rejected.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity=IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = IMSI
			The following messages are sent and shall be received on cell B.
7	SS		The SS deactivates cell A and activates cell B.
8	MS		Cell B is preferred by the MS.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined R/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
10	SS -> MS	ROUTING AREA UPDATING REJECT	TMSI status = no valid TMSI available GMM cause = 'Roaming not allowed in this area'
11	MS		The MS initiates an attach by MMI or by AT command.
12	MS		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	SS -> MS	PACKET PAGING REQUEST	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
14	MS		No response from the MS to the request. This is checked for 10 seconds.
15	SS -> MS	PACKET PAGING REQUEST	Mobile identity = IMSI Paging order is for RR-connection.
16	MS		The MS shall not initiate an RR connection. This is checked during 3 seconds.
17	MS		If possible (see PICS) SIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
18	MS		The MS gets the SIM replaced, is powered up or switched on and initiates an attach (see PICS).
19	MS		The MS initiates an attach by MMI or AT command.
20	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity=IMSI
21	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
22	MS -> SS	ATTACH COMPLETE	Mobile identity = TMSI-1
23	SS -> MS	PACKET PAGING REQUEST	Mobile identity = TMSI-1 Paging order is for RR-connection.
24	MS -> SS	CHANNEL REQUEST	
25	SS -> MS	IMMEDIATE ASSIGNMENT	
26	MS -> SS	PAGING RESPONSE	Mobile identity = TMSI-1

27	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link. Mobile identity = P-TMSI-1 Paging order is for TBF establishment. LLC PDU implicitly indicating paging response. The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'
28	SS -> MS	PACKET PAGING REQUEST	
29	MS -> SS	UPLINK RLC DATA BLOCK	
30	MS		
31	MS -> SS	DETACH REQUEST	

Specific message contents

None.

44.2.3.2.6 Combined routing area updating / abnormal cases / access barred due to access class control

44.2.3.2.6.1 Conformance requirement

- 1) The MS shall not perform combined routing area updating procedure, but stays in the current serving cell and applies normal cell reselection process.
- 2) The Mobile Station shall perform the combined routing area updating procedure when:
 - 2.1 Access is granted.
 - 2.2 Cell is changed.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.6.2 Test purpose

Test purpose 1

To test the behaviour of the MS in case of access class control (access is granted).

Test purpose 2

To test the behaviour of the MS in case of access class control (cell is changed).

44.2.3.2.6.3 Method of test

44.2.3.2.6.3.1 Test procedure 1

Initial conditions

A random access class x(0-15) is selected. The SIM is programmed with this access class x. Communication with mobile stations using access class x is initially indicated to be barred.

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC/LAC1/RAC2.

Both cells are operating in network operation mode I.

Access class x barred.

Mobile Station:

The MS has a valid P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A GPRS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

The SS indicates that access class x is not barred. A routing area updating procedure is performed.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = IMSI
			The following messages are sent and shall be received on cell B.
7	SS		The SS deactivates cell A and activates cell B.
8	MS		Cell B is preferred by the MS.
9	MS		No ROUTING AREA UPDATE REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
10	SS		The access class x is not barred anymore.
11	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1
12	SS -> MS	ROUTING AREA UPDATING ACCEPT	TMSI status = no valid TMSI available Update result = 'Combined RALA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1
13	MS -> SS	ROUTING AREA UPDATING COMPLETE	Routing area identity = RAI-4
14	MS		The MS is switched off or power is removed (see PICS).
15	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'

Specific message contents

None.

44.2.3.2.6.3.2 Test procedure 2

Initial conditions

A random access class x(0-15) is selected. The SIM is programmed with this access class x. Communication with mobile stations using access class x is indicated to be barred on cell A.

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 has access class x not barred, cell B in MCC1/MNC1/LAC1/RAC2 has access class x barred, cell C in MCC1/MNC1/LAC1/RAC2 has access class x not

barred.

All three cells are operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A GPRS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A routing area updating procedure is performed.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS).
4	SS -> MS	ATTACH ACCEPT	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	MS -> SS	ATTACH COMPLETE	
7	SS		The following messages are sent and shall be received on cell B.
8	MS		The SS deactivates cell A and activates cell B.
9	MS		Cell B is preferred by the MS. No ROUTING AREA UPDATING REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
10	SS		The following messages are sent and shall be received on cell C.
11	MS		The SS deactivates cell B and activates cell C.
12	MS -> SS	ROUTING AREA UPDATING REQUEST	Cell C is preferred by the MS. Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RALA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14	MS -> SS	ROUTING AREA UPDATING COMPLETE	
15	MS		The MS is switched off or power is removed (see PICS).
16	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'

Specific message contents

None.

44.2.3.2.7 Combined routing area updating / abnormal cases / attempt counter check / procedure timeout

44.2.3.2.7.1 Conformance requirement

- 1) When a T3330 timeout has occurred during a routing area updating procedure with the attempt counter less than five, the Mobile Station shall repeat the routing area updating procedure after T3330 timeout.
- 2) When a T3330 timeout has occurred during a routing area updating procedure with the attempt counter five, the Mobile Station shall start timer T3302.
- 3) When the T3302 expire, a new routing area updating procedure shall be initiated.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.7.2 Test purpose

To test the behaviour of the MS with respect to the attempt counter.

44.2.3.2.7.3 Method of test**Initial conditions**

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC/LAC1/RAC2.

Both cells are operating in network operation mode I.

Mobile Station:

The MS has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure (attempt counter zero). The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout.

The MS initiates a new routing area updating procedure (attempt counter one) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout.

The MS initiates a new routing area updating procedure (attempt counter two) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout.

The MS initiates a new routing area updating procedure (attempt counter three) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout.

The MS initiates a new routing area updating procedure (attempt counter four) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout.

The MS initiates a new routing area updating procedure with attempt counter five (after T3311 expires). The SS does not answer with ATTACH ACCEPT message before T3330 timeout. The MS shall not perform a new successful routing area updating procedure after 15 seconds.

The MS initiates a routing area updating procedure with attempt counter zero after T3302 expires without P-TMSI, P-TMSI signature, GPRS CKSN and RAI.

T3302; set to 10 minutes

T3311; 15 seconds

T3330; 15 seconds

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = IMSI
			The following messages are sent and shall be received on cell B.
7	SS		The SS deactivates cell A and activates cell B.
8	MS		Cell B is preferred by the MS.
9	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
10	SS		No response is given from the SS.
11	SS		The SS verifies that the time between the RA update requests is 15 seconds (+/- 10%)
12	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13	SS		No response is given from the SS.
14	SS		The SS verifies that the time between the RA update requests is 15 seconds (+/- 10%)
15	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
16	SS		No response is given from the SS.
17	SS		The SS verifies that the time between the RA update requests is 15 seconds (+/- 10%)
18	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
19	SS		No response is given from the SS.
20	SS		The SS verifies that the time between the RA update requests is 15 seconds (+/- 10%)
21	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
22	SS		No response is given from the SS.
23	SS		The SS verifies that the time between the RA update requests is T3302 seconds (+/- 10%)
24	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

25	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RALA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
26	MS -> SS	ROUTING AREA UPDATING COMPLETE	
27	MS		The MS is switched off or power is removed (see PICS).
28	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'

Specific message contents

None.

44.2.3.2.8 Combined routing area updating / abnormal cases / change of cell into new routing area

44.2.3.2.8.1 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the MS shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.8.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.3.2.8.3 Method of test

Initial conditions

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2, cell C in MCC1/MNC1/LAC1/RAC3.

All three cells are operating in network operation mode I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The MS performs a cell update into a new routing area. The Ms shall re-initiate a routing area updating procedure in the new routing area. The MS shall not increment the attempt counter.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = IMSI
6	SS		The following messages are sent and shall be received on cell B. The SS deactivates cell A and activates cell B.
7	MS		Cell B is preferred by the MS.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined R/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	SS		TMSI status = no valid TMSI available No response id given from the SS.
10	SS		The following messages are sent and shall be received on cell A. Activate cell C with a lower signal strength than cell B.
11	MS		The RF level of cell B is lowered, and the RF level of cell C is increased, until cell C is preferred by the MS.
12	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined R/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
13	SS -> MS	ROUTING AREA UPDATING ACCEPT	TMSI status = no valid TMSI available Update result = 'Combined R/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI
14	MS -> SS	ROUTING AREA UPDATING COMPLETE	Routing area identity = RAI-5
15	MS		The MS is switched off or power is removed (see PICS).
16	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'

Specific message contents

None.

44.2.3.2.9 Combined routing area updating / abnormal cases / change of cell during routing area updating procedure

44.2.3.2.9.1 Conformance requirement

When a change of cell within new routing area is performed before the routing area updating procedure is finished, the MS shall perform the cell update before the routing area updating procedure is finished.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.9.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.3.2.9.3 Method of test

Initial conditions

System Simulator:

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

All three cells are operating in network operation mode I.

Mobile Station:

The MS has a valid P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The MS performs a cell update within the routing area. The MS then waits for the ROUTING AREA UPDATE ACCEPT message.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = IMSI
	SS		The following messages are sent and shall be received on cell B.
6	SS		The SS deactivates cell A and activates cell B.
7	MS		Cell B is preferred by the MS.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	SS		TMSI status = no valid TMSI available No response id given from the SS.
	SS		The following messages are sent and shall be received on cell C.
10	SS		Activate cell C with a lower signal strength than cell B.
11	MS		The RF level of cell B is lowered until cell C is preferred by the MS.
12	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating cell update.
13	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RALA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14	MS -> SS	ROUTING AREA UPDATING COMPLETE	
15	MS		The MS is switched off or power is removed (see PICS).
16	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'

Specific message contents

None.

44.2.3.2.10 Combined routing area updating / abnormal cases / GPRS detach procedure collision

44.2.3.2.10.1 Conformance requirement

- 1) When a detach request is received with cause 'GPRS detach' or 'combined GPRS/IMSI detach' by the MS while waiting for a ROUTING AREA UPDATE ACCEPT message, the MS shall terminate the routing area updating procedure and continue with the GPRS detach procedure.
- 2) When a detach request is received with cause 'IMSI detach' by the MS while waiting for a ROUTING AREA UPDATE ACCEPT message, the MS shall ignore the detach request and continue with the routing area updating procedure.

Reference(s):

GSM 04.08 section 4.7.5.2

44.2.3.2.10.2 Test purpose

To test the behaviour of the MS in case of procedure collision.

44.2.3.2.10.3 Method of test

44.2.3.2.10.3.1 Test procedure 1

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 I.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXTI statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a GPRS detach procedure with cause 'GPRS detach' or 'combined GPRS/IMSI detach'. The MS shall terminate the routing area updating procedure and continue with the GPRS detach procedure.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity=IMSI
4	SS -> MS	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	Mobile identity = IMSI
			The following messages are sent and shall be received on cell B.
6	SS		The SS deactivates cell A and activates cell B.
7	MS		Cell B is preferred by the MS.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined R/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	SS		TMSI status = no valid TMSI available The SS ignores the ROUTING AREA UPDATING REQUEST message and initiates a detach procedure.
10	SS -> MS	DETACH REQUEST	Detach type = 're-attach not required'
11	MS -> SS	DETACH ACCEPT	

Specific message contents

None.

44.2.3.2.10.3.2 Test procedure 2

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 I.

Mobile Station:

The MS has a valid P-TMSI, P-TMSI signature and RAI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a GPRS detach procedure with cause 'IMSI detach'. The MS shall ignore the detach procedure and continue with the routing area updating procedure.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS).
4	SS -> MS	ATTACH ACCEPT	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available Attach result = 'Combined GPRS / IMSI attached'
5	MS -> SS	ATTACH COMPLETE	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
6	SS		The following messages are sent and shall be received on cell B.
7	MS		The SS deactivates cell A and activates cell B.
8	MS -> SS	ROUTING AREA UPDATING REQUEST	Cell B is preferred by the MS. Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9	SS		The SS ignores the ROUTING AREA UPDATING REQUEST message and initiates a detach procedure.
10	SS -> MS	DETACH REQUEST	Detach type = 'IMSI detach'
11	MS		The MS ignores the DETACH REQUEST message and continue the routing area updating procedure.
12	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RALA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
13	MS -> SS	ROUTING AREA UPDATING COMPLETE	
14	MS		The MS is switched off or power is removed (see PICS).
15	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'

Specific message contents

None.

44.2.3.3 Periodic routing area updating

44.2.3.3.1 Periodic routing area updating / accepted

44.2.3.3.1.1 Conformance requirement

The Mobile Station shall perform a periodic routing area update procedure after a T3312 timeout.

Reference(s):

GSM 04.08 section 4.7.2.2 and 4.7.5.1

44.2.3.3.1.2 Test purpose

To test the behaviour of the MS with respect to the periodic routing area updating procedure.

44.2.3.3.1.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode II (in case of MS operation mode B), or in network operation mode III (in case of MS operation mode C).

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No

SIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a GPRS attach procedure with identity P-TMSI. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The MS acknowledge the new P-TMSI by sending ATTACH COMPLETE message. A routing area updating procedure is performed at T3312 timeout.

T3312; set to 6 minutes.

Maximum duration of test

20 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 11.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
4	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
5	MS -> SS	ATTACH COMPLETE	
6	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
7	SS		The SS verifies that the time between the attach and the periodic RA updating is T3312 (+/- 10%)
8	SS -> MS	ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1
9	MS		The MS is switched off or power is removed (see PICS).
10	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
11			The SS is set in network operation mode II.
12	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 10.

Specific message contents

None.

44.2.3.3.2 Periodic routing area updating / accepted / T3312 default value

44.2.3.3.2.1 Conformance requirement

The Mobile Station shall perform a periodic routing area update procedure after a T3312 timeout.

Reference(s):

GSM 04.08 section 4.7.2.2 and 4.7.5.2

44.2.3.3.2.2 Test purpose

To test the behaviour of the MS with respect to the periodic routing area updating procedure.

44.2.3.3.2.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode I.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a combined GPRS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312 is omitted. The MS acknowledge the new P-TMSI by sending ATTACH COMPLETE message. After 54 minutes, a periodic routing area updating procedure is initiated by the MS.

T3312; default value 54 minutes.

Maximum duration of test

60 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is powered up or switched on and initiates an attach (see PICS).
2	MS -> SS	ATTACH REQUEST	Attach type = 'Combined GPRS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
3	SS -> MS	ATTACH ACCEPT	Attach result = 'Combined GPRS /IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
4	MS -> SS	ATTACH COMPLETE	
5	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
6	SS		The SS verifies that the time between the attach request and the periodic RA updating is T3312 (+/- 10%)
7	SS -> MS	ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI and TMSI not included. Update result = 'RAUpdated' P-TMSI-3 signature Routing area identity = RAI-1
8	MS		The MS is switched off or power is removed (see PICS).
9	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS/IMSI detach'

Specific message contents

None.

44.2.3.3.3 Periodic routing area updating / no cell available / network mode I

44.2.3.3.3.1 Conformance requirement

If the MS is both IMSI attached for GPRS and non-GPRS services, and if the MS lost coverage of the registered PLMN and timer T3312 expires; if the MS returns to coverage in a cell that supports GPRS and the network is in network operation mode I, then the **MS shall perform a combined routing area update procedure.**

Reference(s):

GSM 04.08 section 4.7.2.2 and 4.7.5.1.

44.2.3.3.3.2 Test purpose

To test the behaviour of the MS with respect to the periodic routing area updating procedure.

44.2.3.3.3.3 Method of test

Initial conditions

System Simulator:

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

Cell A is in are operating in network operation mode II and cell B is in network operation mode I. operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a GPRS attach procedure and an IMSI attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The MS acknowledge the new P-TMSI by sending ATTACH COMPLETE message. GPRS radio contact is distorted before T3312 timeout. GPRS radio contact is established again (after T3312 timeout), and a routing area updating procedure is performed immediately.

T3312; set to 6 minutes.

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		The SS activates cell A.
2	SS		The MS is set in MS operation mode B (see PICS).
3	MS		The MS is powered up or switched on and initiates an attach (see PICS).
4	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
5	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
6	MS -> SS	ATTACH COMPLETE	
7	MS -> SS	CHANNEL REQUEST	
8	SS -> MS	IMMEDIATE ASSIGNMENT	
9	MS -> SS	LOCATION UPDATING REQ	Location updating type = IMSI attach.
10	SS -> MS	LOCATION UPDATING ACC	The SS allocates a new TMSI.
11	MS -> SS	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
12	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
13	SS		After 5 minutes, the signal strength is lowered until the MS have lost contact with the SS.
14	SS		Wait 2 minutes.
			The following messages are sent and shall be received on cell B.
15	SS		The SS deactivates cell A and activates cell B.
16	MS		Cell B is preferred by the MS.
17	MS		The MS immediately start a combined RA updating procedure
18	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RALA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
19	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RALA updated' Mobile identity = P-TMSI-3 P-TMSI-3 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
20	MS		The MS is switched off or power is removed (see PICS).
21	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined GPRS / IMSI detach'

Specific message contents

None.

44.2.3.3.4 Combined periodic routing area updating / no cell available

44.2.3.3.4.1 Conformance requirement

If the MS is both IMSI attached for GPRS and non-GPRS services, and if the MS lost coverage of the registered PLMN and timer T3312 expires; if the MS returns to coverage in a cell that supports GPRS and the network is in network operation mode II, then the **MS shall perform a periodic routing area update procedure and a periodic location update procedure.**

Reference(s):

GSM 04.08 section 4.7.2.2 and 4.7.5.2

44.2.3.3.4.2 Test purpose

To test the behaviour of the MS with respect to the periodic routing area updating procedure.

44.2.3.3.4.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode II.

Mobile Station:

The MS has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The MS initiates a GPRS attach procedure and an IMSI attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The MS acknowledge the new P-TMSI by sending ATTACH COMPLETE message. GPRS radio contact is distorted before T3312 timeout. GPRS radio contact is established again (after T3312 timeout), and a periodic routing area updating procedure and a periodic location update procedure is performed immediately.

T3312; set to 6 minutes.

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is powered up or switched on and initiates an attach (see PICS).
2	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature
3	SS -> MS	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
4	MS -> SS	ATTACH COMPLETE	
5	MS -> SS	CHANNEL REQUEST	
6	SS -> MS	IMMEDIATE ASSIGNMENT	
7	MS -> SS	LOCATION UPDATING REQ	Location updating type = IMSI attach.
8	SS -> MS	LOCATION UPDATING ACC	The SS allocates a new TMSI.
9	MS -> SS	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
10	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
11	SS		After 5 minutes, the signal strength is lowered until the MS have lost contact with the SS.
12	SS		After 2 minutes, the signal strength is increased until the MS have got contact with the SS.
13	MS		The MS immediately start the periodic RA updating procedure
14	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
15	SS -> MS	ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
16	MS -> SS	CHANNEL REQUEST	
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	LOCATION UPDATING REQ	Location updating type = Periodic LA updating.
19	SS -> MS	LOCATION UPDATING ACC	
20	SS -> MS	CHANNEL RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
21	MS		The MS is switched off or power is removed (see PICS).
22	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.4 P-TMSI reallocation

44.2.4.1 Conformance requirement

- 1) A Mobile Station shall acknowledge a new P-TMSI when explicitly allocated.
- 2) The P-TMSI shall be updated on the SIM when the Mobile Station is correctly deactivated in accordance with the manufacturer's instructions.
- 3) A Mobile Station shall use the given P-TMSI in further communication with the network.

Reference(s):

GSM 04.08 section 4.7.6

44.2.4.2 Test Purpose

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

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

The implicit reallocation procedure is tested in the attach procedure.

44.2.4.3 Method of test

Initial conditions

System Simulator:

One cell operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No (only if mode B not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

An explicit P-TMSI reallocation procedure is performed (P-TMSI reallocation command sent from the SS and acknowledged from the MS by P-TMSI reallocation complete). The MS is GPRS detached and switched off. Its power supply is interrupted for 10 seconds. The power supply is resumed and then the MS is switched on. A GPRS attach procedure is performed with the given P-TMSI as identity.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is set in MS operation mode B (see PICS). If MS operation mode B not supported set the MS in operation mode C.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach'
4	SS -> MS	ATTACH ACCEPT	Mobile identity = IMSI Attach result = 'GPRS only attached'
5	MS -> SS	ATTACH COMPLETE	P-TMSI-1 signature P-TMSI-1 Routing area identity = RAI-1
6	SS -> MS	P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
7	MS -> SS	P-TMSI REALLOCATION COMPLETE	
8	MS		The MS is switched off or power is removed (see PICS).
9	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
10	MS		The MS is powered up or switched on and initiates an attach (see PICS).
11	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach'
12	SS -> MS	ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 No new mobile identity assigned. P-TMSI not included. Attach result = 'GPRS only attached'
13	SS -> MS	PAGING REQUEST TYPE 1	P-TMSI-3 signature Routing area identity = RAI-1 Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
14	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
15	MS		The MS is switched off or power is removed (see PICS).
16	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.5 GPRS authentication and ciphering

44.2.5.1 Test of authentication

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

44.2.5.1.1 Authentication accepted

44.2.5.1.1.1 Conformance requirement

A Mobile Station shall correctly respond in an authentication and ciphering procedure by sending a response with the SRES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

Reference(s):

GSM 04.08 section 4.7.7

44.2.5.1.1.2 Test purpose

To test the behaviour of the MS if the network accepts the authentication and ciphering procedure.

44.2.5.1.1.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A GPRS attach is performed, and the SS initiates an authentication and ciphering procedure.

The SS checks the value SRES sent by the MS in the AUTHENTICATION AND CIPHERING RESPONSE message.

The MS initiates a routing area updating procedure and the SS checks the value of the GPRS Ciphering Key Sequence Number sent by the MS in the ROUTING AREA REQUEST message.

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 17.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI
5	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication.
6	MS -> SS	AUTHENTICATION AND CIPHERING RESPONSE	Set GPRS-CKSN-1 SRES
7	SS		The SS checks the SRES value.
8	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
9	MS -> SS	ATTACH COMPLETE	Routing area identity = RAI-1
10	SS		The following messages are sent and shall be received on cell B.
11	MS -> SS	ROUTING AREA UPDATING REQUEST	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. Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 GPRS-CKSN-1
12	SS		The value of GPRS-CKSN is checked
13	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature
14	MS -> SS	ROUTING AREA UPDATING COMPLETE	Routing area identity = RAI-2
15	MS		The MS is switched off or power is removed (see PICS).
16	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
17	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 1 to step 16.

Specific message contents

None.

44.2.5.1.2 Authentication rejected

44.2.5.1.2.1 Conformance requirement

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

1.1 not perform normal routing area updating

- 1.2 not perform periodic routing area updating
- 1.3 not perform GPRS detach if switched off
- 2) The Mobile Station shall delete the stored RAI, GPRS-CKSN P-TMSI and P-TMSI signature. SIM shall be considered invalid until power is switched off or SIM is removed.

Reference(s):

GSM 04.08 sections 4.7.7

44.2.5.1.2.2 Test purpose

To test the behaviour of the MS if the network rejects the authentication and ciphering procedure.

44.2.5.1.2.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A GPRS attach is performed, and the SS rejects the authentication and ciphering procedure.

The SS checks that the MS does not perform normal routing area updating, does not perform periodic routing area updating and does not perform GPRS detach if switched off.

T3312; set to 10 minutes.

Maximum duration of test

30 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 14.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI
5	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication.
6	MS -> SS	AUTHENTICATION AND CIPHERING REJECT	Set GPRS-CKSN-1
7	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = IMSI
8	MS		Paging order is for TBF establishment. No response from the MS to the request. This is checked for 10 seconds.
9	SS		The following messages are sent and shall be received on cell B.
10	MS		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.
11	MS		No ROUTING AREA UPDATING REQUEST sent to the SS (SS waits 30 seconds).
12	MS		No periodic ROUTING AREA UPDATING REQUEST sent to the SS (SS waits T3310 (+/- 10%).
13	SS		The MS is switched off (see PICS). No DETACH REQUEST sent to the SS (SS waits 30 seconds).
14	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 1 to step 13.

Specific message contents

None.

44.2.5.2 Test of ciphering mode setting

The purpose of this procedure is to let the network to trigger the start and stop of stream ciphering.

The SS shall start and synchronise ciphering and deciphering according to GSM 03.20. The bitstream shall be generated by algorithm GEA/1.

44.2.5.2.1 Ciphering mode / start ciphering

44.2.5.2.1.1 Conformance requirements

1. When the MS receives the AUTHENTICATION AND CIPHERING REQUEST message during the attach procedure, with Ciphering indicator information element set to 'ciphering mode off', the Mobile Station shall:
 - 1.1. responds with an AUTHENTICATION AND CIPHERING RESPONSE message
 - 1.2. not start ciphering
2. When the MS receives the AUTHENTICATION AND CIPHERING REQUEST message during the routing area updating procedure, with Ciphering indicator information element set to 'ciphering mode on', the Mobile Station shall:
 - 2.1. responds with an AUTHENTICATION AND CIPHERING RESPONSE message
 - 2.2. start ciphering and deciphering with the algorithm indicated by the Ciphering algorithm information element
 - 2.3. the ciphering uses the cipher key determined during the authentication procedure

Reference(s):

GSM 04.08 section 4.7.7

44.2.5.2.1.2 Test purpose

To test the behaviour of the MS if the network accepts the authentication and ciphering procedure with ciphering.

44.2.5.2.1.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A GPRS attach is performed. Authentication procedure without ciphering is performed.

The MS initiates a routing area updating procedure, and the SS initiates an authentication and ciphering procedure to start ciphering.

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 27.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI Message not ciphered
5	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Ciphering off Message not ciphered
6	MS -> SS	AUTHENTICATION AND CIPHERING RESPONSE	SRES Message not ciphered
7	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Message not ciphered
8	MS -> SS	ATTACH COMPLETE	Message not ciphered
9	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-2 Paging order is for TBF establishment. Message not ciphered
10	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. Message not ciphered
11	SS		The following messages are sent and shall be received on cell B.
12	MS -> SS	ROUTING AREA UPDATING REQUEST	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. Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 Message not ciphered
13	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Ciphering on Message not ciphered
14	MS -> SS	AUTHENTICATION AND CIPHERING RESPONSE	SRES Message not ciphered
15	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Message ciphered
16	MS -> SS	ROUTING AREA UPDATING COMPLETE	Message ciphered
17	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Paging order is for TBF establishment. Message not ciphered
18	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. Message ciphered

19	SS -> MS	P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Message ciphered
20	MS -> SS	P-TMSI REALLOCATION COMPLETE	Message ciphered
21	SS -> MS	IDENTITY REQUEST	Identity type = IMEI Message not ciphered
22	MS -> SS	IDENTITY RESPONSE	Mobile identity = IMEI Message not ciphered
23	SS -> MS	P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Message ciphered
24	MS -> SS	P-TMSI REALLOCATION COMPLETE	Message ciphered
25	MS		The MS is switched off or power is removed (see PICS).
26	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach' Message ciphered
27	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 3 to step 26.

Note that due to the test of ciphering, it is in this test case indicated whether each message is ciphered or not.

Specific message contents

None.44.2.5.2.2 Ciphering mode / stop ciphering

44.2.5.2.2.1 Conformance requirements

1. When the MS receives the AUTHENTICATION AND CIPHERING REQUEST message during the attach procedure, with Ciphering indicator information element set to 'ciphering mode on', the Mobile Station shall:
 - 1.1. responds with an AUTHENTICATION AND CIPHERING RESPONSE message
 - 1.2. start ciphering and deciphering with the algorithm indicated by the Ciphering algorithm information element
 - 1.3. the ciphering uses the cipher key determined during the authentication procedure
2. When the MS receives the AUTHENTICATION AND CIPHERING REQUEST message during the routing area updating procedure, with Ciphering indicator information element set to 'ciphering mode on', the Mobile Station shall:
 - 2.1. responds with an AUTHENTICATION AND CIPHERING RESPONSE message
 - 2.2. start ciphering and deciphering with the algorithm indicated by the Ciphering algorithm information element
 - 2.3. the ciphering uses the cipher key determined during the authentication procedure

Reference(s):

GSM 04.08 section 4.7.7

44.2.5.2.2.2 Test purpose

To test the behaviour of the MS if the network accepts the authentication and ciphering procedure without ciphering.

44.2.5.2.2.2 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A GPRS attach is performed, and the SS initiates an authentication and ciphering procedure to start ciphering.

The MS initiates a routing area updating procedure. A RA updating procedure is initiated, and authentication procedure without ciphering is performed. Ciphering is turned off.

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 21.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI Message not ciphered
5	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Ciphering on Message not ciphered
6	MS -> SS	AUTHENTICATION AND CIPHERING RESPONSE	SRES Message not ciphered
7	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Message ciphered
8	MS -> SS	ATTACH COMPLETE	Message ciphered
9	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-2 Paging order is for TBF establishment. Message not ciphered
10	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. Message ciphered
11	SS		The following messages are sent and shall be received on cell B.
12	MS -> SS	ROUTING AREA UPDATING REQUEST	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. Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 Message not ciphered
13	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Ciphering off Message not ciphered
14	MS -> SS	AUTHENTICATION AND CIPHERING RESPONSE	SRES Message not ciphered
15	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Message not ciphered
16	MS -> SS	ROUTING AREA UPDATING COMPLETE	Message not ciphered
17	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Paging order is for TBF establishment. LLC PDU implicitly indicating paging response. Message not ciphered
18	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. Message not ciphered
19	MS		The MS is switched off or power is removed (see PICS).

20	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach' Message not ciphered
21	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 1 to step 20.

Note that due to the test of ciphering, it is in this test case indicated whether each message is ciphered or not.

Specific message contents

None.

44.2.5.2.3 CIPHERING mode / IMEISV request

44.2.5.2.3.1 Conformance requirements

- 1 When the MS receives the AUTHENTICATION AND CIPHERING REQUEST message during the attach procedure, with Ciphering indicator information element set to 'ciphering mode on' and 'IMEISV requested', the Mobile Station shall:
 - 1.1 responds with an AUTHENTICATION AND CIPHERING RESPONSE message
 - 1.2 include IMEISV
 - 1.3 start ciphering and deciphering with the algorithm indicated by the Ciphering algorithm information element
 - 1.4 the ciphering uses the cipher key determined during the authentication procedure
- 2 When the MS receives the AUTHENTICATION AND CIPHERING REQUEST message during the routing area updating procedure, with Ciphering indicator information element set to 'ciphering mode off' and 'IMEISV not requested', the Mobile Station shall:
 - 2.1 responds with an AUTHENTICATION AND CIPHERING RESPONSE message
 - 2.2 not include IMEISV
 - 2.3 not start ciphering

Reference(s):

GSM 04.08 section 4.7.7

44.2.5.2.3.2 Test purpose

To test the behaviour of the MS with respect to return IMEISV on request only.

44.2.5.2.3.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXTT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

A GPRS attach is performed, and the SS initiates an authentication and ciphering procedure. IMEISV is requested.

The MS initiates a routing area updating procedure, and the SS initiates a new authentication and ciphering procedure without requesting IMEISV.

Maximum duration of test

15 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 21.
4	MS -> SS	ATTACH REQUEST	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI Message not ciphered
5	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Ciphering on IMEISV requested Message not ciphered
6	MS -> SS	AUTHENTICATION AND CIPHERING RESPONSE	SRES Mobile identity = IMEISV Message not ciphered
7	SS -> MS	ATTACH ACCEPT	Attach result = 'GPRS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Message ciphered
8	MS -> SS	ATTACH COMPLETE	Message ciphered
9	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Paging order is for TBF establishment. Message not ciphered
10	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. Message ciphered
11	SS		The following messages are sent and shall be received on cell B. 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.
12	MS -> SS	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 Message not ciphered
13	SS -> MS	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Ciphering off IMEISV not requested Message not ciphered
14	MS -> SS	AUTHENTICATION AND CIPHERING RESPONSE	SRES No IMEISV included Message not ciphered
15	SS -> MS	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Message not ciphered
16	MS -> SS	ROUTING AREA UPDATING COMPLETE	Message not ciphered
17	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-1 Paging order is for TBF establishment. Message not ciphered

18	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response.
19	MS		Message not ciphered The MS is switched off or power is removed (see PICS).
20	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach' Message not ciphered
21	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 1 to step 20.

Note that due to the test of ciphering, it is in this test case indicated whether each message is ciphered or not. **Specific message contents**

None.

44.2.6 Identification procedure

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

44.2.6.1 General Identification

44.2.6.1.1 Conformance requirement

- 1) When requested by the network the Mobile Station shall send its IMSI.
- 2) When requested by the network the Mobile Station shall send its IMEI as stored in the Mobile Equipment.
- 3) When requested by the network the Mobile Station shall send its IMEISV as stored in the Mobile Equipment.

Reference(s):

GSM 04.08 sections 4.7.8

44.2.6.1.2 Test purpose

To verify that the MS sends identity information as requested by the system. The following identities can be requested: IMSI, IMEI and IMEISV.

44.2.6.1.3 Method of test

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC2.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
 MS operation mode B Yes/No
 MS operation mode C Yes/No
 Switch off on button Yes/No
 Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

The SS requests identity information from the MS:

- IMSI
- IMEI
- IMEISV

Maximum duration of test

10 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported, goto step 14.
2	MS		The MS is powered up or switched on and initiates an attach (see PICS).
3	MS -> SS	ATTACH REQUEST	Attach type = 'GPRS attach'
4	SS -> MS	ATTACH ACCEPT	Mobile identity = IMSI Attach result = 'GPRS only attached'
			Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	MS -> SS	ATTACH COMPLETE	
6	SS -> MS	IDENTITY REQUEST	Identity type = IMSI
7	MS -> SS	IDENTITY RESPONSE	Mobile identity = IMSI
8	SS -> MS	IDENTITY REQUEST	Identity type = IMEI
9	MS -> SS	IDENTITY RESPONSE	Mobile identity = IMEI
10	SS -> MS	IDENTITY REQUEST	Identity type = IMEISV
11	MS -> SS	IDENTITY RESPONSE	Mobile identity = IMEISV
12	MS		The MS is switched off or power is removed (see PICS).
13	MS -> SS	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'
14	MS		The MS is set in MS operation mode B (see PICS) and the test is repeated from step 2 to step 13.

Specific message contents

None.

44.2.7 GMM READY timer handling

The READY timer, T3314 is used in the MS and in the network per each assigned P-TMSI to control the cell updating and paging procedure.

When the READY timer is running the MS shall perform cell update each time a new cell is selected (see GSM 03.22 [3]). If a routing area border is crossed a routing area updating procedure shall be performed instead of a cell update.

44.2.7.1 Conformance requirement

- 1) When the READY timer is running the MS shall perform cell update each time a new cell is selected
- 2) The READY timer shall be restarted in the MS when the GMM entity receives an indication from lower layers that user data or GMM or SM signalling messages have been transmitted
- 3) The READY timer shall be stopped when force to standby is received in a signalling message from the network, after successful completion of the signalling procedure.
- 4) if the negotiated READY timer value indicates that the ready timer function is deactivated, then the MS shall behave as if READY timer never expires (i.e. the MS remains in READY state all the time)

Reference(s):

GSM 04.08 section 4.7.2.1

44.2.7.2 Test Purpose

To verify the functionality of the READY timer.

44.2.7.3 Method of test

44.2.7.3.1 Test procedure 1

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode B Yes/No

MS operation mode C Yes/No (only if mode B not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed. The SS negotiates T3314. The MS selects a new cell within the old RA. A cell update is performed.

T3314; set to 60 seconds

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS -> SS	ATTACH REQUEST	The MS is set in MS operation mode B (see PICS). If MS operation mode B not supported set the MS in operation mode C.
4	SS -> MS	ATTACH ACCEPT	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI
5	MS -> SS	ATTACH COMPLETE	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3314 = 60 seconds
6	SS		The following messages are sent and shall be received on cell B.
7	MS -> SS	UPLINK RLC DATA BLOCK	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.
8	MS		LLC PDU implicitly indicating cell update.
9	MS -> SS	DETACH REQUEST	The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.7.3.2 Test procedure 2

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed. The SS negotiates T3314. A page is responded by the MS. The MS selects a new cell within the old RA. A cell update is performed, as T3314 is reset by the paging response.

T3314; set to 60 seconds

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS -> SS	ATTACH REQUEST	The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported set the MS in operation mode B.
4	SS -> MS	ATTACH ACCEPT	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI
5	MS -> SS	ATTACH COMPLETE	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3314 = 60 seconds
6	SS		No action for 90 seconds
7	SS -> MS	PAGING REQUEST TYPE 1	Mobile identity = P-TMSI-2 Paging order is for TBF establishment.
8	MS -> SS	UPLINK RLC DATA BLOCK	LLC PDU implicitly indicating paging response. T3314 reset.
9	SS		The following messages are sent and shall be received on cell B.
10	MS -> SS	UPLINK RLC DATA BLOCK	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.
11	MS		LLC PDU implicitly indicating cell update.
12	MS -> SS	DETACH REQUEST	The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.

44.2.7.3.3 Test procedure 3

Initial conditions

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in MCC1/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No
 MS operation mode B Yes/No
 MS operation mode C Yes/No (only if mode B not supported)
 Switch off on button Yes/No
 Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed. The SS indicates ‘force to standby’. The MS selects a new cell within the old RA. No cell update is performed as the MS is in STANDBY state.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS -> SS	ATTACH REQUEST	The MS is set in MS operation mode B (see PICS). If MS operation mode B not supported set the MS in operation mode C.
4	SS -> MS	ATTACH ACCEPT	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = ‘GPRS attach’ Mobile identity = IMSI
5	MS -> SS	ATTACH COMPLETE	Attach result = ‘GPRS only attached’ Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Force to standby indicator set
6	SS		The following messages are sent and shall be received on cell B.
7	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.
8	MS		The SS verifies for 15 seconds that no cell update is received, as the MS is in STANDBY state
9	MS -> SS	DETACH REQUEST	The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = ‘power switched off, GPRS detach’

Specific message contents

None.

44.2.7.3.4 Test procedure 4

Initial conditions

System Simulator:
 Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in

MCC1/MNC1/LAC1/RAC1.

Both cells are operating in network operation mode II.

Mobile Station:

The MS has a valid IMSI.

Related PICS/PIXIT statement(s)

Support of GPRS service Yes/No

MS operation mode C Yes/No

MS operation mode B Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic GPRS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed. The SS negotiates T3314. The MS selects a new cell within the old RA. A cell update is performed.

T3314; set to deactivated

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	SS		The following messages are sent and shall be received on cell A.
2	MS		The SS activates cell A.
3	MS -> SS	ATTACH REQUEST	The MS is set in MS operation mode C (see PICS). If MS operation mode C not supported set the MS in operation mode B.
4	SS -> MS	ATTACH ACCEPT	The MS is powered up or switched on and initiates an attach (see PICS). Attach type = 'GPRS attach' Mobile identity = IMSI
5	MS -> SS	ATTACH COMPLETE	Attach result = 'GPRS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3314 deactivated
6	SS		The following messages are sent and shall be received on cell B.
7	MS -> SS	UPLINK RLC DATA BLOCK	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.
8	SS		LLC PDU implicitly indicating cell update. No action for 120 seconds.
9	SS		The following messages are sent and shall be received on cell A.
10	MS -> SS	UPLINK RLC DATA BLOCK	The RF level of cell A is increased and the RF level of cell B is lowered until cell A is preferred by the MS.
11	MS		LLC PDU implicitly indicating cell update.
12	MS -> SS	DETACH REQUEST	The MS is switched off or power is removed (see PICS). Message not sent if power is removed. Detach type = 'power switched off, GPRS detach'

Specific message contents

None.