3GPP TSG CN Plenary **Tdoc NP-010123**
Meeting #11, Palm Springs, U.S.A
14th - 16th March 2001

Source: **TSG CN WG1**

Title: **CRs to R99 on Work Item GPRS/UMTS interworking**

Agenda item: **7.16**

Document for: **APPROVAL**

Introduction:

This document contains **15** CRs on **R99** Work Item **" GPRS/UMTS interworking"**, that have been agreed by **TSG CN WG1** and are forwarded to TSG CN Plenary meeting #11 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
24.008	335		N1-010060	R99	Clarification of the establishment confirm for the signalling connection	F	3.6.0
24.008	336		N1-010061	Rel-4	Clarification of the establishment confirm for the signalling connection	A	4.1.1
24.008	338		N1-010063	REL-4	Clarification of the location update abnormal cases b) and c) on the MS side	A	4.1.1
24.008	347		N1-010079	R99	Correction of GPRS ciphering key sequence number IEI	F	3.6.0
24.008	348		N1-010080	REL-4	Correction of GPRS ciphering key sequence number IEI	A	4.1.1
24.007	032		N1-010083	R99	Change MMAS-SAP to RR-SAP in fig. 5.6	F	3.6.0
23.009	048	2	N1-010086	R99	GSM to UMTS Handover: Location Reporting in 3G MSC B	F	3.5.0
24.008	265	2	N1-010099	R99	Addition of type 4 IES for P-TMSI Signature and GPRS Timer	F	3.6.0
24.008	266	2	N1-010100	REL-4	Addition of type 4 IES for P-TMSI Signature and GPRS Timer	A	4.1.1
24.007	025	2	N1-010101	R99	Addition of Stream Identifier and NAS Synchronization Indicator to the primitives	F	3.6.0
24.008	327	1	N1-010116	R99	Correction to MM timer handling	F	3.6.0
24.008	328	1	N1-010117	REL-4	Correction to MM timer handling	A	4.1.1
24.008	349	1	N1-010174	R99	Collisions cases of CN initiated paging and MS initiated GMM specific procedures	F	3.6.0
24.008	350	1	N1-010175	REL-4	Collisions cases of CN initiated paging and MS initiated GMM specific procedures	A	4.1.1
24.008	337	1	N1-010176	R99	Clarification of the location update abnormal cases b) and c) on the MS side	F	3.6.0

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010060

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **335** ⌘ rev **-** ⌘ Current version: **3.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification of the establishment confirm for the signalling connection
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS interworking — ***Date:*** ⌘ 05/01/01
Category:	⌘	**F** — ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘

In the liaison R2-002472 received as N1-010010, RAN2 states that:
"At the establishment of a signalling connection, upper layers in the UE provide an initial NAS message to be transferred to the CN by the access stratum.

According to the model of the interaction between RRC and upper layers being defined in TS 24.007, the RRC layer gives a confirmation to the upper layer entity when the signalling connection is established. The question is at which point in time this is confirmed.

At its 17th meeting, RAN2 concluded that:

Confirmation is given to upper layers at the point when the message is submitted to layer 2 for transmission."

This clashes with the text in sections 4.5.1.1 and 4.5.1.6.1 which states that the initial NAS message has been successfully transferred via the radio interface at this point.

Summary of change: ⌘ This CR proposes to remove the text clashing with RAN2 decision.

Consequences if not approved: ⌘ Inconsistency between CN1 and RAN2 specifications.

Clauses affected: ⌘ 4.5.1.1, 4.5.1.6.1

Other specs affected: ⌘
☐ Other core specifications ⌘
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.5.1.1 MM connection establishment initiated by the mobile station

Upon request of a CM entity to establish an MM connection the MM sublayer first decides whether to accept, delay, or reject this request:

- An MM connection establishment may only be initiated by the mobile station when the following conditions are fulfilled:

  - Its update status is UPDATED.

  - The MM sublayer is in one of the states MM IDLE or MM connection active but not in MM connection active (Group call).

  An exception from this general rule exists for emergency calls (see section 4.5.1.5). A further exception is defined in the following clause.

- If an MM specific procedure is running at the time the request from the CM sublayer is received, and the LOCATION UPDATING REQUEST message has been sent, the request will either be rejected or delayed, depending on implementation, until the MM specific procedure is finished and, provided that the network has not sent a "follow-on proceed" indication, the RR connection is released. If the LOCATION UPDATING REQUEST message has not been sent, the mobile station may include a "follow-on request" indicator in the message. The mobile station shall then delay the request until the MM specific procedure is completed, when it may be given the opportunity by the network to use the RR connection: see section 4.4.4.6.

In order to establish an MM connection, the mobile station proceeds as follows:

a) If no RR connection exists, the MM sublayer requests the RR sublayer to establish an RR connection and enters MM sublayer state WAIT FOR RR CONNECTION (MM CONNECTION). This request contains an establishment cause and a CM SERVICE REQUEST message. When the establishment of an RR connection is indicated by the RR sublayer ~~(this indication implies that the CM SERVICE REQUEST message has been successfully transferred via the radio interface, see section 2.2)~~, the MM sublayer of the mobile station starts timer T3230, gives an indication to the CM entity that requested the MM connection establishment, and enters MM sublayer state WAIT FOR OUTGOING MM CONNECTION.

b) If an RR connection is available, the MM sublayer of the mobile station sends a CM SERVICE REQUEST message to the network, starts timer T3230, gives an indication to the CM entity that requested the MM connection establishment, and enters:

   - MM sublayer state WAIT FOR OUTGOING MM CONNECTION, if no MM connection is active;

   - MM sublayer state WAIT FOR ADDITIONAL OUTGOING MM CONNECTION, if at least one MM connection is active;

   - If an RR connection exists but the mobile station is in the state WAIT FOR NETWORK COMMAND then any requests from the CM layer that are received will either be rejected or delayed until this state is left.

c) Only applicable for mobile stations supporting VGCS talking:

If a mobile station which is in the MM sublayer state MM IDLE, service state RECEIVING GROUP CALL (NORMAL SERVICE), receives a request from the GCC sublayer to perform an uplink access, the MM sublayer requests the RR sublayer to perform an uplink access procedure and enters MM sublayer state WAIT FOR RR CONNECTION (GROUP TRANSMIT MODE).

When a successful uplink access is indicated by the RR sublayer, the MM sublayer of the mobile station gives an indication to the GCC sublayer and enters MM sublayer state MM CONNECTION ACTIVE (GROUP TRANSMIT MODE).

When an uplink access reject is indicated by the RR sublayer, the MM sublayer of the mobile station gives an indication to the GCC sublayer and enters the MM sublayer state MM IDLE, service state RECEIVING GROUP CALL (NORMAL SERVICE).

In the network, if an uplink access procedure is performed, the RR sublayer in the network provides an indication to the MM sublayer together with the mobile subscriber identity received in the TALKER INDICATION message. The network shall then enter the MM sublayer state MM CONNECTION ACTIVE (GROUP TRANSMIT MODE).

****** Next modified section ******

4.5.1.6.1 Call re-establishment, initiation by the mobile station

NOTE: The network is unable to initiate call re-establishment.

If at least one request to re-establish an MM connection is received from a CM entity as a response to the indication that the MM connection is interrupted (see 4.5.2.3.) the mobile station initiates the call re-establishment procedure. If several CM entities request re-establishment only one re-establishment procedure is initiated. If any CM entity requests re-establishment, then re-establishment of all transactions belonging to all Protocol Discriminators that permit Call Re-establishment shall be attempted.

Upon request of a CM entity to re-establish an MM connection the MM sublayer requests the RR sublayer to establish an RR connection and enters MM sublayer state WAIT FOR REESTABLISH. This request contains an establishment cause and a CM RE-ESTABLISHMENT REQUEST message. When the establishment of an RR connection is indicated by the RR sublayer ~~(this indication implies that the CM RE-ESTABLISHMENT REQUEST message has been successfully transferred via the radio interface, see section 2.2)~~, the MM sublayer of the mobile station starts timer T3230, gives an indication to all CM entities that are being re-established, and remains in the MM sublayer state WAIT FOR REESTABLISH.

The CM RE-ESTABLISHMENT REQUEST message contains the

- mobile identity according to section 10.5.1.4;
- mobile station classmark 2;
- ciphering key sequence number.

NOTE: Whether or not a CM entity can request re-establishment depends upon the Protocol Discriminator. The specifications for Short Message Service (GSM 04.11), Call Independent Supplementary Services (TS 24.010) and Location Services (TS 24.071) do not currently specify any re-establishment procedures.

Upon receiving a CM RE-ESTABLISHMENT REQUEST message, the network shall analyse its content. Depending on the type of request, the network may start any of the MM common procedures and RR procedures.

The network may initiate the classmark interrogation procedure, for example, to obtain further information on the mobile station's encryption capabilities.

The identification procedure (see section 4.3.3) may be invoked.

The network may invoke the authentication procedure (see section 4.3.2).

In GSM, the network decides if the security mode setting procedure shall be invoked (see GSM 04.18 section 3.4.7).

An indication from the RR sublayer that the security mode setting procedure is completed, or reception of a CM SERVICE ACCEPT message, shall be treated as a service acceptance indication by the mobile station.

In UMTS, the network decides if the security mode control procedure shall be invoked (see section 8.1.10 in 3GPP TS 25.331). An indication from the RR sublayer that the security mode control procedure is completed, or reception of a CM SERVICE ACCEPT message, shall be treated as a service acceptance indication by the mobile station.

The MM connection re-establishment is completed, timer T3230 shall be stopped, all CM entities associated with the re-establishment shall be informed, and MM sublayer state MM CONNECTION ACTIVE is re-entered. All the MM connections are considered to be active.

If the network cannot associate the re-establishment request with any existing call for that mobile station, a CM SERVICE REJECT message is returned with the reject cause:

#38 "call cannot be identified"

If call re-establishment cannot be performed for other reasons, a CM SERVICE REJECT is returned, the appropriate reject cause may be any of the following (see annex G):

4 "IMSI unknown in VLR";

6 "illegal ME";

#17 "network failure";

#22 "congestion";

#32 "service option not supported";

#34 "service option temporarily out of order".

Whatever the reject cause a mobile station receiving a CM SERVICE REJECT as a response to the CM RE-ESTABLISHMENT REQUEST shall stop T3230, release all MM connections and proceed as described in section 4.5.3.1. In addition:

- if cause value #4 is received, the mobile station deletes any TMSI, LAI and ciphering key sequence number in the SIM, changes the update status to NOT UPDATED (and stores it in the SIM according to section 4.1.2.2), and enters the MM sublayer state WAIT FOR NETWORK COMMAND. If subsequently the RR connection is released or aborted, this will force the mobile station to initiate a normal location updating). The CM re-establishment request shall not be memorized during the location updating procedure.

- if cause value #6 is received, the mobile station deletes any TMSI, LAI and ciphering key sequence number in the SIM, changes the update status to ROAMING NOT ALLOWED (and stores it in the SIM according to section 4.1.2.2), and enters the MM sublayer state WAIT FOR NETWORK COMMAND. The MS shall consider the SIM as invalid until switch-off or the SIM is removed.

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15-19 January 2001, Beijing, China

Tdoc N1-010061

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **336** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification of the establishment confirm for the signalling connection
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS interworking
Date:	⌘	16/01/01
Category:	⌘	**A**
Release:	⌘	REL-4

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According to the model of the interaction between RRC and upper layers being defined in TS 24.007, the RRC layer gives a confirmation to the upper layer entity when the signalling connection is established. The question is at which point in time this is confirmed.

At its 17th meeting, RAN2 concluded that:

Confirmation is given to upper layers at the point when the message is submitted to layer 2 for transmission."

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Summary of change: ⌘ This CR proposes to remove the text clashing with RAN2 decision.

Consequences if not approved: ⌘ Inconsistency between CN1 and RAN2 specifications.

Clauses affected: ⌘ 4.5.1.1, 4.5.1.6.1

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Other comments: ⌘

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   - MM sublayer state WAIT FOR OUTGOING MM CONNECTION, if no MM connection is active;

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c) Only applicable for mobile stations supporting VGCS talking:

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When a successful uplink access is indicated by the RR sublayer, the MM sublayer of the mobile station gives an indication to the GCC sublayer and enters MM sublayer state MM CONNECTION ACTIVE (GROUP TRANSMIT MODE).

When an uplink access reject is indicated by the RR sublayer, the MM sublayer of the mobile station gives an indication to the GCC sublayer and enters the MM sublayer state MM IDLE, service state RECEIVING GROUP CALL (NORMAL SERVICE).

In the network, if an uplink access procedure is performed, the RR sublayer in the network provides an indication to the MM sublayer together with the mobile subscriber identity received in the TALKER INDICATION message. The network shall then enter the MM sublayer state MM CONNECTION ACTIVE (GROUP TRANSMIT MODE).

****** Next modified section ******

4.5.1.6.1 Call re-establishment, initiation by the mobile station

NOTE: The network is unable to initiate call re-establishment.

If at least one request to re-establish an MM connection is received from a CM entity as a response to the indication that the MM connection is interrupted (see 4.5.2.3.) the mobile station initiates the call re-establishment procedure. If several CM entities request re-establishment only one re-establishment procedure is initiated. If any CM entity requests re-establishment, then re-establishment of all transactions belonging to all Protocol Discriminators that permit Call Re-establishment shall be attempted.

Upon request of a CM entity to re-establish an MM connection the MM sublayer requests the RR sublayer to establish an RR connection and enters MM sublayer state WAIT FOR REESTABLISH. This request contains an establishment cause and a CM RE-ESTABLISHMENT REQUEST message. When the establishment of an RR connection is indicated by the RR sublayer ~~(this indication implies that the CM RE-ESTABLISHMENT REQUEST message has been successfully transferred via the radio interface, see section 2.2)~~, the MM sublayer of the mobile station starts timer T3230, gives an indication to all CM entities that are being re-established, and remains in the MM sublayer state WAIT FOR REESTABLISH.

The CM RE-ESTABLISHMENT REQUEST message contains the

- mobile identity according to section 10.5.1.4;
- mobile station classmark 2;
- ciphering key sequence number.

NOTE: Whether or not a CM entity can request re-establishment depends upon the Protocol Discriminator. The specifications for Short Message Service (GSM 04.11), Call Independent Supplementary Services (TS 24.010) and Location Services (TS 24.071) do not currently specify any re-establishment procedures.

Upon receiving a CM RE-ESTABLISHMENT REQUEST message, the network shall analyse its content. Depending on the type of request, the network may start any of the MM common procedures and RR procedures.

The network may initiate the classmark interrogation procedure, for example, to obtain further information on the mobile station's encryption capabilities.

The identification procedure (see section 4.3.3) may be invoked.

The network may invoke the authentication procedure (see section 4.3.2).

In GSM, the network decides if the security mode setting procedure shall be invoked (see GSM 04.18 section 3.4.7).

An indication from the RR sublayer that the security mode setting procedure is completed, or reception of a CM SERVICE ACCEPT message, shall be treated as a service acceptance indication by the mobile station.

In UMTS, the network decides if the security mode control procedure shall be invoked (see section 8.1.10 in TS 25.331). An indication from the RR sublayer that the security mode control procedure is completed, or reception of a CM SERVICE ACCEPT message, shall be treated as a service acceptance indication by the mobile station.

The MM connection re-establishment is completed, timer T3230 shall be stopped, all CM entities associated with the re-establishment shall be informed, and MM sublayer state MM CONNECTION ACTIVE is re-entered. All the MM connections are considered to be active.

If the network cannot associate the re-establishment request with any existing call for that mobile station, a CM SERVICE REJECT message is returned with the reject cause:

#38 "call cannot be identified"

If call re-establishment cannot be performed for other reasons, a CM SERVICE REJECT is returned, the appropriate reject cause may be any of the following (see annex G):

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#34 "service option temporarily out of order".

Whatever the reject cause a mobile station receiving a CM SERVICE REJECT as a response to the CM RE-ESTABLISHMENT REQUEST shall stop T3230, release all MM connections and proceed as described in section 4.5.3.1. In addition:

- if cause value #4 is received, the mobile station deletes any TMSI, LAI and ciphering key sequence number in the SIM, changes the update status to NOT UPDATED (and stores it in the SIM according to section 4.1.2.2), and enters the MM sublayer state WAIT FOR NETWORK COMMAND. If subsequently the RR connection is released or aborted, this will force the mobile station to initiate a normal location updating). The CM re-establishment request shall not be memorized during the location updating procedure.

- if cause value #6 is received, the mobile station deletes any TMSI, LAI and ciphering key sequence number in the SIM, changes the update status to ROAMING NOT ALLOWED (and stores it in the SIM according to section 4.1.2.2), and enters the MM sublayer state WAIT FOR NETWORK COMMAND. The MS shall consider the SIM as invalid until switch-off or the SIM is removed.

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010063

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **338** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification of the location update abnormal cases b) and c) on the MS side
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS interworking
Date:	⌘	18/01/01
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
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A *(corresponds to a correction in an earlier release)*
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R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘[H1

For case b):
The description of the location update abnormal case b) on the MS side in section 4.4.4.9 is misleading and could be interpreted in different ways for UMTS:

- A first interpretation is that case b) does not apply to UMTS because the IMMEDIATE ASSIGNMENT REJECT message does not exist in UMTS.
- A second interpretation is that case b) applies to UMTS when an RRC CONNECTION REJECT message is received by the UE (the UMTS equivalent of the IMMEDIATE ASSIGNMENT REJECT message).

It shall also be noted that, as described in TS 25.331 section 8.1.3.9, when receiving an RRC CONNECTION REJECT message, RRC automaticaly resends the RRC CONNECTION REQUEST message after the “wait time” sent by the network. Also there is no UMTS equivalent to the GSM timer T3122 during which access to the cell is prohibited after a rejected access. For these 2 reasons, retransmission at MM level in this access reject case is not needed for UMTS.

For case c):
The location update abnormal case c) on the MS side in section 4.4.4.9 describes the reaction on random access failure.

In GSM, on random access failure, RR will cell reselect another cell and the cell where the random failure occurred is inhibited for 5 secs. At MM level, the 4 seconds timer T3213 is set and on expiry of this timer MM will ask RR to send the location update again. Because T3213 is shorter than the 5 seconds cell inhibition timer in RR, the second location update attempt is sent on another cell.

In summary, in GSM, the combination of RR and MM timers make the mobile retry the location update 4 seconds later through another cell in case of random access failure on the first atempt.

		However in UMTS no cell reselection takes place at RRC level in case of random access failure. Therefore this abnormal case will make the mobile to retry the location update on the same cell in case of random access failure. This create unecessary signalling and battery drain for no benefit.
Summary of change:	⌘	This CR proposes that case b) in section 4.4.4.9 applies only to GSM This CR proposes that the current description in case c) in section 4.4.4.9 applies only to GSM. This CR creates a new case h) to cover the cases of random access failure and access reject for Iu mode.
Consequences if not approved:	⌘	For case b): The specification is unclear and might lead to different inconsistent MS implementations. For case c): Unecessary signalling and battery drain in case of random access failure for location updates for no benefit.

Clauses affected:	⌘	4.4.4.9		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.4.4.9 Abnormal cases on the mobile station side

The different abnormal cases that can be identified are the following:

a) Access barred because of access class control

The location updating procedure is not started. The mobile station stays in the current serving cell and applies normal cell reselection process. The procedure is started as soon as possible and if still necessary (when the barred state is ended or because of a cell change)

b) The answer to random access is an IMMEDIATE ASSIGNMENT REJECT message (A/Gb mode only)

The location updating is not started. The mobile station stays in the chosen cell and applies normal cell selection process. The waiting timer T3122 is reset when a cell change occurs. The procedure is started as soon as possible after T3122 timeout if still necessary.

c) Random access failure (A/Gb mode only)

Timer T3213 is started. When it expires the procedure is attempted again if still necessary.

NOTE: As specified in GSM 05.08, a cell reselection then takes place, with return to the cell inhibited for 5 seconds if there is at least one other suitable cell. Typically the selection process will take the mobile station back to the cell where the random access failed after 5 seconds.

If at the expiry of timer T3213 a new cell has not been selected due to the lack of valid information (see GSM 05.08), the mobile station may as an option delay the repeated attempt for up to 8 seconds to allow cell re-selection to take place. In this case the procedure is attempted as soon as a new cell has been selected or the mobile station has concluded that no other cell can be selected.

If random access failure occurs for two successive random access attempts for location updating the mobile station proceeds as specified below.

d) RR connection failure

The procedure is aborted and the mobile station proceeds as specified below.

e) T3210 timeout

The procedure is aborted, the RR connection is aborted and the MS proceeds as specified below.

f) RR release before the normal end of procedure

The procedure is aborted and the mobile station proceeds as specified below.

g) Location updating reject, other causes than those treated in section 4.4.4.7

The MS waits for release of the RR connection as specified in section 4.4.4.8, and then proceeds as specified below.

h) RR connection establishment failure (Iu mode only)

The procedure is aborted and the mobile station proceeds as specified below.

NOTE: Case h) covers all cases when the signalling connection cannot be established, including random access failure and access reject. As the RRC protocol has error specific retransmission mechanisms (see 3GPP TS 25.331), there is no need to distinguish between the different error cases within MM.

In cases d) to ~~g)~~ h) above and for repeated failures as defined in c) above the mobile station proceeds as follows. Timer T3210 is stopped if still running. The RR Connection is aborted in case of timer T3210 timeout. The attempt counter is incremented. The next actions depend on the Location Area Identities (stored and received from the BCCH of the current serving cell) and the value of the attempt counter.

- the update status is UPDATED, and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4:

  The mobile station shall keep the update status to UPDATED, the MM IDLE sub-state after the RR connection release is NORMAL SERVICE. The mobile station shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type;

- either the update status is different from UPDATED, or the stored LAI is different from the one received on the BCCH from the current serving cell, or the attempt counter is greater or equal to 4:

  The mobile station shall delete any LAI, TMSI, ciphering key sequence number stored in the SIM, set the update status to NOT UPDATED and enter the MM IDLE sub-state ATTEMPTING TO UPDATE when the RR connection is released (See section 4.2.2.2 for the subsequent actions). If the attempt counter is smaller than 4, the mobile station shall memorize that timer T3211 is to be started when the RR connection is released, otherwise it shall memorize that timer T3212 is to be started when the RR connection is released.

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Tdoc N1-010079

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **347** ⌘ rev **-** ⌘ Current version: **3.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of GPRS ciphering key sequence number IEI
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS Interworking
Date:	⌘	2001-01-08
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	The IEI value "8" for CKSN IE should be corrected to "8-" in table 9.4.9 in chapter 9.4.4, as only the four most significant bits in the octet 1 of the ciphering key sequence number IE defines the IEI value. Bit 8 in figure 10.5.2 shall also be used for the CKSN IEI in order to make the value "8-" a possible value for this IEI.
Summary of change:	⌘	Correction of the IEI value of the GPRS CKSN IE in the Authentication and Ciphering Request message.
Consequences if not approved:	⌘	

Clauses affected:	⌘	9.4.9, 10.5.1.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.4.9 Authentication and ciphering request

This message is sent by the network to the MS to initiate authentication of the MS identity. Additionally, the ciphering mode is set, indicating whether ciphering will be performed or not. See table 9.4.9/GSM 24.008.

Message type: AUTHENTICATION AND CIPHERING REQUEST

Significance: dual

Direction: network to MS

Table 9.4.9/GSM 24.008: AUTHENTICATION AND CIPHERING REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Authentication and ciphering request message identity	Message type 10.4	M	V	1
	Ciphering algorithm	Ciphering algorithm 10.5.5.3	M	V	1/2
	IMEISV request	IMEISV request 10.5.5.10	M	V	1/2
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	A&C reference number	A&C reference number 10.5.5.19	M	V	1/2
21	Authentication parameter RAND	Authentication parameter RAND 10.5.3.1	O	TV	17
8-	GPRS ciphering key sequence number	Ciphering key sequence number 10.5.1.2	C	TV	1
28	Authentication parameter AUTN	Authentication parameter AUTN 10.5.3.1.1	O	TLV	18

9.4.9.1 Authentication Parameter RAND

This IE shall only be included if authentication shall be performed.

9.4.9.2 GPRS ciphering key sequence number

This IE is included if and only if the *Authentication parameter RAND* is contained in the message.

9.4.9.3 Authentication Parameter AUTN

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

10.5.1.2 Ciphering Key Sequence Number

In a GSM authentication challenge, the purpose of the *Ciphering Key Sequence Number* information element is to make it possible for the network to identify the ciphering key Kc which is stored in the mobile station without invoking the authentication procedure.

The ciphering key sequence number is allocated by the network and sent with the AUTHENTICATION REQUEST message to the mobile station where it is stored together with the calculated ciphering key Kc.

The *Ciphering Key Sequence Number* information element is coded as shown in figure 10.5.2/3GPP TS 24.008 and table 10.5.2/3GPP TS 24.008.

In a UMTS authentication challenge, the purpose of the *Ciphering Key Sequence Number* information element is to make it possible for the network to identify the ciphering key CK and integrity key IK which are stored in the MS without invoking the authentication procedure. CK and IK form a Key Set Identifier (KSI) (see 3GPP TS 33.102) which is encoded the same as the CKSN and is therefore included in the CKSN field.

The ciphering key sequence number is a type 1 information element.

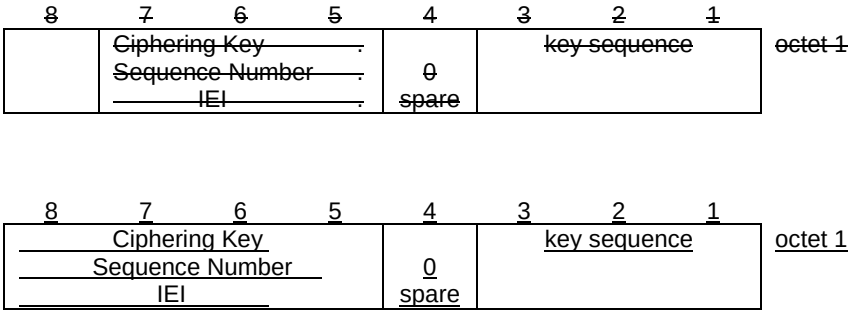

Figure 10.5.2/3GPP TS 24.008 *Ciphering Key Sequence Number* information element

Table 10.5.2/3GPP TS 24.008: *Ciphering Key Sequence Number* information element

Key sequence (octet 1) Bits **3 2 1**	
0 0 0 through 1 1 0	Possible values for the ciphering key sequence number
1 1 1	No key is available (MS to network); Reserved (network to MS)

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Beijing, China – 15-19 January, 2001

Tdoc N1-010080

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **348** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of GPRS ciphering key sequence number IEI
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS Interworking
Date:	⌘	2001-01-08
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The IEI value "8" for CKSN IE should be corrected to "8-" in table 9.4.9 in chapter 9.4.4, as only the four most significant bits in the octet 1 of the ciphering key sequence number IE defines the IEI value. Bit 8 in figure 10.5.2 shall also be used for the CKSN IEI in order to make the value "8-" a possible value for this IEI.
Summary of change:	⌘	Correction of the IEI value of the GPRS CKSN IE in the Authentication and Ciphering Request message.
Consequences if not approved:	⌘	

Clauses affected:	⌘	9.4.9, 10.5.1.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.4.9 Authentication and ciphering request

This message is sent by the network to the MS to initiate authentication of the MS identity. Additionally, the ciphering mode is set, indicating whether ciphering will be performed or not. See table 9.4.9/GSM 24.008.

Message type: AUTHENTICATION AND CIPHERING REQUEST

Significance: dual

Direction: network to MS

Table 9.4.9/GSM 24.008: AUTHENTICATION AND CIPHERING REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
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	IMEISV request	IMEISV request 10.5.5.10	M	V	1/2
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	A&C reference number	A&C reference number 10.5.5.19	M	V	1/2
21	Authentication parameter RAND	Authentication parameter RAND 10.5.3.1	O	TV	17
8-	GPRS ciphering key sequence number	Ciphering key sequence number 10.5.1.2	C	TV	1
28	Authentication parameter AUTN	Authentication parameter AUTN 10.5.3.1.1	O	TLV	18

9.4.9.1 Authentication Parameter RAND

This IE shall only be included if authentication shall be performed.

9.4.9.2 GPRS ciphering key sequence number

This IE is included if and only if the *Authentication parameter RAND* is contained in the message.

9.4.9.3 Authentication Parameter AUTN

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

*** Next Modification ***

10.5.1.2 Ciphering Key Sequence Number

In a GSM authentication challenge, the purpose of the *Ciphering Key Sequence Number* information element is to make it possible for the network to identify the ciphering key Kc which is stored in the mobile station without invoking the authentication procedure.

The ciphering key sequence number is allocated by the network and sent with the AUTHENTICATION REQUEST message to the mobile station where it is stored together with the calculated ciphering key Kc.

The *Ciphering Key Sequence Number* information element is coded as shown in figure 10.5.2/TS 24.008 and table 10.5.2/TS 24.008.

In a UMTS authentication challenge, the purpose of the *Ciphering Key Sequence Number* information element is to make it possible for the network to identify the ciphering key CK and integrity key IK which are stored in the MS without invoking the authentication procedure. CK and IK form a Key Set Identifier (KSI) (see TS 33.102) which is encoded the same as the CKSN and is therefore included in the CKSN field.

The ciphering key sequence number is a type 1 information element.

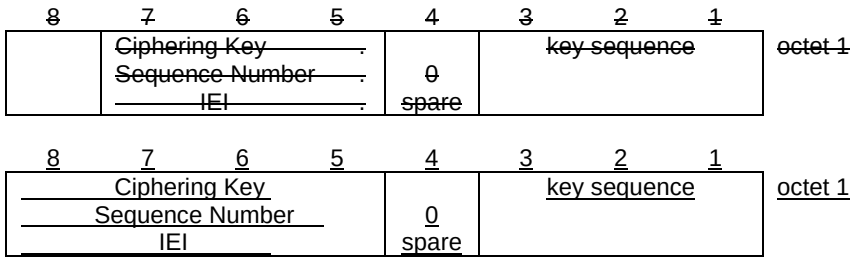


Figure 10.5.2/TS 24.008 *Ciphering Key Sequence Number* information element

Table 10.5.2/TS 24.008: *Ciphering Key Sequence Number* information element

Key sequence (octet 1)	
Bits **3 2 1**	
0 0 0 Throug h 1 1 0	Possible values for the ciphering key sequence number
1 1 1	No key is available (MS to network); Reserved (network to MS)

3GPP TSG-CN1 Meeting #15
Bejing, China, 15-19 January 2001

Tdoc N1-010083

CR-Form-v3

CHANGE REQUEST

⌘ **24.007** **CR** **032** ⌘ rev **-** ⌘ Current version: **3.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network x

Title:	⌘	Change MMAS-SAP to RR-SAP in fig. 5.6
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS interworking
Date:	⌘	4/1/01
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	In the description sections the SAP between MM and AS is called RR-SAP while in fig 5.6 the SAP is wrongly called MMAS-SAP.
Summary of change:	⌘	The SAP in fig 5.6 has been renamed correctly
Consequences if not approved:	⌘	Fig. 5.6 is inconsistent.

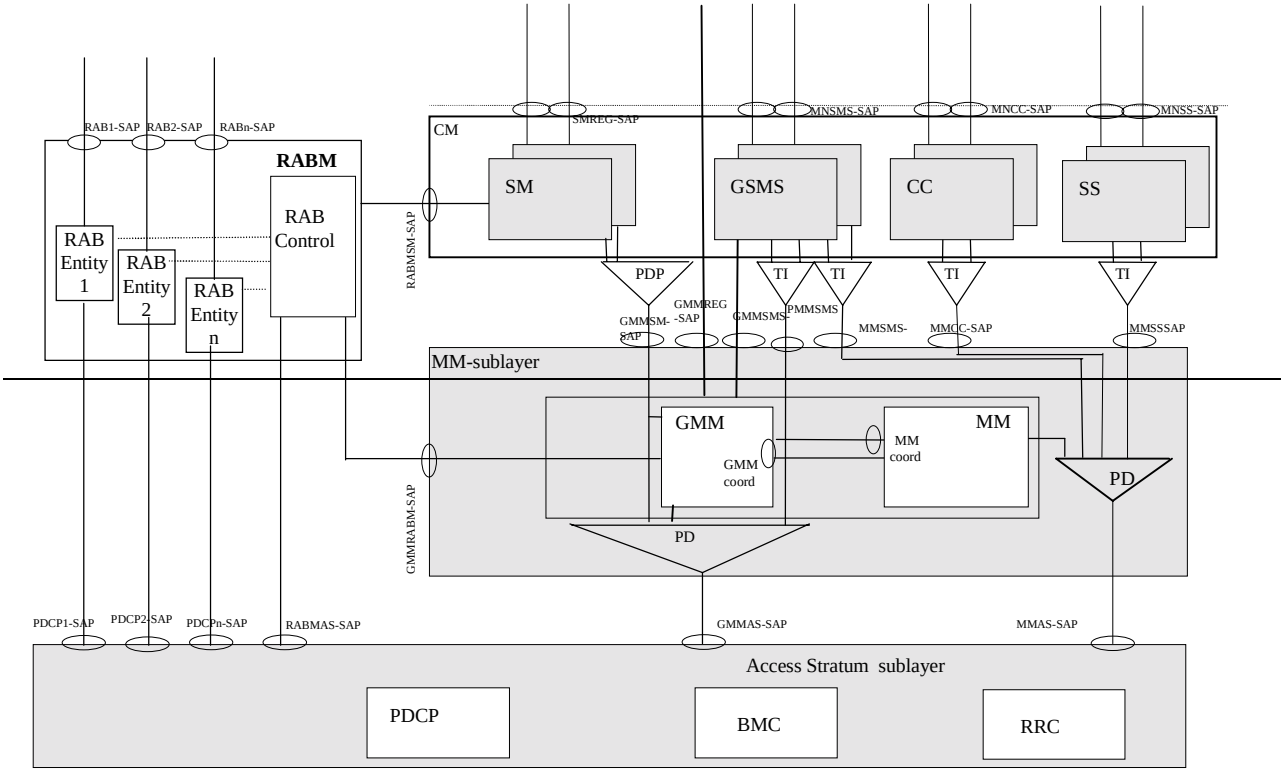
Clauses affected:	⌘	Fig 5.6
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.



~~**Figure 5.6/24.007: Protocol architecture of Non Access Stratum supporting CS/PS mode of operation MSs, MS – side**~~

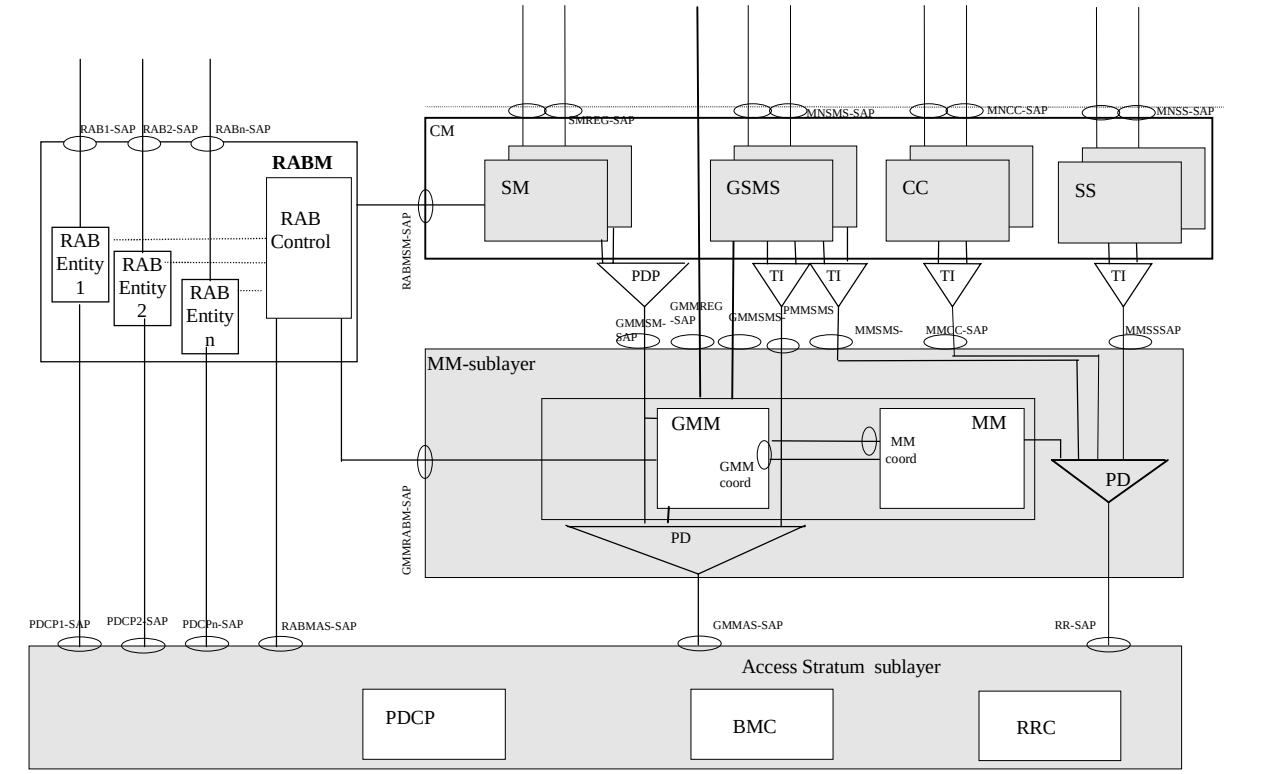


Figure 5.6/24.007: Protocol architecture of Non Access Stratum supporting CS/PS mode of operation MSs, MS – side

3GPP TSG-CN1 Meeting #14
Beijing, China 15 - 19 January, 2001

Tdoc N1-010086 ***(revision of N1-001222)***

CR-Form-v3

CHANGE REQUEST

⌘ **23.009** **CR** **018** ⌘ rev **r2** ⌘ Current version: **3.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	GSM to UMTS Handover: Location Reporting in 3G_MSC-B
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS Interworking
Date:	⌘	2000-01-11
Category:	⌘	**F**
Release:	⌘	R99

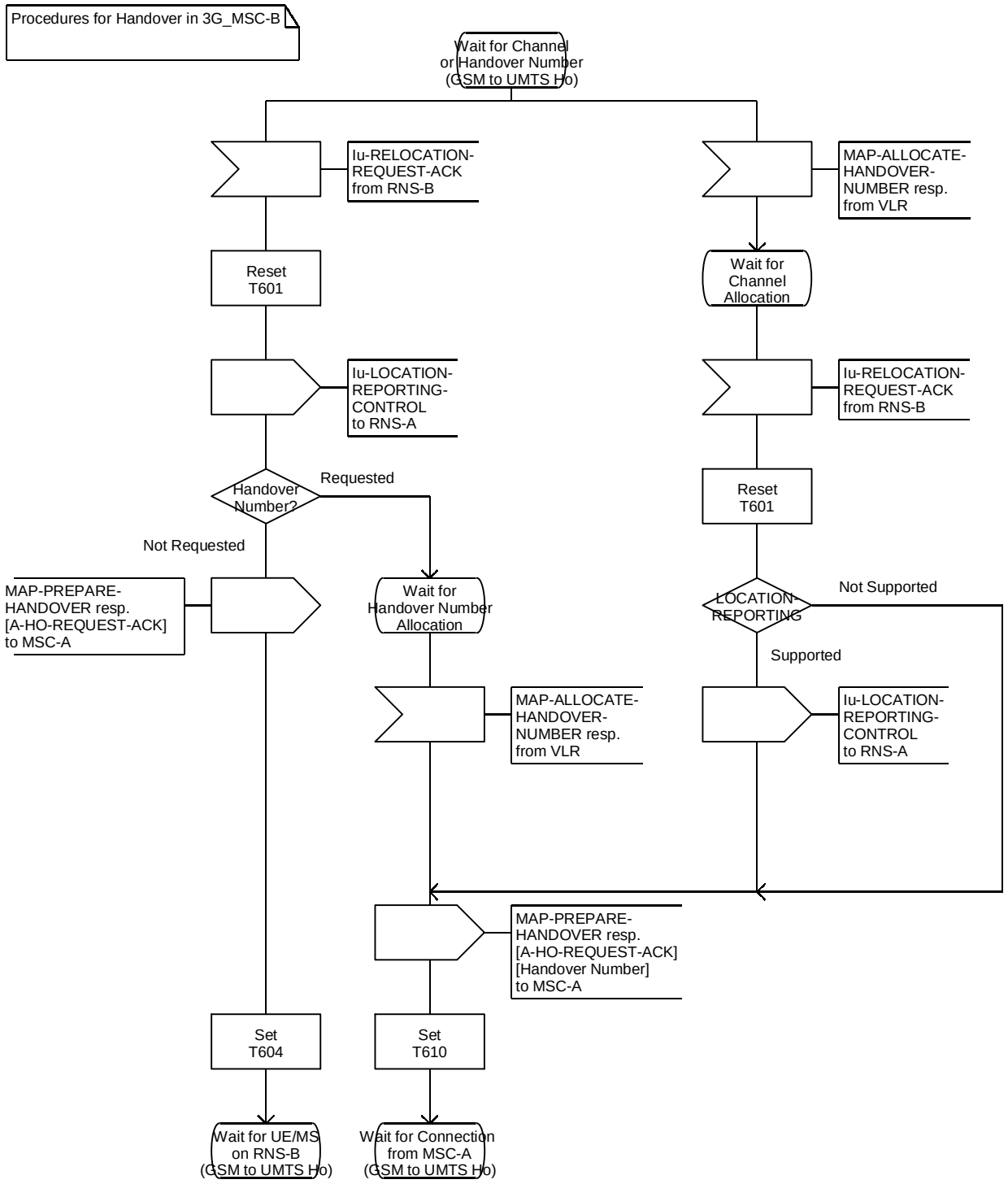
Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	3G_MSC-B or 3G_MSC-B' should always initiate the Location Reporting Control procedure towards the target RNC since the MAP-E interface doesn't support initiation of the Location Reporting Control procedure from MSC-A in case of an inter-MSC GSM to UMTS handover. If no reporting control is required from the target RNC, after an inter-MSC GSM to UMTS handover, neither legal interception nor location based services running in the anchor MSC will work, due to that the RNC does not inform of location changes.
Summary of change:	⌘	Location Reporting Control procedure is introduced in GSM to UMTS HO.
Consequences if not approved:	⌘	Neither Legal Interception nor Location based services will work properly after the GSM to UMTS HO.

Clauses affected:	⌘	Fig. 44 (sheet 2, 8 and 24 of 54)
Other specs affected:	⌘	☐ Other core specifications ⌘ 29.010 CR008 ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

Procedure 3G_MSC_B_HO Sheet2(54)



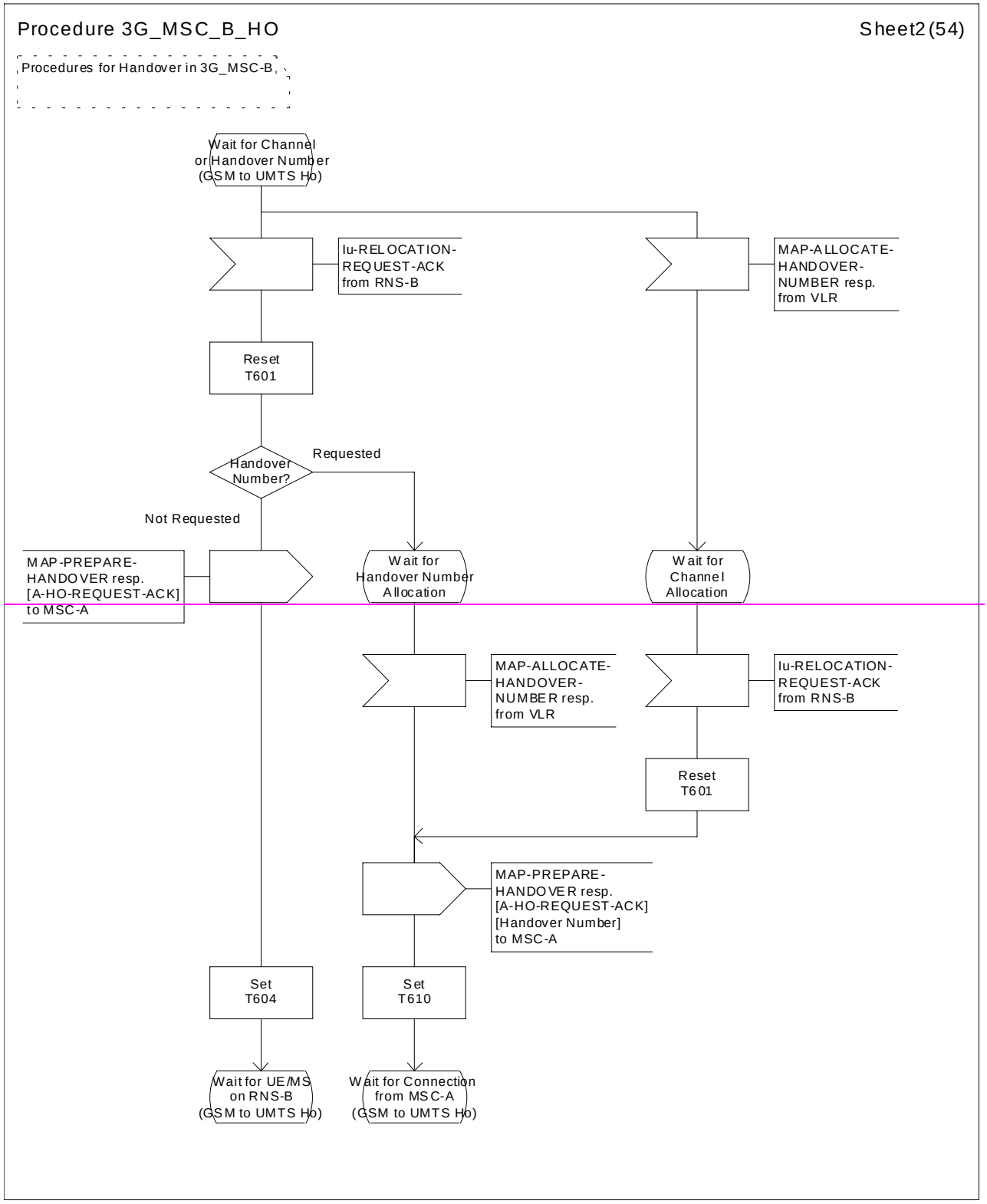
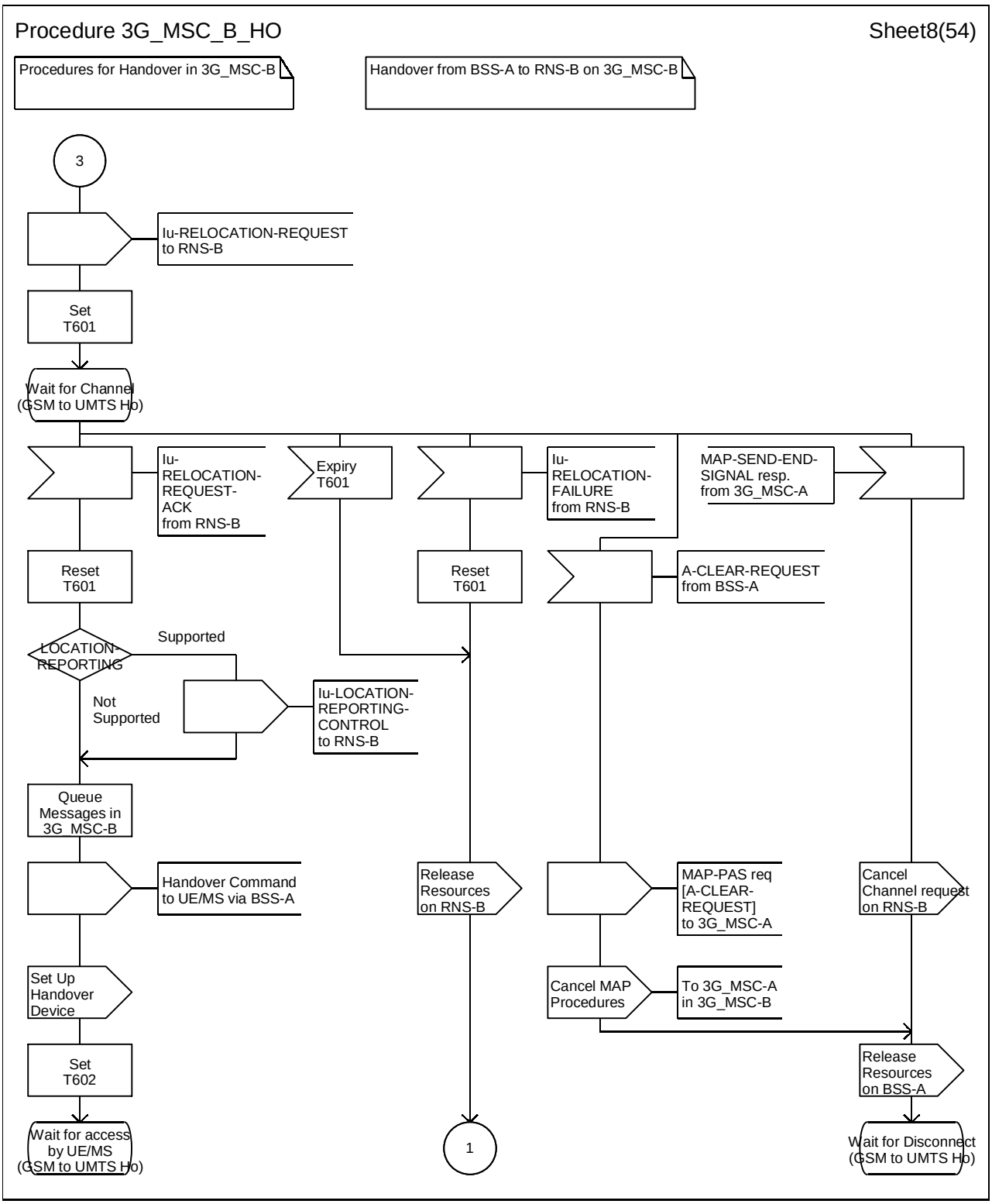


Figure 44 (sheet 2 of 54): Handover control procedure in 3G_MSC-B


Procedure 3G_MSC_B_HO
Sheet8(54)
Procedures for Handover in 3G_MSC-B
Handover from BSS-A to RNS-B on 3G_MSC-B
3
Iu-RELOCATION-REQUEST to RNS-B
Set T601
Wait for Channel (GSM to UMTS Ho)
Iu-RELOCATION-REQUEST-ACK from RNS-B
Expiry T601
Iu-RELOCATION-FAILURE from RNS-B
MAP-SEND-END-SIGNAL resp. from 3G_MSC-A
Reset T601
Reset T601
A-CLEAR-REQUEST from BSS-A
LOCATION-REPORTING
Supported
Not Supported
Iu-LOCATION-REPORTING-CONTROL to RNS-B
Queue Messages in 3G_MSC-B
Handover Command to UE/MS via BSS-A
Release Resources on RNS-B
MAP-PAS req [A-CLEAR-REQUEST] to 3G_MSC-A
Cancel Channel request on RNS-B
Set Up Handover Device
Cancel MAP Procedures
To 3G_MSC-A in 3G_MSC-B
Set T602
Release Resources on BSS-A
Wait for access by UE/MS (GSM to UMTS Ho)
1
Wait for Disconnect (GSM to UMTS Ho)

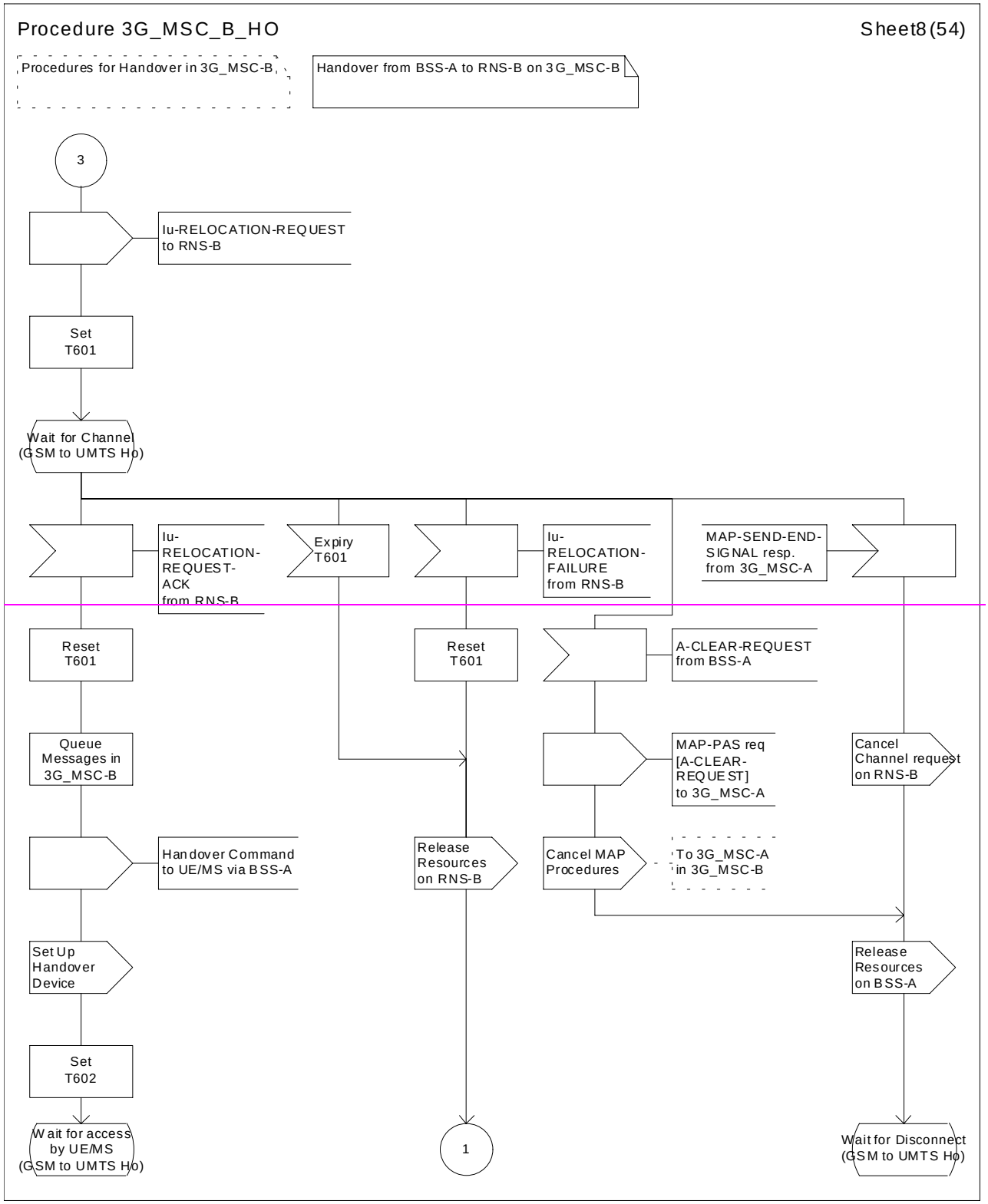
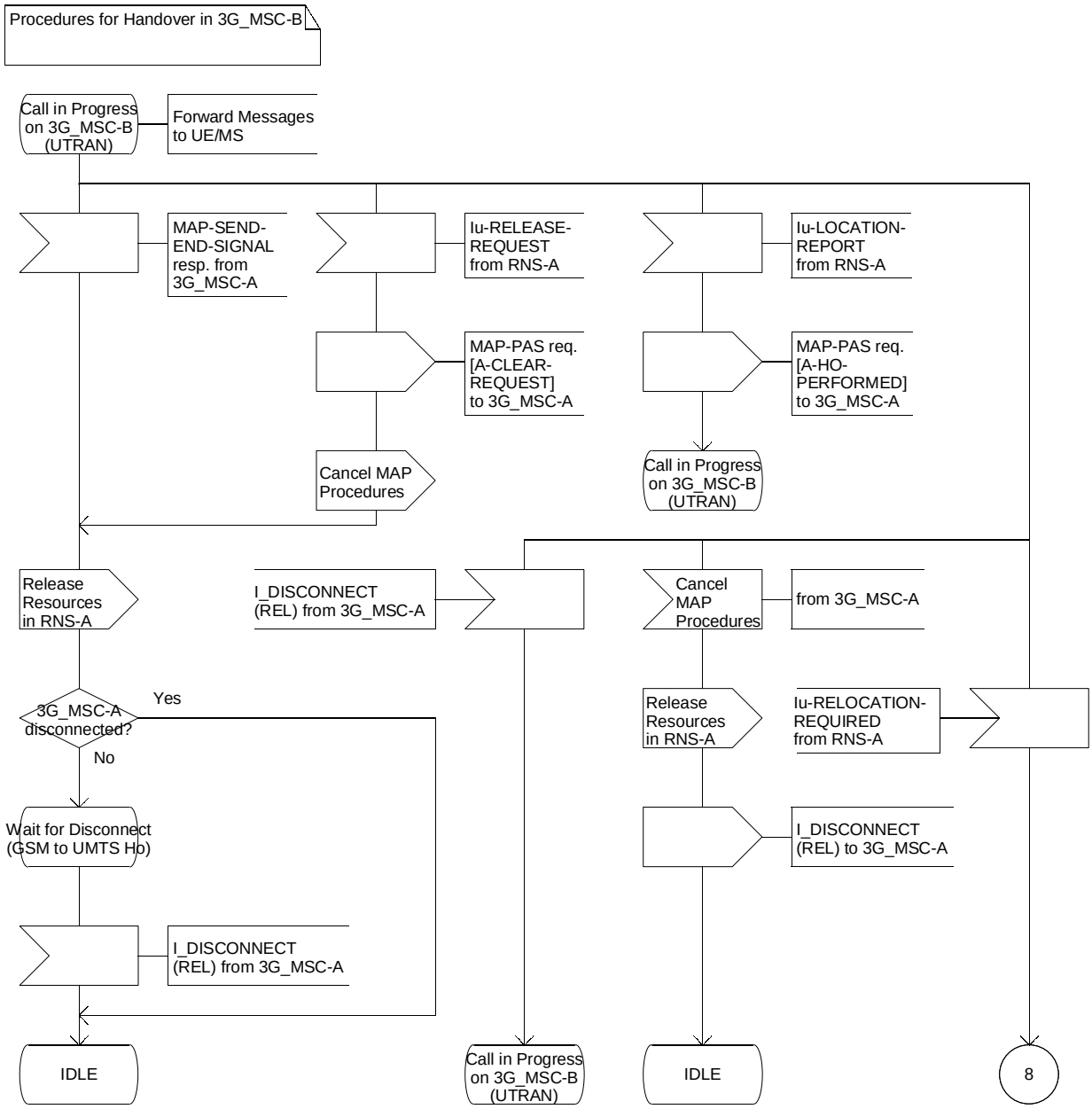


Figure 44 (sheet 8 of 54): Handover control procedure in 3G_MSC-B

Procedure 3G_MSC_B_HO

Sheet24(54)



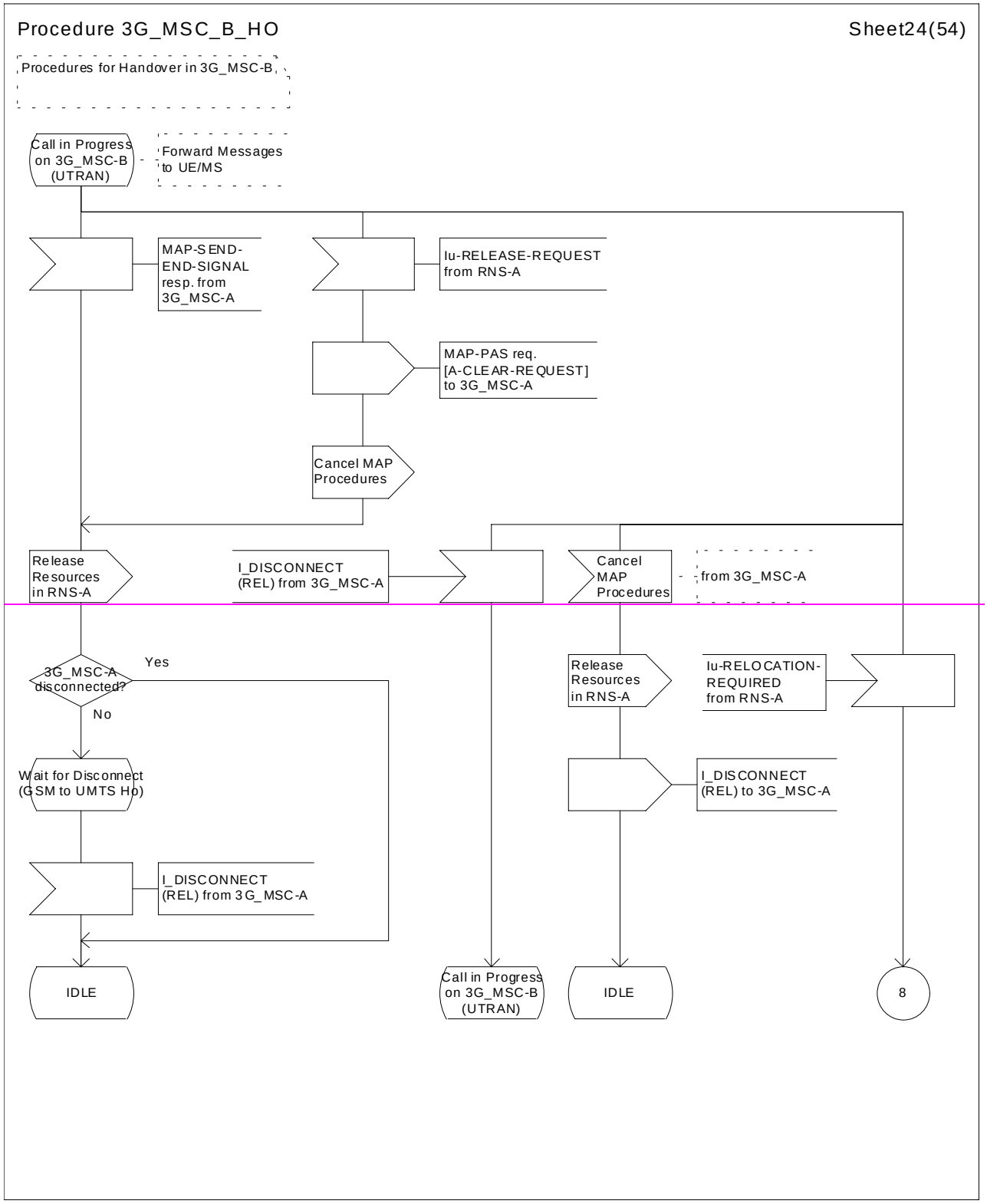


Figure 44 (sheet 24 of 54): Handover control procedure in 3G_MSC-B

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010099
(revision of Tdoc N1-001201)

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **265** ⌘ rev **2** ⌘ Current version: **3.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network **X**

Title:	⌘	Addition of type 4 IEs for P-TMSI Signature and GPRS Timer
Source:	⌘	Siemens AG
Work item code:	⌘	GSM / UMTS interworking
Date:	⌘	08 January 01
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	In R99 the information elements P-TMSI Signature and GPRS Timer were added to several messages as type 4 IEs, as for reasons of backward compatibility type 3 IEs cannot be added to messages already defined in earlier versions of the protocol. In section 10, however, these information elements are only specified as type 3 IEs.
Summary of change:	⌘	P-TMSI Signature and GPRS Timer are specified also as type 4 IEs.
Consequences if not approved:	⌘	The description of the message encoding is incomplete.

Clauses affected:	⌘	9.4.2, 9.4.4, 9.4.5.2, 9.4.15, 9.4.17, 10.5.5.8a (new), 10.5.7.4 (new)
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

9.4.2 Attach accept

This message is sent by the network to the MS to indicate that the corresponding attach request has been accepted. See table 9.4.2/3GPP TS 24.008.

Message type: ATTACH ACCEPT

Significance: dual

Direction: network to MS

Table 9.4.2/3GPP TS 24.008: ATTACH ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Attach accept message identity	Message type 10.4	M	V	1
	Attach result	Attach result 10.5.5.1	M	V	1/2
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Periodic RA update timer	GPRS Timer 10.5.7.3	M	V	1
	Radio priority for SMS	Radio priority 10.5.7.2	M	V	1/2
	Spare half octet	Spare half octet 10.5.1.8	M	V	1/2
	Routing area identification	Routing area identification 10.5.5.15	M	V	6
19	P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
17	Negotiated READY timer value	GPRS Timer 10.5.7.3	O	TV	2
18	Allocated P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
23	MS identity	Mobile identity 10.5.1.4	O	TLV	6 - 7
25	GMM cause	GMM cause 10.5.5.14	O	TV	2
2A	T3302 value	GPRS Timer 2 10.5.7.~~43~~	O	TLV	3
8C	Cell Notification	Cell Notification 10.5.5.21	O	T	1

9.4.2.1 P-TMSI signature

This IE may be included to assign an identity to the MS's GMM context.

9.4.2.2 Negotiated READY timer

This IE may be included to indicate a value for the READY timer.

9.4.2.3 Allocated P-TMSI

This IE may be included to assign a P-TMSI to an MS in case of a GPRS or combined GPRS attach.

9.4.2.4 MS identity

This IE may be included to assign or unassign a TMSI to an MS in case of a combined GPRS attach.

9.4.2.5 GMM cause

This IE shall be included when IMSI attach for non-GPRS services was not successful during a combined GPRS attach procedure.

9.4.2.6 T3302 value

This IE may be included to indicate a value for the T3302 timer.

9.4.2.7 Cell Notification (GSM only)

In GSM, this IE shall be included by the SGSN in order to indicate the ability to support the Cell Notification.

********** NEXT MODIFIED SECTION **********

9.4.4 Attach reject

This message is sent by the network to the MS to indicate that the corresponding attach request has been rejected. See table 9.4.4/3GPP TS 24.008.

Message type: ATTACH REJECT

Significance: dual

Direction: network to MS

Table 9.4.4/3GPP TS 24.008: ATTACH REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Attach reject message identity	Message type 10.4	M	V	1
	GMM cause	GMM cause 10.5.5.14	M	V	1
2A	T3302 value	GPRS Timer 2 10.5.7.4~~3~~	O	TLV	3

9.4.4.1 T3302 value

This IE may be included to indicate a value for the T3302 timer.

********** NEXT MODIFIED SECTION **********

9.4.5.2 Detach request (mobile originating detach)

This message is sent by the MS to request the release of a GMM context. See table 9.4.5.2/3GPP TS 24.008.

Message type: DETACH REQUEST

Significance: dual

Direction: MS to network

Table 9.4.5.2/3GPP TS 24.008:DETACH REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Detach request message identity	Message type 10.4	M	V	1
	Detach type	Detach type 10.5.5.5	M	V	1/2
	Spare half octet	Spare half octet 10.5.1.8	M	V	1/2
18	P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
19	P-TMSI signature	P-TMSI signature 2 10.5.5.8a	O	TLV	5

9.4.5.2.1 P-TMSI

This IE shall be included by the MS.

9.4.5.2.2 P-TMSI signature

This IE shall be included if the MS has a valid P-TMSI signature.

********** NEXT MODIFIED SECTION **********

9.4.15 Routing area update accept

This message is sent by the network to the MS to provide the MS with GPRS mobility management related data in response to a *routing area update request* message . See table 9.4.15/3GPP TS 24.008.

Message type: ROUTING AREA UPDATE ACCEPT

Significance: dual

Direction: network to MS

Table 9.4.15/3GPP TS 24.008: ROUTING AREA UPDATE ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update accept message identity	Message type 10.4	M	V	1
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Update result	Update result 10.5.5.17	M	V	1/2
	Periodic RA update timer	GPRS Timer 10.5.7.3	M	V	1
	Routing area identification	Routing area identification 10.5.5.15	M	V	6
19	P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
18	Allocated P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
23	MS identity	Mobile identity 10.5.1.4	O	TLV	7
26	List of Receive N-PDU Numbers	Receive N-PDU Number list 10.5.5.11	O	TLV	4 - 19
17	Negotiated READY timer value	GPRS Timer 10.5.7.3	O	TV	2
25	GMM cause	GMM cause 10.5.5.14	O	TV	2
2A	T3302 value	GPRS Timer 2 10.5.7.~~3~~	O	TLV	3
8C	Cell Notification	Cell Notification 10.5.5.21	O	T	1

9.4.15.1 P-TMSI signature

This IE may be included to assign an identity to the MS's GMM context.

9.4.15.2 Allocated P-TMSI

This IE may be included to assign a P-TMSI to an MS in case of a GPRS or combined routing area updating procedure.

9.4.15.3 MS identity

This IE may be included to assign or unassign a TMSI to a MS in case of a combined routing area updating procedure.

9.4.15.4 List of Receive N-PDU Numbers

This IE shall be included in case of an inter SGSN routing area updating, if there are PDP contexts that have been activated in acknowledged transfer mode.

9.4.15.5 Negotiated READY timer value

This IE may be included to indicate a value for the READY timer.

9.4.15.6 GMM cause

This IE shall be included if IMSI attach was not successful for non-GPRS services during a combined GPRS routing area updating procedure.

9.4.15.7 T3302 value

This IE may be included to indicate a value for the T3302 timer.

9.4.15.8 Cell Notification (GSM only)

In GSM, this IE shall be included if by the SGSN in order to indicate the ability to support the Cell Notification.

********** NEXT MODIFIED SECTION **********

9.4.17 Routing area update reject

This message is sent by the network to the MS in order to reject the routing area update procedure. See table 9.4.17/3GPP TS 24.008.

Message type: ROUTING AREA UPDATE REJECT

Significance: dual

Direction: network to MS

Table 9.4.17/3GPP TS 24.008: ROUTING AREA UPDATE REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update reject message identity	Message type 10.4	M	V	1
	GMM cause	GMM cause 10.5.5.14	M	V	1
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Spare half octet	Spare half octet 10.5.1.8	M	V	1/2
2A	T3302 value	GPRS Timer 2 10.5.7.43	O	TLV	3

9.4.17.1 T3302 value

This IE may be included to indicate a value for the T3302 timer.

********** NEXT MODIFIED SECTION **********

10.5.5.8 P-TMSI signature

The purpose of the *P-TMSI signature* information element is to identify a GMM context of an MS.
The *P-TMSI signature* is a type 3 information element with 4 octets length.
The *P-TMSI signature* information element is coded as shown in figure 10.5.124/3GPP TS 24.008 and table 10.5.141/3GPP TS 24.008.

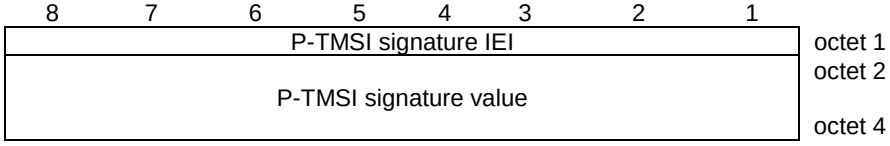


Figure 10.5.124/3GPP TS 24.008: *P-TMSI signature* information element

Table 10.5.141/3GPP TS 24.008: *P-TMSI signature* information element

P-TMSI signature value Octets 2, 3 and 4 contain the binary representation of the P-TMSI signature. Bit 1 of octet 4 is the least significant bit and bit 8 of octet 2 is the most significant bit.

10.5.5.8a P-TMSI signature 2

The purpose of the *P-TMSI signature 2* information element is to identify a GMM context of an MS.
The *P-TMSI signature 2* is a type 4 information element with 5 octets length.
The *P-TMSI signature 2* information element is coded as shown in figure 10.5.124a/3GPP TS 24.008 and table 10.5.141a/3GPP TS 24.008.

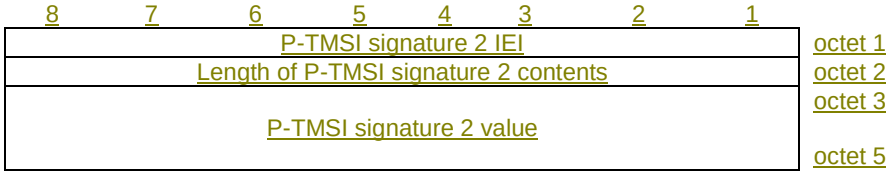


Figure 10.5.124a/3GPP TS 24.008: *P-TMSI signature 2* information element

Table 10.5.141a/3GPP TS 24.008: *P-TMSI signature 2* information element

P-TMSI signature 2 value is coded as octets 2 to 4 of the *P-TMSI signature* IE.

********** NEXT MODIFIED SECTION **********

10.5.7.3 GPRS Timer

The purpose of the *GPRS timer* information element is to specify GPRS specific timer values, e.g. for the READY timer.
The *GPRS timer* is a type 3 information element with 2 octets length.
The *GPRS timer* information element is coded as shown in figure 10.5.146/3GPP TS 24.008 and table 10.5.162/3GPP TS 24.008.

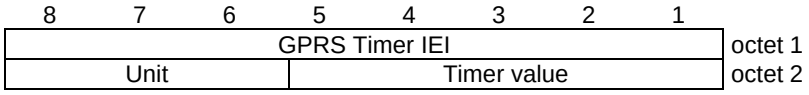


Figure 10.5.146/3GPP TS 24.008: GPRS *Timer* ~~*value*~~ information element

Table 10.5.162/3GPP TS 24.008: GPRS *Timer* ~~*value*~~ information element

Timer value (octet 2) Bits 5 to 1 represent the binary coded timer value. Bits 6 to 8 defines the timer value unit for the GPRS timer as follows: Bits **8 7 6** 0 0 0 value is incremented in multiples of 2 seconds 0 0 1 value is incremented in multiples of 1 minute 0 1 0 value is incremented in multiples of decihours 1 1 1 value indicates that the timer is deactivated. Other values shall be interpreted as multiples of 1 minute in this version of the protocol.

10.5.7.4 GPRS Timer 2

The purpose of the *GPRS timer 2* information element is to specify GPRS specific timer values, e.g. for the timer T3302.
The *GPRS timer 2* is a type 4 information element with 3 octets length.

The *GPRS timer 2* information element is coded as shown in figure 10.5.147/3GPP TS 24.008 and table 10.5.163/3GPP TS 24.008.

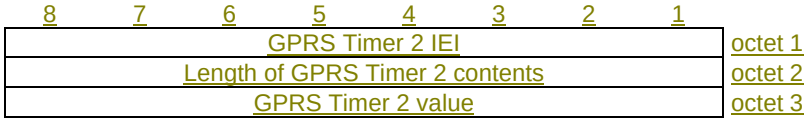


Figure 10.5.147/3GPP TS 24.008: GPRS *Timer 2* information element

Table 10.5.163/3GPP TS 24.008: GPRS *Timer 2* information element

GPRS Timer 2 value is coded as octet 2 of the *GPRS timer* information element.

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010100
(revision of Tdoc N1-001202)

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **266** ⌘ rev **2** ⌘ Current version: **4.1.1** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network **X**

Title:	⌘	Addition of type 4 IEs for P-TMSI Signature and GPRS Timer
Source:	⌘	Siemens AG
Work item code:	⌘	GSM / UMTS interworking
Date:	⌘	08 January 01
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	In R99 the information elements P-TMSI Signature and GPRS Timer were added to several messages as type 4 IEs, as for reasons of backward compatibility type 3 IEs cannot be added to messages already defined in earlier versions of the protocol. In section 10, however, these information elements are only specified as type 3 IEs.
Summary of change:	⌘	P-TMSI Signature and GPRS Timer are specified also as type 4 IEs.
Consequences if not approved:	⌘	The description of the message encoding is incomplete.

Clauses affected:	⌘	9.4.2, 9.4.4, 9.4.5.2, 9.4.15, 9.4.17, 10.5.5.8a (new), 10.5.7.4 (new)
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.4.2 Attach accept

This message is sent by the network to the MS to indicate that the corresponding attach request has been accepted. See table 9.4.2/TS 24.008.

Message type: ATTACH ACCEPT

Significance: dual

Direction: network to MS

Table 9.4.2/TS 24.008: ATTACH ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Attach accept message identity	Message type 10.4	M	V	1
	Attach result	Attach result 10.5.5.1	M	V	1/2
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Periodic RA update timer	GPRS Timer 10.5.7.3	M	V	1
	Radio priority for SMS	Radio priority 10.5.7.2	M	V	1/2
	Spare half octet	Spare half octet 10.5.1.8	M	V	1/2
	Routing area identification	Routing area identification 10.5.5.15	M	V	6
19	P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
17	Negotiated READY timer value	GPRS Timer 10.5.7.3	O	TV	2
18	Allocated P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
23	MS identity	Mobile identity 10.5.1.4	O	TLV	6 - 7
25	GMM cause	GMM cause 10.5.5.14	O	TV	2
2A	T3302 value	GPRS Timer 2 10.5.7.4~~3~~	O	TLV	3
8C	Cell Notification	Cell Notification 10.5.5.21	O	T	1

9.4.2.1 P-TMSI signature

This IE may be included to assign an identity to the MS's GMM context.

9.4.2.2 Negotiated READY timer

This IE may be included to indicate a value for the READY timer.

9.4.2.3 Allocated P-TMSI

This IE may be included to assign a P-TMSI to an MS in case of a GPRS or combined GPRS attach.

9.4.2.4 MS identity

This IE may be included to assign or unassign a TMSI to an MS in case of a combined GPRS attach.

9.4.2.5 GMM cause

This IE shall be included when IMSI attach for non-GPRS services was not successful during a combined GPRS attach procedure.

9.4.2.6 T3302 value

This IE may be included to indicate a value for the T3302 timer.

9.4.2.7 Cell Notification (GSM only)

In GSM, this IE shall be included by the SGSN in order to indicate the ability to support the Cell Notification.

********** NEXT MODIFIED SECTION **********

9.4.4 Attach reject

This message is sent by the network to the MS to indicate that the corresponding attach request has been rejected. See table 9.4.4/TS 24.008.

Message type: ATTACH REJECT

Significance: dual

Direction: network to MS

Table 9.4.4/TS 24.008: ATTACH REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Attach reject message identity	Message type 10.4	M	V	1
	GMM cause	GMM cause 10.5.5.14	M	V	1
2A	T3302 value	GPRS Timer 2 10.5.7.4~~3~~	O	TLV	3

9.4.4.1 T3302 value

This IE may be included to indicate a value for the T3302 timer.

********** NEXT MODIFIED SECTION **********

9.4.5.2 Detach request (mobile originating detach)

This message is sent by the MS to request the release of a GMM context. See table 9.4.5.2/TS 24.008.

Message type: DETACH REQUEST

Significance: dual

Direction: MS to network

Table 9.4.5.2/TS 24.008:DETACH REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Detach request message identity	Message type 10.4	M	V	1
	Detach type	Detach type 10.5.5.5	M	V	1/2
	Spare half octet	Spare half octet 10.5.1.8	M	V	1/2
18	P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
19	P-TMSI signature	P-TMSI signature 2 10.5.5.8a	O	TLV	5

9.4.5.2.1 P-TMSI

This IE shall be included by the MS.

9.4.5.2.2 P-TMSI signature

This IE shall be included if the MS has a valid P-TMSI signature.

********** NEXT MODIFIED SECTION **********

9.4.15 Routing area update accept

This message is sent by the network to the MS to provide the MS with GPRS mobility management related data in response to a *routing area update request* message . See table 9.4.15/TS 24.008.

Message type: ROUTING AREA UPDATE ACCEPT

Significance: dual

Direction: network to MS

Table 9.4.15/TS 24.008: ROUTING AREA UPDATE ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update accept message identity	Message type 10.4	M	V	1
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Update result	Update result 10.5.5.17	M	V	1/2
	Periodic RA update timer	GPRS Timer 10.5.7.3	M	V	1
	Routing area identification	Routing area identification 10.5.5.15	M	V	6
19	P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
18	Allocated P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
23	MS identity	Mobile identity 10.5.1.4	O	TLV	7
26	List of Receive N-PDU Numbers	Receive N-PDU Number list 10.5.5.11	O	TLV	4 - 19
17	Negotiated READY timer value	GPRS Timer 10.5.7.3	O	TV	2
25	GMM cause	GMM cause 10.5.5.14	O	TV	2
2A	T3302 value	GPRS Timer 2 10.5.7.43	O	TLV	3
8C	Cell Notification	Cell Notification 10.5.5.21	O	T	1

9.4.15.1 P-TMSI signature

This IE may be included to assign an identity to the MS's GMM context.

9.4.15.2 Allocated P-TMSI

This IE may be included to assign a P-TMSI to an MS in case of a GPRS or combined routing area updating procedure.

9.4.15.3 MS identity

This IE may be included to assign or unassign a TMSI to a MS in case of a combined routing area updating procedure.

9.4.15.4 List of Receive N-PDU Numbers

This IE shall be included in case of an inter SGSN routing area updating, if there are PDP contexts that have been activated in acknowledged transfer mode.

9.4.15.5 Negotiated READY timer value

This IE may be included to indicate a value for the READY timer.

9.4.15.6 GMM cause

This IE shall be included if IMSI attach was not successful for non-GPRS services during a combined GPRS routing area updating procedure.

9.4.15.7 T3302 value

This IE may be included to indicate a value for the T3302 timer.

9.4.15.8 Cell Notification (GSM only)

In GSM, this IE shall be included if by the SGSN in order to indicate the ability to support the Cell Notification.

********** NEXT MODIFIED SECTION **********

9.4.17 Routing area update reject

This message is sent by the network to the MS in order to reject the routing area update procedure. See table 9.4.17/TS 24.008.

Message type: ROUTING AREA UPDATE REJECT

Significance: dual

Direction: network to MS

Table 9.4.17/TS 24.008: ROUTING AREA UPDATE REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update reject message identity	Message type 10.4	M	V	1
	GMM cause	GMM cause 10.5.5.14	M	V	1
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Spare half octet	Spare half octet 10.5.1.8	M	V	1/2
2A	T3302 value	GPRS Timer 2 10.5.7.~~4~~3	O	TLV	3

9.4.17.1 T3302 value

This IE may be included to indicate a value for the T3302 timer.

********** NEXT MODIFIED SECTION **********

10.5.5.8 P-TMSI signature

The purpose of the *P-TMSI signature* information element is to identify a GMM context of an MS.

The *P-TMSI signature* is a type 3 information element with 4 octets length.

The *P-TMSI signature* information element is coded as shown in figure 10.5.124/TS 24.008 and table 10.5.141/TS 24.008.

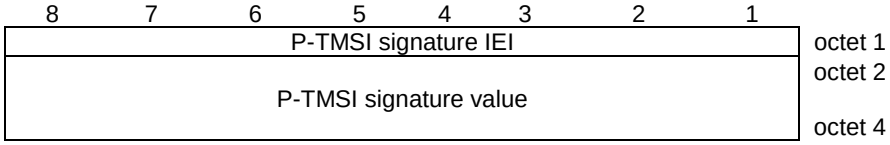


Figure 10.5.124/TS 24.008: *P-TMSI signature* information element

Table 10.5.141/TS 24.008: *P-TMSI signature* information element

P-TMSI signature value Octets 2, 3 and 4 contain the binary representation of the P-TMSI signature. Bit 1 of octet 4 is the least significant bit and bit 8 of octet 2 is the most significant bit.

10.5.5.8a P-TMSI signature 2

The purpose of the *P-TMSI signature 2* information element is to identify a GMM context of an MS.

The *P-TMSI signature 2* is a type 4 information element with 5 octets length.

The *P-TMSI signature 2* information element is coded as shown in figure 10.5.124a/TS 24.008 and table 10.5.141a/TS 24.008.

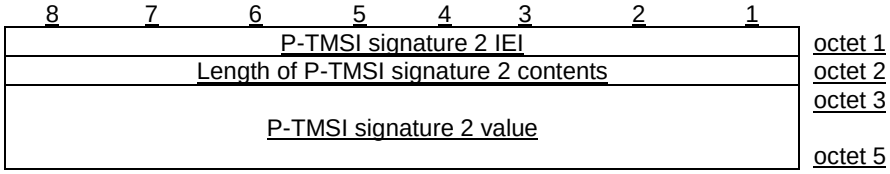


Figure 10.5.124a/TS 24.008: *P-TMSI signature 2* information element

Table 10.5.141a/TS 24.008: *P-TMSI signature 2* information element

P-TMSI signature 2 value is coded as octets 2 to 4 of the *P-TMSI signature* IE.

********** NEXT MODIFIED SECTION **********

10.5.7.3 GPRS Timer

The purpose of the *GPRS timer* information element is to specify GPRS specific timer values, e.g. for the READY timer.

The *GPRS timer* is a type 3 information element with 2 octets length.

The *GPRS timer* information element is coded as shown in figure 10.5.146/TS 24.008 and table 10.5.162/TS 24.008.

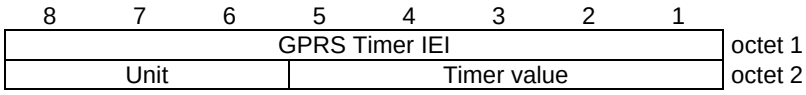


Figure 10.5.146/TS 24.008: GPRS *Timer ~~value~~* information element

Table 10.5.162/TS 24.008: GPRS *Timer ~~value~~* information element

Timer value (octet 2) Bits 5 to 1 represent the binary coded timer value. Bits 6 to 8 defines the timer value unit for the GPRS timer as follows: Bits **8 7 6** 0 0 0 value is incremented in multiples of 2 seconds 0 0 1 value is incremented in multiples of 1 minute 0 1 0 value is incremented in multiples of decihours 1 1 1 value indicates that the timer is deactivated. Other values shall be interpreted as multiples of 1 minute in this version of the protocol.

10.5.7.4 GPRS Timer 2

The purpose of the *GPRS timer 2* information element is to specify GPRS specific timer values, e.g. for the timer T3302.

The *GPRS timer 2* is a type 4 information element with 3 octets length.

The *GPRS timer 2* information element is coded as shown in figure 10.5.147/TS 24.008 and table 10.5.163/TS 24.008.

8	7	6	5	4	3	2	1	
GPRS Timer 2 IEI								octet 1
Length of GPRS Timer 2 contents								octet 2
GPRS Timer 2 value								octet 3

Figure 10.5.147/TS 24.008: GPRS *Timer 2* information element

Table 10.5.163/TS 24.008: GPRS *Timer 2* information element

GPRS Timer 2 value is coded as octet 2 of the *GPRS timer* information element.

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010101
(revision of Tdoc N1-001205)

CR-Form-v3

CHANGE REQUEST

⌘ **24.007** **CR** **025** ⌘ rev **2** ⌘ Current version: **3.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network **X**

Title:	⌘	Addition of Stream Identifier and NAS Synchronization Indicator to the primitives
Source:	⌘	Siemens AG
Work item code:	⌘	GSM-UMTS interworking
Date:	⌘	08 January 01
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	As the NAS Synchronization Indicator was added in R99 to the specifications for RRC (TS 25.331) and RANAP (TS 25.413), it needs to be described also in TS 24.007.
Summary of change:	⌘	
Consequences if not approved:	⌘	incomplete description of the primitives

Clauses affected:	⌘			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

9.1.2 Service primitives

Table 9.1: Primitives and parameters at the RR-SAP - MS side

PRIMITIVES	PARAMETERS	REFERENCE
RR_EST_REQ	Layer 3 message transferred in the SABM frame, CN domain identity	9.1.2.1
RR_EST_IND	-	9.1.2.2
RR_EST_CNF	-	9.1.2.3
RR_REL_IND	cause	9.1.2.4
RR_SYNC_IND	cause (ciphering, res. ass., channel mode modify), list of (RAB ID, NAS Synchronization Indicator)	9.1.2.5
RR_DATA_REQ	Layer 3 message, local flow identifier CN domain identity	9.1.2.6
RR_DATA_IND	Layer 3 message, CN domain identity	9.1.2.7
RR_UNIT DATA_IND	Layer 3 message	9.1.2.8
RR_ABORT_REQ	cause	9.1.2.9
RR_ABORT_IND	cause	9.1.2.10
RR_ACT_REQ	reselection mode	9.1.2.11

9.1.2.1 RR_EST_REQ

In A/Gb mode it is used by the Mobility Management entity to request establishment of a Mobile originated RR connection.

The request shall be given only in the IDLE state when the MS listens to the CCCH and the previously selected BCCH.

In Iu mode it is used by the Mobility Management entity to request the establishment of a signalling connection to the CN domain type given in the parameter CN domain identity. The request shall be given only if no signalling connection to the specific CN domain type is established.

9.1.2.2 RR_EST_IND

Indicates to the Mobility Management entity the establishment of a Mobile terminated RR connection. By this indication MM is informed that a transparent connection exists and RR is in the dedicated mode.

9.1.2.3 RR_EST_CNF

Is used by RR to indicate the successful completion of a Mobile originated RR connection establishment. RR connection exists and RR is in the dedicated mode.

9.1.2.4 RR_REL_IND

Is used by RR to indicate to the Mobility Management entity the release of a RR connection when RR has received a CHANNEL RELEASE from the Network and has triggered a normal release of the data link layer. It is also used to indicate that a requested RR connection cannot be established. In both cases, RR returns to IDLE mode.

9.1.2.5 RR_SYNC_IND

Is used for synchronizing RR and the Mobility Management entity after the establishment of a Mobile originated or Mobile terminated RR connection. This indication is provided to MM in the following cases:

- ciphering has been started (ciphering);
- integrity protection has been started (integrity) (UMTS only);
- a traffic channel has been assigned (res. ass. = "resource assigned");
- the channel mode has been modified (channel mode modify).

In Iu mode, in case of a resource assignment or channel mode modification, RR indicates to the Mobility Management entity the list of RAB IDs and, optionally, the NAS Synchronization Indicators associated with the assigned or modified radio bearers.

9.1.2.5a Void

9.1.2.5b Void

9.1.2.6 RR_DATA_REQ

Is used by the Mobility Management entity to send control data to its peer entity on the Network side via an existing RR connection.

9.1.2.7 RR_DATA_IND

Is used by RR to indicate control-data, which has been received from its peer entity on the Network side via an existing RR connection.

For UMTS, RR_DATA_IND is also used to indicate whether control-data has been:

- successfully integrity checked;
- unsuccessfully integrity checked;
- received with no integrity protection.

9.1.2.7a Void

9.1.2.8 RR_UNIT_DATA_IND

Is used by RR to provide MM with system info. The system info is received on the current BCCH if RR is in the IDLE state. If a RR connection has been established, the system info is received on the SACCH.

9.1.2.9 RR_ABORT_REQ

Request to abort an existing RR connection or a RR connection in progress. The data link, if already established, shall be released by a normal release procedure (DISC/UA) initiated by the MS. This is the only way the MS can trigger the release of a RR connection in case of exceptional conditions. The RR returns to the IDLE state.

9.1.2.10 RR_ABORT_IND

Indication that the RR connection has been aborted by a lower layer failure and RR has returned to the IDLE state.

********** NEXT MODIFIED SECTION **********

9.2.2 Service primitives

Table 9.2: Primitives and Parameters at MMCC-SAP, MMSS-SAP (for type A LMU), MMLCS-SAP or MMSMS-SAP - MS side

PRIMITIVES	PARAMETERS	REFERENCE
MMXX_EST_REQ (see note 1)	Parameters for the appropriate CM SERVICE REQUEST (if any)	9.2.2.1
MMXX_EST_IND (see note 1)	First CM message	9.2.2.2
MMXX_EST_CNF (see note 1)	-	9.2.2.3
MMXX_REL_REQ (see note 1)	cause	9.2.2.4
MMXX_REL_IND (see note 1)	cause	9.2.2.5
MMXX_DATA_REQ (see note 1)	Layer 3 message	9.2.2.6
MMXX_DATA_IND (see note 1)	Layer 3 message	9.2.2.7
MMXX_UNIT_DATA_REQ (see note 1)	Layer 3 message	9.2.2.8
MMXX_UNIT_DATA_IND (see note 1)	Layer 3 message	9.2.2.9
MMCC_SYNC_IND (see note 2)	cause: res.ass; list of (RAB ID, NAS Synchronization Indicator)	9.2.2.10
MMXX_REEST_REQ (see note 1)		9.2.2.11
MMXX_REEST_CNF (see note 1)		9.2.2.12
MMXX_ERR_IND (see note 1)	cause	9.2.2.13
MMXX_PROMPT_IND (see note 1)	-	9.2.2.14
MMXX_PROMPT_REJ (see note 1)	-	9.2.2.15
NOTE 1: MMXX is used as substitution for MMCC, MMSS, MMLCS or MMSMS. NOTE 2: Only at MMCC-SAP.		

9.2.2.1 MMXX_EST_REQ

Request used by CC, SS, LCS (for type A LMU) and SMS respectively, to request establishment of a MM connection. Several MM connections may be provided in parallel to the requesting entities. The primitive may contain parameters which are relevant for the CM SERVICE REQUEST message, e.g. to distinguish a basic call from an emergency call.

9.2.2.2 MMXX_EST_IND

Indication to CC, SS, LCS (for type A LMU) or SMS that a Mobile terminated MM connection has been established and the first message has been received from the respective peer entity. Several MM connections may be provided in parallel. If a MM connection already exists, a new MM connection using the same RR connection is indicated by this primitive if MM detects a message with a new combination of Protocol Discriminator (PD) and Transaction Identifier (TI).

9.2.2.3 MMXX_EST_CNF

Successful confirmation of the MM connection establishment by the MM sublayer to be given to the appropriate entity which has requested the service.

9.2.2.4 MMXX_REL_REQ

Used by CC, SS, LCS (for type A LMU) or SMS respectively, to request release of the MM connection. The corresponding PD/TI will be released and may be used for a new MM connection.

9.2.2.5 MMXX_REL_IND

Indication of the release of an existing MM connection or a MM connection in progress. This primitive is used in exceptional cases to indicate that the MM connection cannot be established or kept any longer and PD/TI have been released.

9.2.2.6 MMXX_DATA_REQ

Request used by the CC, SS or SMS entities for acknowledged control-data transmission.

9.2.2.7 MMXX_DATA_IND

Indication used by MM to transfer the received acknowledged control-data to the CC, SS, LCS (for type A LMU) or SMS entities.

9.2.2.8 MMXX_UNIT_DATA_REQ

Request used by the CC, SS, LCS (for type A LMU) or SMS entities for unacknowledged control-data transmission.

9.2.2.9 MMXX_UNIT_DATA_IND

Indication used by MM to transfer the received unacknowledged control-data to the CC, SS, LCS or SMS entities.

9.2.2.10 MMCC_SYNC_IND

Indication that a dedicated channel assignment has been performed and/or the channel mode has been changed (only towards the CC entity).

In Iu mode, MM indicates the list of the RAB IDs and, optionally, the NAS Synchronization Indicators associated with the assigned or modified radio bearers.

9.2.2.11 MMXX_REEST_REQ

Request to establish a MM connection which has been interrupted by a lower layer failure. The interruption must have been indicated by MMXX_ERR_IND.

9.2.2.12 MMXX_REEST_CNF

Confirmation of the successful re-establishment of the MM connection. The MM connection will continue with PD/TI as it had before.

9.2.2.13 MMXX_ERR_IND

Indication of a lower layer failure interrupting the MM connection. The PD/TI are still kept by MM. In case of parallel transactions this indication is passed to all CM entities for which a MM connection has been established. It is left to the decision of the appropriate CM entity to either request the re-establishment of the MM connection by MMXX_REEST_REQ or to release it by MMXX_REL_REQ.

9.2.2.14 MMXX_PROMPT_IND

Indication given by MM to inform of the completion of the MM connection to the CC, SS, LCS (for type A LMU) or SMS entities for a mobile station which supports “Network Initiated MO CM Connection Request”.

9.2.2.15 MMXX_PROMPT_REJ

Response to the MMXX_PROMPT_IND indication to the MM entity in a mobile station which supports “Network Initiated MO CM Connection Request” in case when it is impossible to establish the prompted CM connection e.g. due to lack of free transaction identifiers.

********** NEXT MODIFIED SECTION **********

10.1.2 Service primitives

Table 10.1: Primitives and Parameters at the RR-SAP - Network side

PRIMITIVES	PARAMETERS	REFERENCE
RR_EST_REQ	Parameters for the Initial layer 3 message	10.1.2.1
RR_EST_IND	Initial layer 3 message	10.1.2.2
RR_EST_CNF	-	10.1.2.3
RR_REL_REQ	cause	10.1.2.4
RR_REL_IND	cause	10.1.2.5
RR_SYNC_REQ	cause (resource assign, ciphering~~)~~, channel mode modify), list of (RAB ID, NAS Synchronization Indicator)	10.1.2.6
RR_SYNC_CNF	cause (resource assign, ciphering)	10.1.2.7
RR_DATA_REQ	Layer 3 message	10.1.2.8
RR_DATA_IND	Layer 3 message	10.1.2.9
RR_UNIT_DATA_REQ	Layer 3 message	10.1.2.10
RR_UNIT_DATA_IND	Layer 3 message	10.1.2.11
RR_ABORT_REQ	cause	10.1.2.12
RR_ABORT_IND	cause	10.1.2.13

10.1.2.1 RR_EST_REQ

Request used by the Mobility Management entity to request establishment of control channel connections.

10.1.2.2 RR_EST_IND

Indication to the Mobility Management entity that the establishment of control channel connections has been done.

10.1.2.3 RR_EST_CNF

Confirmation used by RR to confirm the establishment of a requested control channel connection.

10.1.2.4 RR_REL_REQ

Request used by the Mobility Management to release a control channel connection.

10.1.2.5 RR_REL_IND

Indication from RR to MM that the main signalling link has been released.

10.1.2.6 RR_SYNC_REQ

Request used by the Mobility Management entity for synchronization with the RR protocol.

In Iu mode, in case of resource assignment or channel mode modification, Mobility Management includes the list of the RAB IDs and, optionally, the NAS Synchronization Indicators associated with the radio bearers to be assigned or modified.

10.1.2.7 RR_SYNC_CNF

Confirmation used by RR that the requested synchronization is done.

10.1.2.8 RR_DATA_REQ

Request used by the Mobility Management entity for acknowledged control-data transmission.

10.1.2.9 RR_DATA_IND

Indication used by RR to transfer received control-data, which should be acknowledged, to the Mobility Management entity.

10.1.2.10 RR_UNIT_DATA_REQ

Request used by the Mobility Management entity for unacknowledged control-data transmission.

10.1.2.11 RR_UNIT_DATA_IND

Indication used by RR to transfer received control-data, which should not be acknowledged, to the Mobility Management entity.

10.1.2.12 RR_ABORT_REQ

Request of the abandon of the RR connection.

10.1.2.13 RR_ABORT_IND

Indication that a radio link failure has occurred.

********** NEXT MODIFIED SECTION **********

10.2.2 Service primitives

Table 10.2: Primitives and Parameters at MMCC-SAP, MMSS-SAP, MMSMS-SAP - Network side

PRIMITIVES	PARAMETERS	REFERENCE
MMXX_EST_REQ (see note 1)	Mobile ID	10.2.2.1
MMXX_EST_IND (see note 1)	First CM message	10.2.2.2
MMXX_EST_CNF (see note 1)	-	10.2.2.3
MMXX_REL_REQ (see note 1)	cause	10.2.2.4
MMXX_REL_IND (see note 1)	cause	10.2.2.5
MMXX_DATA_REQ (see note 1)	Layer 3 message	10.2.2.6
MMXX_DATA_IND (see note 1)	Layer 3 message	10.2.2.7
MMXX_UNIT_DATA_REQ (see note 1)	Layer 3 message	10.2.2.8
MMXX_UNIT_DATA_IND (see note 1)	Layer 3 message	10.2.2.9
MMCC_SYNC_REQ (see note 2)	cause (resource assign), list of (RAB ID, NAS Synchronization Indicator)	10.2.2.10
MMCC_SYNC_CNF (see note 2)	cause (resource assign)	10.2.2.11
NOTE 1: MMXX is used as substitution for MMCC, MMSS, MMLCS (for type A LMU) or MMSMS. NOTE 2: Only at MMCC-SAP.		

10.2.2.1 MMXX_EST_REQ

Request by CC, SS, LCS (for type A LMU) and SMS respectively, for the establishment of a MM connection.

10.2.2.2 MMXX_EST_IND

Indication by the MM sublayer that a MM connection is established.

10.2.2.3 MMXX_EST_CNF

Confirmation of the MM connection establishment by the MM sublayer.

10.2.2.4 MMXX_REL_REQ

Request by CC, SS, LCS (for type A LMU) or SMS respectively, for the release of the MM connection.

10.2.2.5 MMXX_REL_IND

Indication by the MM sublayer that a MM connection has been released.

10.2.2.6 MMXX_DATA_REQ

Request by the CC, SS, LCS (for type A LMU) or SMS entities for acknowledged control-data transmission.

10.2.2.7 MMXX_DATA_IND

Indication used by MM to transfer the received acknowledged control-data to the CC, SS, LCS (for type A LMU) or SMS entities.

10.2.2.8 MMXX_UNIT_DATA_REQ

Request used by the CC, SS, LCS (for type A LMU) or SMS entities for unacknowledged control-data transmission.

10.2.2.9 MMXX_UNIT_DATA_IND

Indication used by MM to transfer the received unacknowledged control-data to the CC, SS, LCS (for type A LMU) or SMS entities.

10.2.2.10 MMCC_SYNC_REQ

Request used by the CC entity to synchronize with the MM entity (resource assign).

In Iu mode, the CC entity includes the list of the RAB IDs and, optionally, the NAS Synchronization Indicators associated with the requested radio bearers.

10.2.2.11 MMCC_SYNC_CNF

Confirmation used by the MM to inform the CC entity that synchronization is completed (resource assign).

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010116

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **327** ⌘ rev **1** ⌘ Current version: **3.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM [X] ME/UE [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Correction to MM timer handling
Source:	⌘	Nokia
Work item code:	⌘	GSM-UMTS interworking
Date:	⌘	5.1.2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	If the (UMTS) network authentication fails the MS sends AUTHENTICATION FAILURE and starts T3214 or T3216 to supervise reauthentication from the network. If a handover from UTRAN to GSM is performed before the new authentication then it is not clear whether the MS must consider the network as invalid and bar the cell where the previous authentication was received.
Summary of change:	⌘	The handling of subsequent GSM authentication after AUTHENTICATION FAILURE has been specified. For security reasons only a valid UMTS authentication will stop timer T3214 or T3216.
Consequences if not approved:	⌘	The specification remains ambiguous.

Clauses affected:	⌘	4.3.2.5-4.3.2.6
Other specs affected:	⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.3.2.5.1 Authentication not accepted by the MS

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

A R99 GSM-only MS connected to a R99 core network (even using the GSM radio access) shall support a UMTS authentication challenge.

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

a) MAC code failure

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

b) SQN failure

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

4.3.2.6 Abnormal cases

(a) RR connection failure:

Upon detection of a RR connection failure before the AUTHENTICATION RESPONSE is received, the network shall release all MM connections (if any) and abort any ongoing MM specific procedure.

(b) Expiry of timer T3260:

The authentication procedure is supervised on the network side by the timer T3260. At expiry of this timer the network may release the RR connection. In this case the network shall abort the authentication procedure and any ongoing MM specific procedure, release all MM connections if any, and initiate the RR connection release procedure described in section 3.5.

(c) Authentication failure (reject cause ‘MAC failure’):

The MS shall send an AUTHENTICATION FAILURE message, with reject cause ‘MAC failure’, to the network and start timer T3214. Upon receipt of an AUTHENTICATION FAILURE message from the MS, with reject cause ‘MAC failure,’ the network may initiate the identification procedure described in section 4.3.3. This is to allow the network to obtain the IMSI from the MS. The network may then check that the TMSI originally used in the authentication challenge corresponded to the correct IMSI. Upon receipt of the IDENTITY REQUEST message from the network, the MS shall send the IDENTITY RESPONSE message.

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

When the first AUTHENTICATION REQUEST message containing an invalid MAC has been received by the MS from the network, the MS shall stop any of the retransmission timers that are running (i.e. T3210, T3220 or T3230).

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

It can be assumed that the source of the authentication challenge is not genuine (authentication not accepted by the MS) if any of the following occur:

- After sending the AUTHENTICATION FAILURE message with the reject cause ‘MAC failure’ the timer T3214 expires;

- —Upon receipt of the second AUTHENTICATION REQUEST while T3214 is running and the MAC value cannot be resolved.

- The second AUTHENTICATION REQUEST which is received while T3214 is running is GSM authentication.

When it has been deemed by the MS that the source of the authentication challenge is not genuine (i.e. authentication not accepted by the MS), the MS shall behave as described in section 4.3.2.6.1.

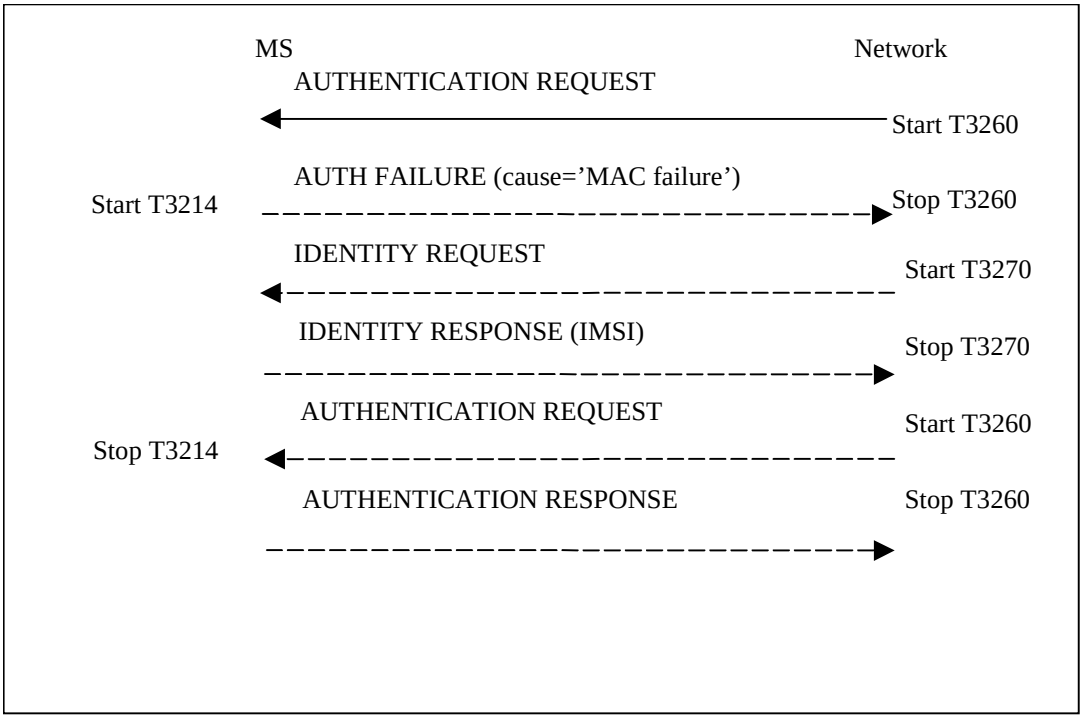


Figure 4.2/3GPP TS 24.008: Authentication Failure Procedure (reject cause ‘MAC failure’)

(d) Authentication failure (reject cause ‘synch failure’):

The MS shall send an AUTHENTICATION FAILURE message, with reject cause ‘synch failure,’ to the network and start the timer T3216. Upon receipt of an AUTHENTICATION FAILURE message from the MS with the reject cause ‘synch failure,’ the network shall use the returned AUTS parameter from the authentication failure parameter IE in the AUTHENTICATION FAILURE message, to re-synchronise. The re-synchronisation procedure requires the VLR/MSC to delete all unused authentication vectors for that IMSI and obtain new vectors from the HLR. When re-synchronisation is complete, the network shall initiate the authentication procedure. Upon receipt of the AUTHENTICATION REQUEST message, the MS shall stop the timer T3216, if running.

When the first AUTHENTICATION REQUEST message containing an invalid SQN has been received by the MS from the network, the MS shall stop any of the retransmission timers that are running (i.e. T3210, T3220 or T3230).

Upon successfully validating the network (a second AUTHENTICATION REQUEST is received which contains a valid SQN) while T3216 is running, the MS shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the MS received the first AUTHENTICATION REQUEST message containing an invalid SQN.

If the MS receives a second AUTHENTICATION REQUEST which contains an invalid SQN or GSM AUTHENTICATION REQUEST while T3216 is running, then the MS shall behave as described in section 4.3.2.6.1.

If the timer T3216 expires, then the MS shall behave as described in section 4.3.2.6.1.

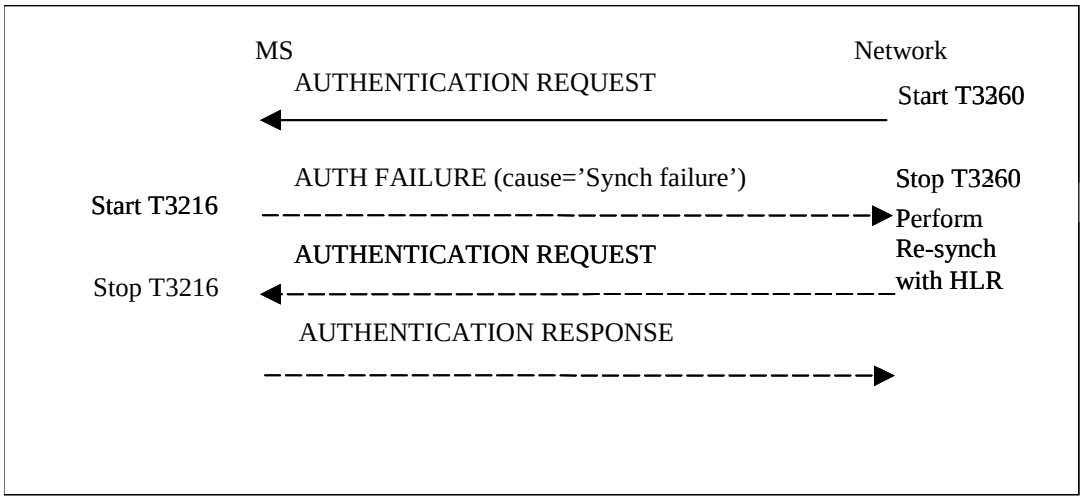


Figure 4.2a/3GPP TS 24.008: Authentication Failure Procedure (reject cause 'Synch failure')

4.3.2.6.1 MS behaviour towards a network that has failed the authentication procedure

If the MS deems that the network has failed the authentication check, then ~~the~~ it shall treat the cell where the AUTHENTICATION REQUEST message which lead to sending of AUTHENTICATION FAILURE was received as barred, until refresh of system information data. The MS shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the MS received the first AUTHENTICATION REQUEST message containing an invalid MAC or SQN.

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010117

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **328** ⌘ rev **1** ⌘ Current version: **4.1.1** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM [X] ME/UE [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Correction to MM timer handling
Source:	⌘	Nokia
Work item code:	⌘	GSM-UMTS interworking
Date:	⌘	5.1.2001
Category:	⌘	**A**
Release:	⌘	Rel-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	If the (UMTS) network authentication fails the MS sends AUTHENTICATION FAILURE and starts T3214 or T3216 to supervise reauthentication from the network. If a handover from UTRAN to GSM is performed before the new authentication then it is not clear whether the MS must consider the network as invalid and bar the cell where the previous authentication was received.
Summary of change:	⌘	The handling of subsequent GSM authentication after AUTHENTICATION FAILURE has been specified. For security reasons only a valid UMTS authentication will stop timer T3214 or T3216.
Consequences if not approved:	⌘	The specification remains ambiguous.

Clauses affected:	⌘	4.3.2.5-4.3.2.6
Other specs affected:	⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.3.2.5.1 Authentication not accepted by the MS

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

A R99 GSM-only MS connected to a R99 core network (even using the GSM radio access) shall support a UMTS authentication challenge.

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

a) MAC code failure

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

b) SQN failure

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

4.3.2.6 Abnormal cases

(a) RR connection failure:

Upon detection of a RR connection failure before the AUTHENTICATION RESPONSE is received, the network shall release all MM connections (if any) and abort any ongoing MM specific procedure.

(b) Expiry of timer T3260:

The authentication procedure is supervised on the network side by the timer T3260. At expiry of this timer the network may release the RR connection. In this case the network shall abort the authentication procedure and any ongoing MM specific procedure, release all MM connections if any, and initiate the RR connection release procedure described in section 3.5.

(c) Authentication failure (reject cause ‘MAC failure’):

The MS shall send an AUTHENTICATION FAILURE message, with reject cause ‘MAC failure’, to the network and start timer T3214. Upon receipt of an AUTHENTICATION FAILURE message from the MS, with reject cause ‘MAC failure,’ the network may initiate the identification procedure described in section 4.3.3. This is to allow the network to obtain the IMSI from the MS. The network may then check that the TMSI originally used in the authentication challenge corresponded to the correct IMSI. Upon receipt of the IDENTITY REQUEST message from the network, the MS shall send the IDENTITY RESPONSE message.

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

When the first AUTHENTICATION REQUEST message containing an invalid MAC has been received by the MS from the network, the MS shall stop any of the retransmission timers that are running (i.e. T3210, T3220 or T3230).

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

It can be assumed that the source of the authentication challenge is not genuine (authentication not accepted by the MS) if any of the following occur:

- After sending the AUTHENTICATION FAILURE message with the reject cause 'MAC failure' the timer T3214 expires;

- Upon receipt of the second AUTHENTICATION REQUEST while T3214 is running and the MAC value cannot be resolved.

- The second AUTHENTICATION REQUEST which is received while T3214 is running is GSM authentication.

When it has been deemed by the MS that the source of the authentication challenge is not genuine (i.e. authentication not accepted by the MS), the MS shall behave as described in section 4.3.2.6.1.

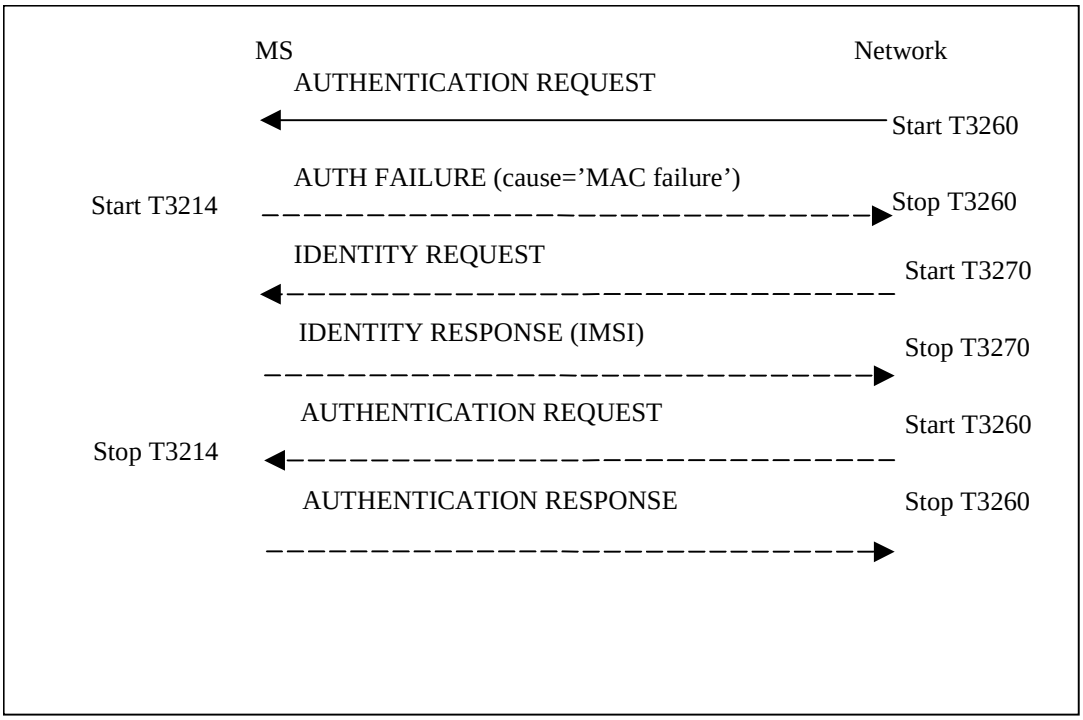

Figure 4.2/TS 24.008: Authentication Failure Procedure (reject cause 'MAC failure')

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

The MS shall send an AUTHENTICATION FAILURE message, with reject cause 'synch failure,' to the network and start the timer T3216. Upon receipt of an AUTHENTICATION FAILURE message from the MS with the reject cause 'synch failure,' the network shall use the returned AUTS parameter from the authentication failure parameter IE in the AUTHENTICATION FAILURE message, to re-synchronise. The re-synchronisation procedure requires the VLR/MSC to delete all unused authentication vectors for that IMSI and obtain new vectors from the HLR. When re-synchronisation is complete, the network shall initiate the authentication procedure. Upon receipt of the AUTHENTICATION REQUEST message, the MS shall stop the timer T3216, if running.

When the first AUTHENTICATION REQUEST message containing an invalid SQN has been received by the MS from the network, the MS shall stop any of the retransmission timers that are running (i.e. T3210, T3220 or T3230).

Upon successfully validating the network (a second AUTHENTICATION REQUEST is received which contains a valid SQN) while T3216 is running, the MS shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the MS received the first AUTHENTICATION REQUEST message containing an invalid SQN.

If the MS receives a second AUTHENTICATION REQUEST which contains an invalid SQN or GSM AUTHENTICATION REQUEST while T3216 is running, then the MS shall behave as described in section 4.3.2.6.1.

If the timer T3216 expires, then the MS shall behave as described in section 4.3.2.6.1.

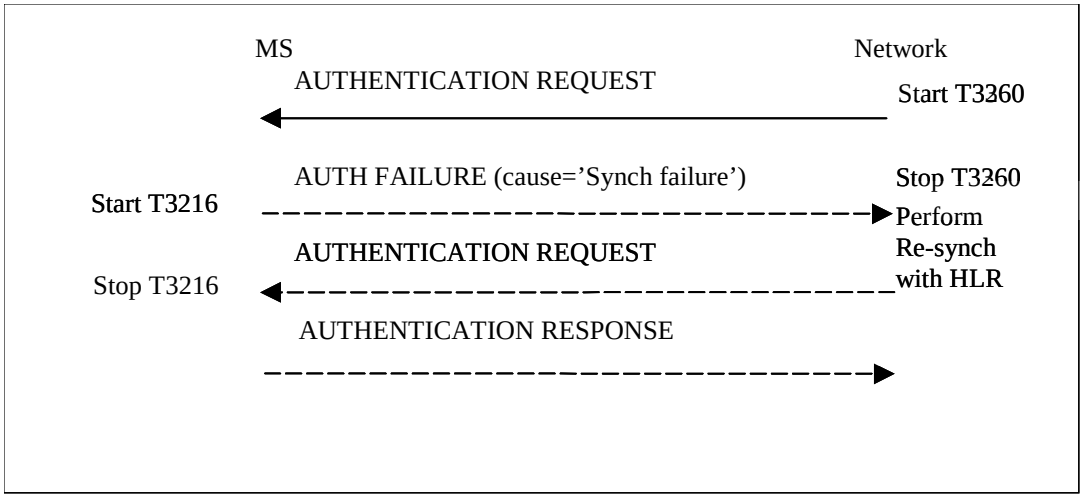

Figure 4.2a/TS 24.008: Authentication Failure Procedure (reject cause 'Synch failure')

4.3.2.6.1 MS behaviour towards a network that has failed the authentication procedure

If the MS deems that the network has failed the authentication check, then ~~the~~ it shall treat the cell where the AUTHENTICATION REQUEST message which lead to sending of AUTHENTICATION FAILURE was received as barred, until refresh of system information data. The MS shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the MS received the first AUTHENTICATION REQUEST message containing an invalid MAC or SQN.

3GPP TSG-CN1 Meeting #15
Beijing, China – 15-19 January, 2001

Tdoc N1-010174
(Revision of Tdoc N1-010081)

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **349** ⌘ rev **1** ⌘ Current version: **3.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network **X**

Title:	⌘	Collisions cases of core network initiated paging and MS initiated GMM specific procedures
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS Interworking
Date:	⌘	2001-01-18
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	In UMTS, it is not clarified how the MS shall proceed when a collision case of an MS initiated specific GMM procedure and a core network initiated paging for GPRS services occurs.
Summary of change:	⌘	This CR clarifies how the MS and network shall proceed in the collision cases of an MS initiated GMM specific procedure and a core network initiated paging for GPRS in UMTS.
Consequences if not approved:	⌘	Different MS and network implementations might cause that the MS might respond to the paging in a way that will be ignored by the network, as the network expects a different response from the MS.

Clauses affected:	⌘	4.7.9
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.7.9 Paging procedure

4.7.9.1 Paging for GPRS services

In GSM, paging is used by the network to identify the cell the MS has currently selected, or to prompt the mobile to re-attach if necessary as a result of network failure. If the MS is not GPRS attached when it receives a paging for GPRS services, the MS shall ignore the paging.

In UMTS, paging is used by the network to request the establishment of PS signalling connection or to prompt the mobile to re-attach if necessary as a result of network failure. If the MS is not GPRS attached when it receives a paging for GPRS services, the MS shall ignore the paging.

4.7.9.1.1 Paging for GPRS services using P-TMSI

The network shall initiate the paging procedure for GPRS services using P-TMSI when GMM signalling messages or user data is pending to be sent to the MS while the Mobile Reachable timer is running. The network may page only GPRS MSs which are GMM-REGISTERED and identified by a local P-TMSI.

In UMTS, to initiate the procedure the GMM entity in the network requests the lower layer to start paging (see 3GPP TS 25.331 and 3GPP TS 25.413) and starts timer T3313. Upon reception of a paging indication, the MS shall respond to the paging with a SERVICE REQUEST message with service type "paging response" (see 3GPP TS 24.007 [20], 3GPP TS 23.060 [74], 3GPP TS 25.331 and 3GPP TS 25.413). If the paging request for GPRS services was received during an ongoing MS initiated GMM specific procedure, then the MS shall progress the GMM specific procedure, and the network shall proceed with the GMM specific procedure.

In GSM, to initiate the procedure the GMM entity requests the RR sublayer to start paging (see GSM 04.18, GSM 04.60 [75], and starts timer T3313. Upon reception of a paging indication, the MS shall respond to the paging with any LLC frame (see 3GPP TS 24.007 [20], 3GPP TS 23.060 [74].

At intersystem change, an MS not having the READY timer running in GSM or an MS in PMM-IDLE mode in UMTS, being paged in a different access network as when it last sent user data or signalling message, uses ROUTING AREA UPDATE REQUEST message as paging response, i.e. the RA update procedure shall be performed instead according to the selective routing area update procedure.

The network shall stop timer T3313 when a response is received from the MS. When the timer T3313 expires the network may reinitiate paging.

In UMTS, when a response is received from the MS, the network shall change from PMM-IDLE mode to PMM-CONNECTED mode.

In GSM, when a response is received from the MS, the network shall start the READY timer.

4.7.9.1.2 Paging for GPRS services using IMSI

Paging for GPRS services using IMSI is an abnormal procedure used for error recovery in the network.

The network may initiate paging using IMSI if the P-TMSI is not available due to a network failure.

In UMTS, to initiate the procedure the GMM entity in the network requests the lower layer to start paging (see 3GPP TS 25.331 and 3GPP TS 25.413).

In GSM, to initiate the procedure the GMM entity in the network requests the RR sublayer to start paging (see GSM 04.18, GSM 04.60 [75].

Upon reception of a paging indication for GPRS services using IMSI, the MS shall locally deactivate any active PDP contexts and locally detach from GPRS. The local detach includes deleting any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number stored, setting the GPRS update status to GU2 NOT UPDATED and changing state to GMM-DEREGISTERED.

In UMTS, when an MS receives a paging request for GPRS services using the IMSI from the network before an MS initiated GMM specific procedure has been completed, then the MS shall abort the GMM specific procedure, and the MS shall proceed according to the description in this clause.

After performing the local detach, the MS shall then perform a GPRS attach or combined GPRS attach procedure.

After performing the attach, a MS should activate PDP context(s) to replace any previously active PDP context(s).

NOTE 1: In some cases, user interaction may be required and then the MS cannot activate the PDP context(s) automatically.

NOTE 2: The MS does not respond to the paging except with the Attach Request. Hence timer T3313 in the network is not used when paging with IMSI.

NOTE 3: Paging without DRX parameters may require a considerable extension of the paging duration.

4.7.9.2 Paging for non-GPRS services

The network may initiate the paging procedure for non-GPRS services when the MS is IMSI attached for non-GPRS services.

In UMTS, to initiate the procedure the GMM entity requests the lower layer to start paging (see 3GPP TS 25.331 and 3GPP TS 25.413) for non-GPRS services.

In GSM, to initiate the procedure the GMM entity requests the RR sublayer to start paging (see GSM 04.18 GSM 04.60 [75] for non-GPRS services.

The MS identity used for paging shall be the allocated TMSI if acknowledged by the MS, otherwise the IMSI.

3GPP TSG-CN1 Meeting #15
Beijing, China – 15-19 January, 2001

Tdoc N1-010175
(Revision of Tdoc N1-010082)

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **350** ⌘ rev **1** ⌘ Current version: **4.1.1** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Collisions cases of core network initiated paging and MS initiated GMM specific procedures
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS Interworking
Date:	⌘	2001-01-18
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	In UMTS, it is not clarified how the MS and network shall proceed when a collision case of an MS initiated specific GMM procedure and a core network initiated paging for GPRS services occurs.
Summary of change:	⌘	This CR clarifies how the MS and network shall proceed in the collision cases of an MS initiated GMM specific procedure and a core network initiated paging for GPRS in UMTS.
Consequences if not approved:	⌘	Different MS and network implementations might cause that the MS might respond to the paging in a way that will be ignored by the network, as the network expects a different respond from the MS.

Clauses affected:	⌘	4.7.9
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.7.9 Paging procedure

4.7.9.1 Paging for GPRS services

In GSM, paging is used by the network to identify the cell the MS has currently selected, or to prompt the mobile to re-attach if necessary as a result of network failure. If the MS is not GPRS attached when it receives a paging for GPRS services, the MS shall ignore the paging.

In UMTS, paging is used by the network to request the establishment of PS signalling connection or to prompt the mobile to re-attach if necessary as a result of network failure. If the MS is not GPRS attached when it receives a paging for GPRS services, the MS shall ignore the paging.

4.7.9.1.1 Paging for GPRS services using P-TMSI

The network shall initiate the paging procedure for GPRS services using P-TMSI when GMM signalling messages or user data is pending to be sent to the MS while the Mobile Reachable timer is running. The network may page only GPRS MSs which are GMM-REGISTERED and identified by a local P-TMSI.

In UMTS, to initiate the procedure the GMM entity in the network requests the lower layer to start paging (see TS 25.331 and TS 25.413) and starts timer T3313. Upon reception of a paging indication, the MS shall respond to the paging with a SERVICE REQUEST message with service type "paging response" (see TS 24.007 [20], TS 23.060 [74], TS 25.331 and TS 25.413). If the paging request for GPRS services was received during an ongoing MS initiated GMM specific procedure, then the MS shall progress the GMM specific procedure, and the network shall proceed with the GMM specific procedure.

In GSM, to initiate the procedure the GMM entity requests the RR sublayer to start paging (see GSM 04.18, GSM 04.60 [75], and starts timer T3313. Upon reception of a paging indication, the MS shall respond to the paging with any LLC frame (see TS 24.007 [20], TS 23.060 [74].

At intersystem change, an MS not having the READY timer running in GSM or an MS in PMM-IDLE mode in UMTS, being paged in a different access network as when it last sent user data or signalling message, uses ROUTING AREA UPDATE REQUEST message as paging response, i.e. the RA update procedure shall be performed instead according to the selective routing area update procedure.

The network shall stop timer T3313 when a response is received from the MS. When the timer T3313 expires the network may reinitiate paging.

In UMTS, when a response is received from the MS, the network shall change from PMM-IDLE mode to PMM-CONNECTED mode.

In GSM, when a response is received from the MS, the network shall start the READY timer.

4.7.9.1.2 Paging for GPRS services using IMSI

Paging for GPRS services using IMSI is an abnormal procedure used for error recovery in the network.

The network may initiate paging using IMSI if the P-TMSI is not available due to a network failure.

In UMTS, to initiate the procedure the GMM entity in the network requests the lower layer to start paging (see TS 25.331 and TS 25.413).

In GSM, to initiate the procedure the GMM entity in the network requests the RR sublayer to start paging (see GSM 04.18, GSM 04.60 [75].

Upon reception of a paging indication for GPRS services using IMSI, the MS shall locally deactivate any active PDP contexts and locally detach from GPRS. The local detach includes deleting any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number stored, setting the GPRS update status to GU2 NOT UPDATED and changing state to GMM-DEREGISTERED.

In UMTS, when an MS receives a paging request for GPRS services using the IMSI from the network before an MS initiated GMM specific procedure has been completed, then the MS shall abort the GMM specific procedure, and the MS shall proceed according to the description in this clause.

After performing the local detach, the MS shall then perform a GPRS attach or combined GPRS attach procedure.

After performing the attach, a MS should activate PDP context(s) to replace any previously active PDP context(s).

NOTE 1: In some cases, user interaction may be required and then the MS cannot activate the PDP context(s) automatically.

NOTE 2: The MS does not respond to the paging except with the Attach Request. Hence timer T3313 in the network is not used when paging with IMSI.

NOTE 3: Paging without DRX parameters may require a considerable extension of the paging duration.

4.7.9.2 Paging for non-GPRS services

The network may initiate the paging procedure for non-GPRS services when the MS is IMSI attached for non-GPRS services.

In UMTS, to initiate the procedure the GMM entity requests the lower layer to start paging (see TS 25.331 and TS 25.413) for non-GPRS services.

In GSM, to initiate the procedure the GMM entity requests the RR sublayer to start paging (see GSM 04.18 GSM 04.60 [75] for non-GPRS services.

The MS identity used for paging shall be the allocated TMSI if acknowledged by the MS, otherwise the IMSI.

3GPP TSG-CN1 Meeting #15
15-19 January 2001, Beijing, China

Tdoc N1-010176
Revision of N1-010062

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **337** ⌘ rev **1** ⌘ Current version: **3.6.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification of the location update abnormal cases b) and c) on the MS side
Source:	⌘	Ericsson
Work item code:	⌘	GSM/UMTS interworking
Date:	⌘	17/01/01
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘[H1

For case b):
The description of the location update abnormal case b) on the MS side in section 4.4.4.9 is misleading and could be interpreted in different ways for UMTS:

- A first interpretation is that case b) does not apply to UMTS because the IMMEDIATE ASSIGNMENT REJECT message does not exist in UMTS.
- A second interpretation is that case b) applies to UMTS when an RRC CONNECTION REJECT message is received by the UE (the UMTS equivalent of the IMMEDIATE ASSIGNMENT REJECT message).

It shall also be noted that, as described in TS 25.331 section 8.1.3.9, when receiving an RRC CONNECTION REJECT message, RRC automaticaly resends the RRC CONNECTION REQUEST message after the “wait time” sent by the network. Also there is no UMTS equivalent to the GSM timer T3122 during which access to the cell is prohibited after a rejected access. For these 2 reasons, retransmission at MM level in this access reject case is not needed for UMTS.

For case c):
The location update abnormal case c) on the MS side in section 4.4.4.9 describes the reaction on random access failure.

In GSM, on random access failure, RR will cell reselect another cell and the cell where the random failure occurred is inhibited for 5 secs. At MM level, the 4 seconds timer T3213 is set and on expiry of this timer MM will ask RR to send the location update again. Because T3213 is shorter than the 5 seconds cell inhibition timer in RR, the second location update attempt is sent on another cell.

In summary, in GSM, the combination of RR and MM timers make the mobile retry the location update 4 seconds later through another cell in case of random access failure on the first atempt.

		However in UMTS no cell reselection takes place at RRC level in case of random access failure. Therefore this abnormal case will make the mobile to retry the location update on the same cell in case of random access failure. This create unecessary signalling and battery drain for no benefit.
Summary of change:	⌘	This CR proposes that case b) in section 4.4.4.9 applies only to GSM This CR proposes that the current description in case c) in section 4.4.4.9 applies only to GSM. This CR creates a new case h) to cover the cases of random access failure and access reject for Iu mode.
Consequences if not approved:	⌘	For case b): The specification is unclear and might lead to different inconsistent MS implementations. For case c): Unecessary signalling and battery drain in case of random access failure for location updates for no benefit.

Clauses affected:	⌘	4.4.4.9		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.4.4.9 Abnormal cases on the mobile station side

The different abnormal cases that can be identified are the following:

a) Access barred because of access class control

The location updating procedure is not started. The mobile station stays in the current serving cell and applies normal cell reselection process. The procedure is started as soon as possible and if still necessary (when the barred state is ended or because of a cell change)

b) The answer to random access is an IMMEDIATE ASSIGNMENT REJECT message (A/Gb mode only)

The location updating is not started. The mobile station stays in the chosen cell and applies normal cell selection process. The waiting timer T3122 is reset when a cell change occurs. The procedure is started as soon as possible after T3122 timeout if still necessary.

c) Random access failure (A/Gb mode only)

Timer T3213 is started. When it expires the procedure is attempted again if still necessary.

NOTE: As specified in GSM 05.08, a cell reselection then takes place, with return to the cell inhibited for 5 seconds if there is at least one other suitable cell. Typically the selection process will take the mobile station back to the cell where the random access failed after 5 seconds.

If at the expiry of timer T3213 a new cell has not been selected due to the lack of valid information (see GSM 05.08), the mobile station may as an option delay the repeated attempt for up to 8 seconds to allow cell re-selection to take place. In this case the procedure is attempted as soon as a new cell has been selected or the mobile station has concluded that no other cell can be selected.

If random access failure occurs for two successive random access attempts for location updating the mobile station proceeds as specified below.

d) RR connection failure

The procedure is aborted and the mobile station proceeds as specified below.

e) T3210 timeout

The procedure is aborted, the RR connection is aborted and the MS proceeds as specified below.

f) RR release before the normal end of procedure

The procedure is aborted and the mobile station proceeds as specified below.

g) Location updating reject, other causes than those treated in section 4.4.4.7

The MS waits for release of the RR connection as specified in section 4.4.4.8, and then proceeds as specified below.

h) RR connection establishment failure (Iu mode only)

The procedure is aborted and the mobile station proceeds as specified below.

NOTE: Case h) covers all cases when the signalling connection cannot be established, including random access failure and access reject. As the RRC protocol has error specific retransmission mechanisms (see 3GPP TS 25.331), there is no need to distinguish between the different error cases within MM.

In cases d) to ~~g)~~ h) above and for repeated failures as defined in c) above the mobile station proceeds as follows. Timer T3210 is stopped if still running. The RR Connection is aborted in case of timer T3210 timeout. The attempt counter is incremented. The next actions depend on the Location Area Identities (stored and received from the BCCH of the current serving cell) and the value of the attempt counter.

- the update status is UPDATED, and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4:

  The mobile station shall keep the update status to UPDATED, the MM IDLE sub-state after the RR connection release is NORMAL SERVICE. The mobile station shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type;

- either the update status is different from UPDATED, or the stored LAI is different from the one received on the BCCH from the current serving cell, or the attempt counter is greater or equal to 4:

  The mobile station shall delete any LAI, TMSI, ciphering key sequence number stored in the SIM, set the update status to NOT UPDATED and enter the MM IDLE sub-state ATTEMPTING TO UPDATE when the RR connection is released (See section 4.2.2.2 for the subsequent actions). If the attempt counter is smaller than 4, the mobile station shall memorize that timer T3211 is to be started when the RR connection is released, otherwise it shall memorize that timer T3212 is to be started when the RR connection is released.