Technical Document – Confidential

GSM PROTOCOL STACK

G23

GMM_MSC – MESSAGE SEQUENCE CHARTS FOR GMM

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Change History

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2003-May-14	XGUTTEFE		0.2	Draft	

Notes:

1. Initial version

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[ISO 9000:2000] International Organization for Standardization. Quality management systems - Fundamentals and vocabulary. December 2000

1.1 References

[GSM 04.08] Draft EN 300 940: April 1999 (GSM 04.08 version 6.3.0)
Mobile radio interface layer 3 specification, ETSI

2 Introduction

G23 is a software package implementing Layers 2 and 3 of the ETSI-defined GSM air interface signalling protocol, and as such represents that part of a GSM mobile station's protocol software which is both, platform and manufacturer independent. Therefore, G23 can be viewed as a building block providing standardised functionality through generic interfaces for easy integration.

The G23 suite of products consists of the following items:

- Layers 2 and 3 for speech & short message services,
- Layers 2 and 3 for fax & data services,
- Application Control Interface,
- Slim MMI [02.30] and
- Test and integration support tools.

This document defines the Message Sequence Charts for GMM (GPRS Mobility Management).

3 GMM Introduction

3.1 GMM states

The GMM functionality is spread over different states. The actual state is stored by GMM. The GMM-DEREGISTERED and GMM-REGISTERED states are subdivided into several substates. The substates pertain to the whole MS (ME alone if no SIM is inserted, or ME plus SIM). The following GMM states are implemented:

GMM-NULL	The GPRS capability is disabled in the MS. No GPRS mobility management function shall be performed in this state.
GMM-DEREGISTERED	The GPRS capability has been enabled in the MS, but no GMM context has been established. In this state, the MS may establish a GMM context by starting the GPRS attach or combined GPRS attach procedure.
Substate GMM-DEREGISTERED.NORMAL-SERVICE	Valid subscriber data is available, the GPRS update status is GU1 or GU2, a cell has been selected. In this state, a request for GPRS attach is performed using the stored temporary mobile subscriber identity for GPRS (P-TMSI), routing area identification (RAI) and GPRS ciphering key sequence number in case of GU1. If the GPRS update status is GU2, the IMSI shall be used to attach for GPRS services.
Substate GMM-DEREGISTERED.LIMITED-SERVICE	Valid subscriber data is available, GPRS update status is GU3, and a cell is selected, which is known not to be able to provide normal service.
Substate GMM-DEREGISTERED.ATTACH-NEEDED	Valid subscriber data is available and for some reason a GPRS attach must be performed as soon as possible. This state is usually of no duration, but can last, e.g. if the access class is blocked.
Substate GMM-DEREGISTERED.ATTEMPTING-TO-ATTACH	The GPRS update status is GU2, a cell is selected, a previous GPRS attach was rejected. The execution of further attach procedures depends on the GPRS attach attempt counter. No GMM procedure except GPRS attach shall be initiated by the MS in this substate.
Substate GMM-DEREGISTERED.NO-IMSI	No valid subscriber data is available (no SIM, or the SIM is not considered valid by the ME) and a cell has been selected.

Substate GMM-DEREGISTERED.NO-CELL-AVAILABLE	No cell can be selected. This substate is entered after a first intensive search failed (substate PLMN SEARCH). Cells are searched for at a low rhythm. No services are offered.
Substate GMM-DEREGISTERED.PLMN-SEARCH	The mobile station is searching for PLMNs. This substate is left either when a cell has been selected (the new substate is NORMAL-SERVICE or LIMITED-SERVICE) or when it has been concluded that no cell is available at the moment (the new substate is NO-CELL-AVAILABLE).
GMM-REGISTERED-INITIATED	A GPRS attach or combined GPRS attach procedure has been started and the MS is awaiting a response from the network.
GMM-REGISTERED	A GMM context has been established, i.e. the GPRS attach or combined GPRS attach procedure has been successfully performed. In this state, the MS may activate PDP contexts, may send and receive user data and signalling information and may reply to a page request. Furthermore, cell and routing area updating are performed.
Substate GMM-REGISTERED.NORMAL-SERVICE	User data and signalling information may be sent and received.
Substate GMM-REGISTERED.SUSPENDED	The MS shall enter this substate when entering dedicated mode and when the MS limitations makes it unable to communicate on GPRS channels. In this substate, no user data should be sent and no signalling information shall be sent. The MS shall leave this substate when leaving dedicated mode.
Substate GMM-REGISTERED.UPDATE-NEEDED	The MS has to perform a routing area updating procedure, but its access class is not allowed in the cell. The procedure will be initiated as soon as access is granted (this might be due to a cell-reselection or due to change of the access class of the current cell). No GMM procedure except routing area updating shall be initiated by the MS in this substate. In this substate, no user data and no signalling information shall be sent.
Substate GMM-REGISTERED.ATTEMPTING-TO-UPDATE	A routing area updating procedure failed due to a missing response from the network. The MS retries the procedure controlled by timers and a GPRS attempt counter. No GMM procedure except routing area updating shall be initiated by the MS in this substate. No data shall be sent or received.
Substate GMM-REGISTERED.NO-CELL-AVAILABLE	GPRS coverage has been lost. In this substate, the MS shall not initiate any GMM procedures except of cell (and PLMN) reselection.
GMM-DEREGISTERED-INITIATED	The MS has requested release of the GMM context by starting the GPRS detach or combined GPRS detach procedure. This state is only entered if the MS is not being switched off at detach request.
GMM-ROUTING-AREA-UPDATING-INITIATED	A routing area updating procedure has been started and the MS is awaiting a response from the network.

3.2 GMM procedures

Normal GPRS attach

The attach procedure is used to establish the GMM context in both the MS and the network. The normal GPRS attach procedure is used to IMSI attach for GPRS services.

Combined GPRS attach

The attach procedure is used to establish the GMM context in both the MS and the network. The combined GPRS attach procedure is used to IMSI attach for GPRS and non-GPRS services.

GPRS detach

The detach procedure is used to free the GMM context in both the MS and the network. The GPRS detach procedure can be used to IMSI detach for GPRS services only or for GPRS and non-GPRS services.

Normal RAU

The normal RAU procedure is used by the MS to update the registration of the actual RA in the network.

Combined RAU

The combined RAU procedure is used by the MS to update the registration of the actual RA and LA in the network, if the MS is IMSI attached for GPRS and non-GPRS services.

P-TMSI reallocation

The P-TMSI reallocation procedure is used by the network to assign a new P-TMSI to the MS.

Authentication and ciphering

The Authentication and ciphering procedure is used by the network to check whether the identity provided by the MS is acceptable or not, to set the ciphering mode and algorithm, and to provide parameters enabling the MS to calculate a new GPRS ciphering key.

Identification

The Identification procedure is used by the network to request the MS to provide specific identification parameters to the network, e.g. IMSI or IMEI.

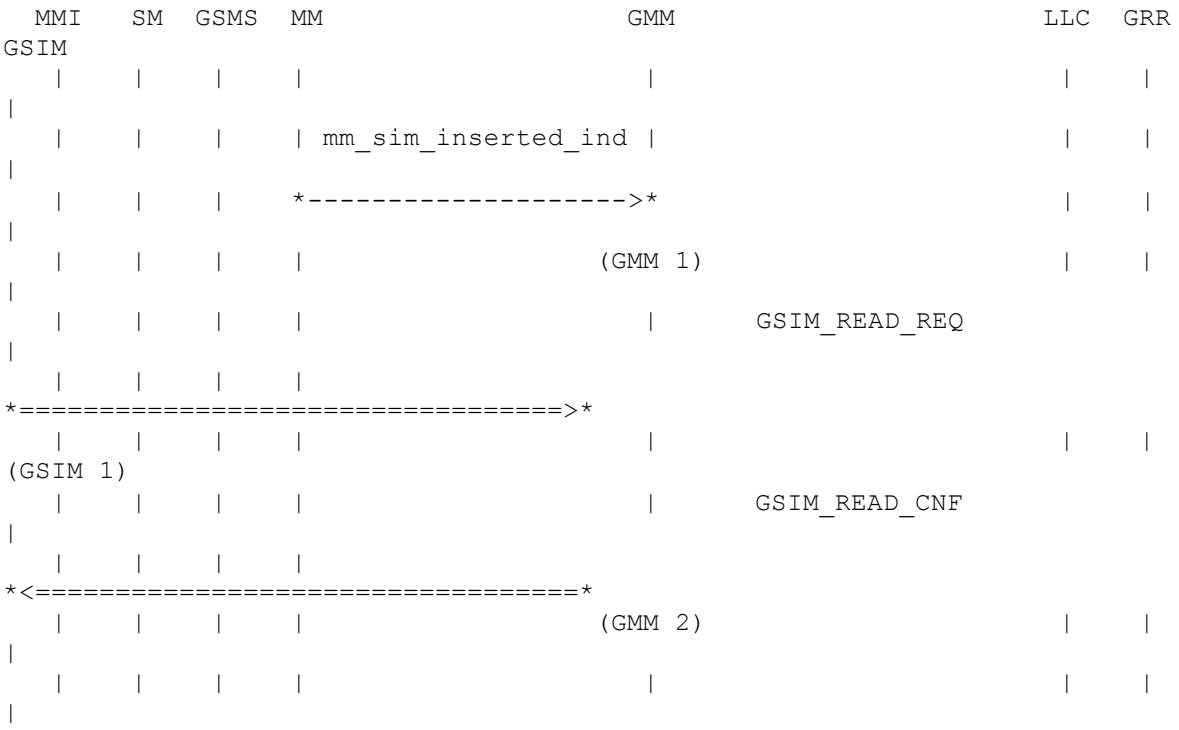
Paging

The paging procedure is used by the network to identify the cell the MS has currently selected.

4 Protocol

4.1 SIM

4.1.1 SIM is inserted and valid



(GMM 1)
GMM is in state GMM-DEREGISTERED.NO-IMSI. GMM receives the indication that a SIM has been inserted and that the SIM is valid. GMM resets the GPRS attach attempt counter. GMM enters state GMM-DEREGISTERED.PLMN-SEARCH.
<R.GMM.ATTACH.M.007>

(GSIM 1)
GMM requests GSIM to send the stored temporary GPRS data and the GPRS update status to GMM.

(GMM 2)
GSIM sends the requested stored temporary GPRS data, if any, and the GPRS update status to GMM.

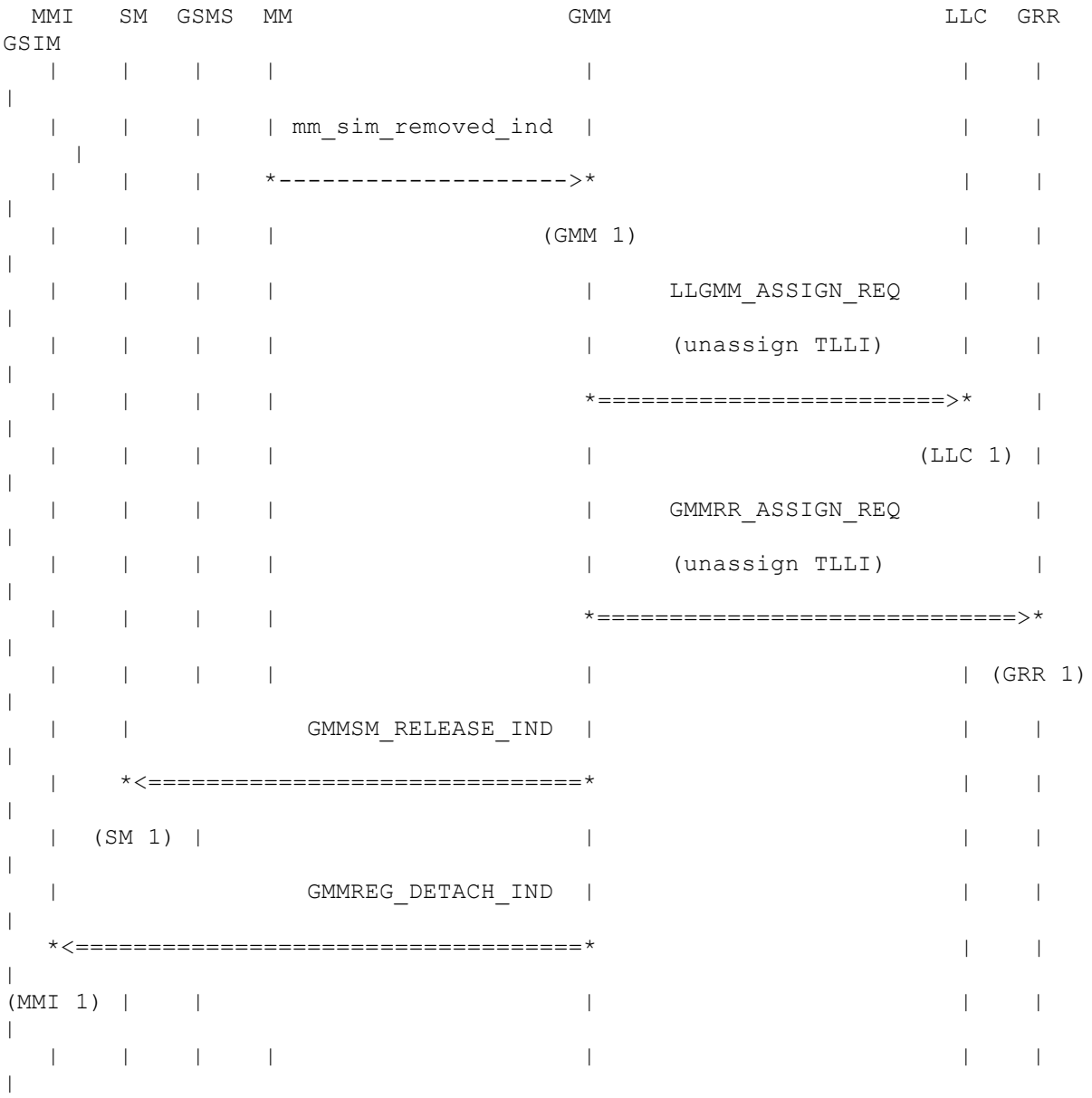
4.1.2 No SIM present or SIM not valid

4.1.2.1 State GMM-DEREGISTERED

(GMM 1)
GMM is in GMM-DEREGISTERED.any-state. GMM receives the indication that no SIM is present or that the SIM is not valid. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.ODNOIMSI.M.001>

4.1.2.2 State GMM-REGISTERED, network not reachable



(GMM 1)
GMM is in GMM-REGISTERED, any other substate than NORMAL-SERVICE. GMM receives the indication that no SIM is present or that the SIM is not valid. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.DSUBFANO.M.003>, <R.GMM.DETACH.M.005>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.DETACH.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

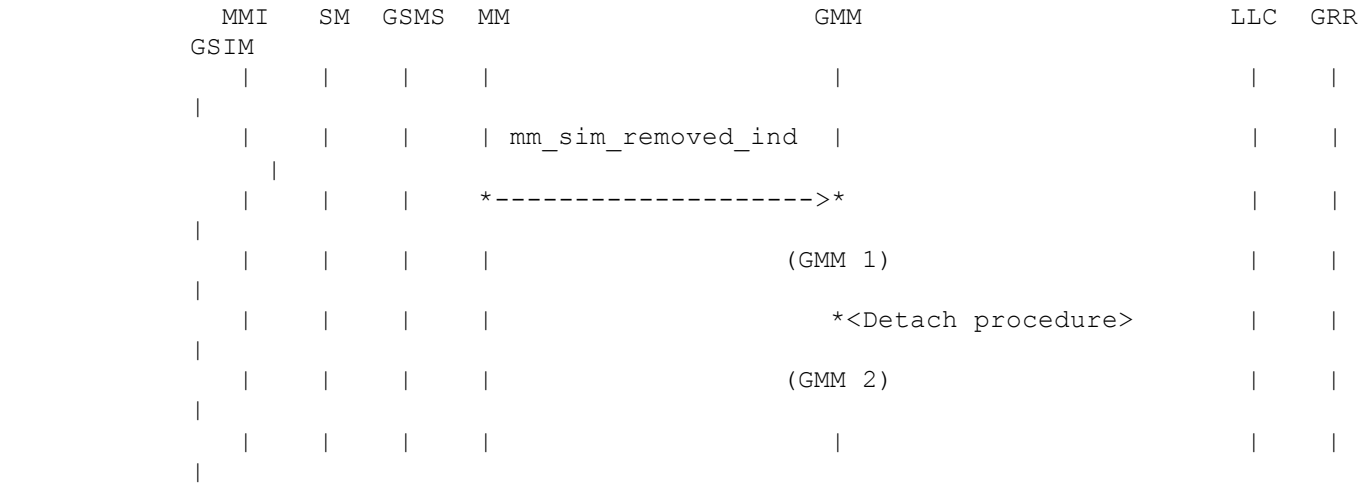
<R.GMM.DETACH.M.005>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DETACH.M.005>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DETACH.M.005>

4.1.2.3 State GMM-REGISTERED, network reachable

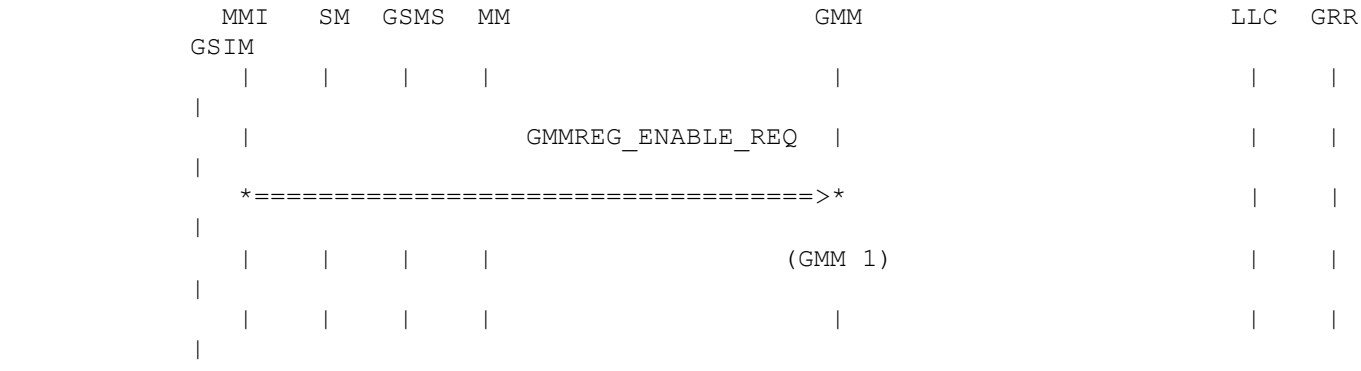


(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE. GMM receives the indication that no SIM is present or that the SIM is not valid.
<R.GMM.DETACH.M.005>

(GMM 2)
Depending on the network operation mode, the normal or combined GPRS detach procedure is started.
<R.GMM.DETACH.M.005>

4.2 Enable/disable GPRS capability

4.2.1 Enable GPRS capability



(GMM 1)
GMM is in state GMM-NULL. MMI enables the GPRS capability in the MS by sending the GMMREG_ENABLE_REQ primitive to GMM. GMM enters state GMM-DEREGISTERED.

<R.GMM.DSUBPWRN.M.009>

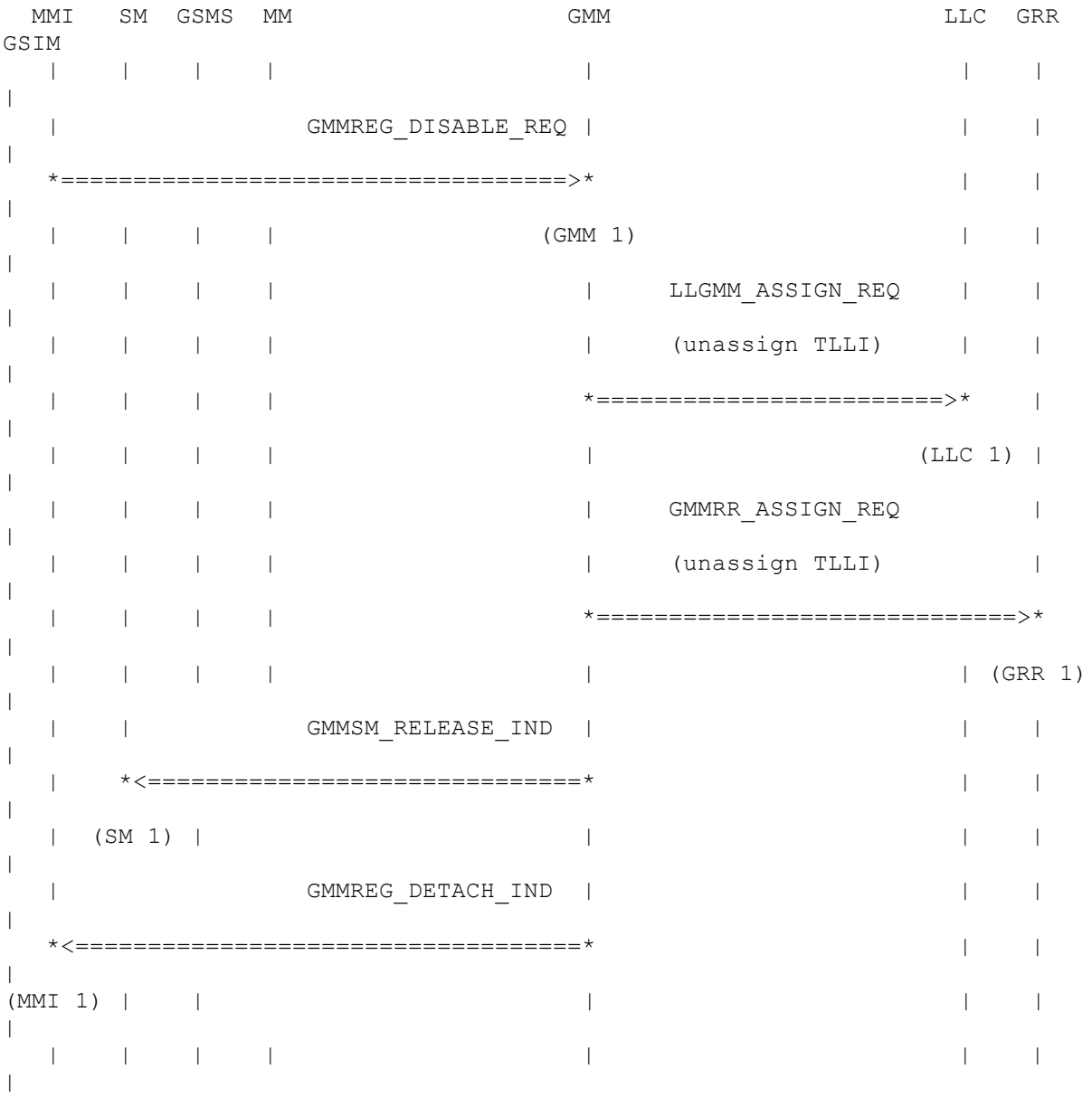
4.2.2 Disable GPRS capability

4.2.2.1 State GMM-DEREGISTERED

(GMM 1)
GMM is in state GMM-DEREGISTERED.any-state. MMI disables the GPRS capability in the MS by sending the GMMREG_DISABLE_REQ primitive to GMM. GMM enters state GMM-NULL.

<R.GMM.STNULL.M.001>

4.2.2.2 State GMM-REGISTERED, network not reachable



(GMM 1)
GMM is in GMM-REGISTERED, any other substate than NORMAL-SERVICE. MMI disables the GPRS capability in the MS by sending the GMMREG_DISABLE_REQ primitive to GMM. GMM enters state GMM-NULL.

<R.GMM.STNULL.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.STNULL.M.002>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.STNULL.M.002>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.STNULL.M.002>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.STNULL.M.002>

4.2.2.3 State GMM-REGISTERED, network reachable

(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE. MMI disables the GPRS capability in the MS by sending the GMMREG_DISABLE_REQ primitive to GMM.
<R.GMM.DETACH.M.005>

(GMM 2)
Depending on the network operation mode, the normal or combined GPRS detach procedure is started.
<R.GMM.DETACH.M.005>

4.3 MMI-initiated normal/combined GPRS attach

4.3.1 Not yet GPRS/IMSI attached

(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH and access to the cell is not barred because of access class control. MMI orders GMM to perform a normal or combined GPRS attach (distinguished by Attach type IE).

<R.GMM.PATTREQ.M.001>

(MM 1)
GMM requests MM to perform cell selection.
<R.GMM.ODSEARCH.M.001>

4.3.2 GPRS attach while already IMSI attached

(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH and access to the cell is not barred because of access class control. MMI orders GMM to perform a GPRS attach while already IMSI attached (Attach type = 'GPRS attach while IMSI attached').
<R.GMM.PATTREQ.M.001>

(GMM 2)
Depending on the network operation mode, the normal or combined GPRS attach procedure is started.
<R.GMM.ATTACH.M.002>, <R.GMM.ATTACH.M.003>

4.3.3 IMSI attach while already GPRS attached

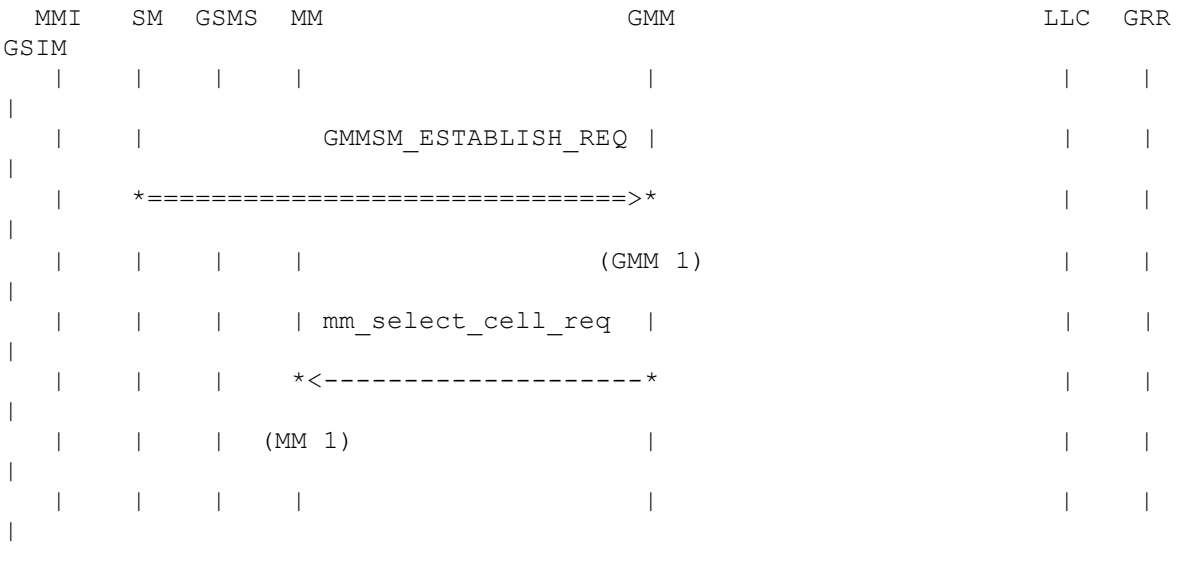
(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE, GMM-REGISTERED.ATTEMPTING-TO-UPDATE, or GMM-REGISTERED.LIMITED-SERVICE, and access to the cell is not barred because of access class control. MMI orders GMM to perform an IMSI attach (Attach type = 'Combined GPRS/IMSI attach').
<R.GMM.PATTREQ.M.001>

(GMM 2)
GMM starts the combined RAU procedure.

<R.GMM.ATTACH.M.005>, <R.GMM.RAU.M.004>

4.4 SM-initiated normal/combined GPRS attach

4.4.1 State GMM-DEREGISTERED



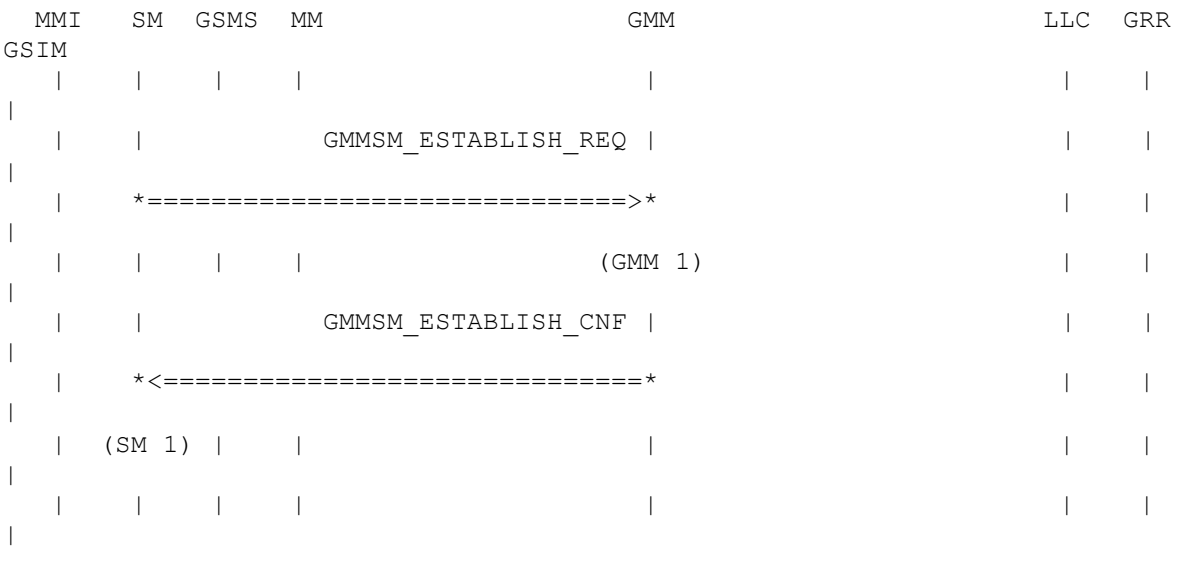
(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH and access to the cell is not barred because of access class control. GMM receives the request to setup a GMM connection.

<R.GMM.PESTREQ.M.001>, <R.GMM.PESTREQ.M.002>

(MM 1)
GMM requests MM to perform cell selection.

<R.GMM.ODSEARCH.M.001>

4.4.2 State GMM-REGISTERED



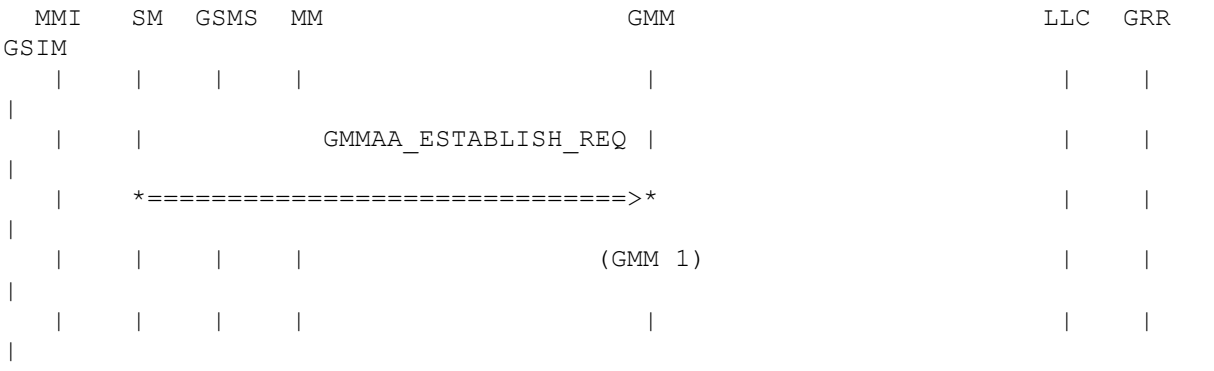
(GMM 1)
GMM is in state GMM-REGISTERED.any-state. GMM receives the request to setup a GMM connection.

<R.GMM.PESTREQ.M.001>, <R.GMM.PESTREQ.M.002>

(SM 1)
GMM informs SM that a GMM connection has already been set up.
<R.GMM.PESTCNF.M.001>

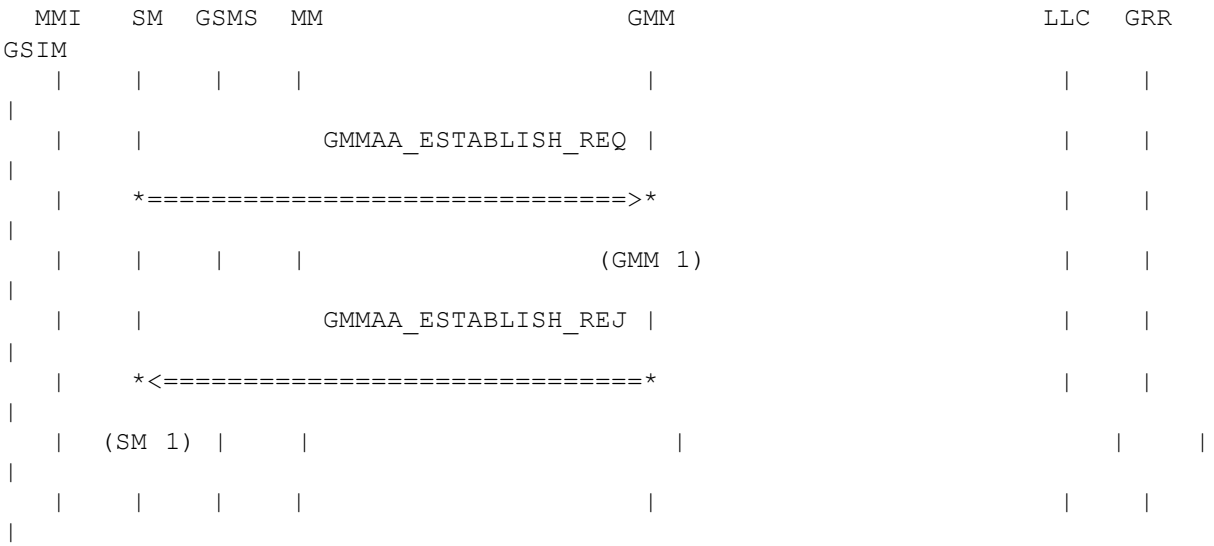
4.5 Anonymous access initiation

4.5.1 GMM not suspended



(GMM 1)
GMM-AA is in state GMMAA-DEREGISTERED. GMM-AA receives the request from SM to support anonymous access. GMM-AA enters state GMMAA-REGISTERED.
<R.GMM.PAESTREQ.M.001>, <R.GMM.PAESTREQ.M.002>

4.5.2 GMM suspended



(GMM 1)
GMM-AA is in state GMMAA-DEREGISTERED, and GMM is in state GMM-REGISTERED.SUSPENDED. GMM-AA receives the request from SM to support anonymous access.
<R.GMM.DRSUSPND.M.002>

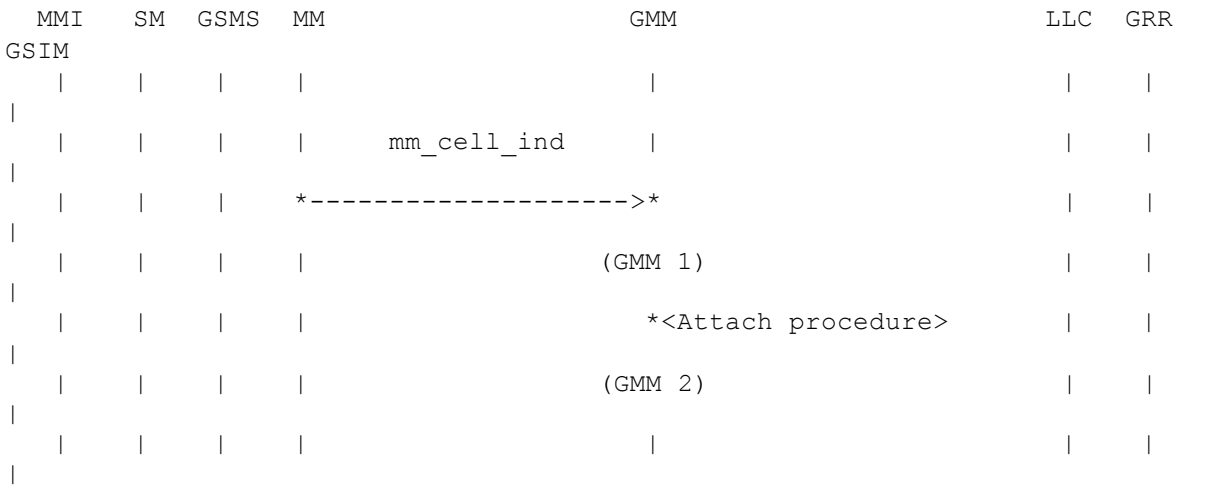
(SM 1)
GMM-AA informs SM that anonymous access is not possible.

<R.GMM.DRSUSPND.M.002>, <R.GMM.PAESTREJ.M.001>

4.6 Cell updating

4.6.1 A cell supporting GPRS has been found which is not in a forbidden PLMN/LA

4.6.1.1 State GMM-DEREGISTERED



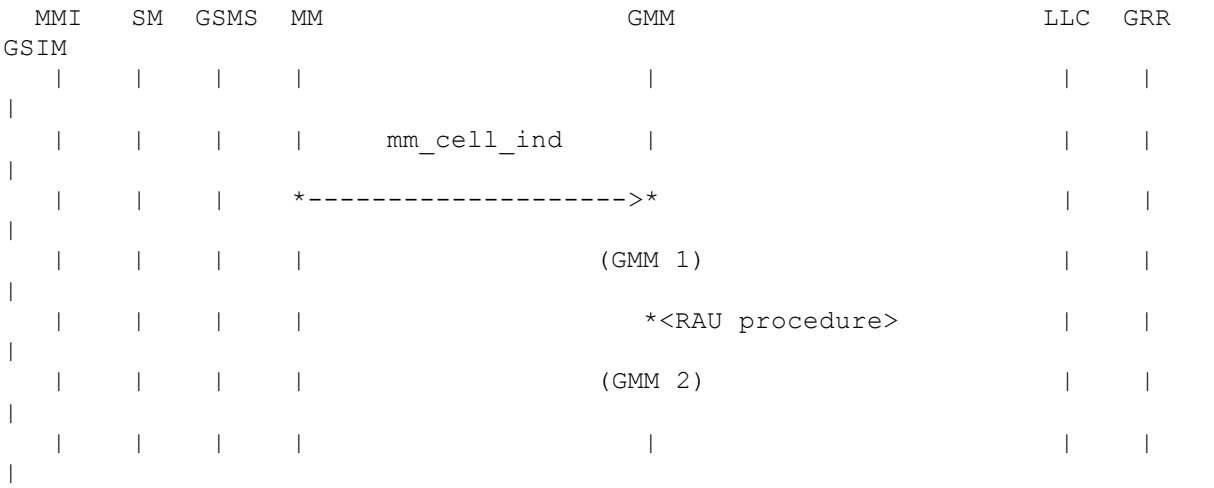
(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH, GMM-DEREGISTERED.LIMITED-SERVICE, GMM-DEREGISTERED.NO-CELL-AVAILABLE, GMM-DEREGISTERED.ATTEMPTING-TO-ATTACH and GPRS attach shall be performed when a new cell is entered, or GMM-DEREGISTERED.ATTACH-NEEDED. GMM receives the indication from MM that a cell supporting GPRS has been found. GMM enters state GMM-DEREGISTERED.NORMAL-SERVICE.

<R.GMM.ODSEARCH.M.002>, <R.GMM.DSUBPWRN.M.002>, <R.GMM.DSUBPWRN.M.005>, <R.GMM.ODNORMAL.M.003>, <R.GMM.DDLIMITD.M.001>, <R.GMM.DDATTNEE.M.001>, <R.GMM.DDATMATT.M.003>, <R.GMM.DDATMATT.M.004>, <R.GMM.ODNORMAL.M.001>, <R.GMM.ODNORMAL.M.002>, <R.GMM.ODNORMAL.M.004>, <R.GMM.ODNORMAL.M.005>

(GMM 2)
GMM starts the normal or combined GPRS attach procedure (see section 4.7).

<R.GMM.ODNORMAL.M.004>, <R.GMM.ODNORMAL.M.005>, <R.GMM.DDNORMAL.M.001>

4.6.1.2 State GMM-REGISTERED, no anonymous access active



(GMM 1)
GMM is in state GMM-REGISTERED.NO-CELL-AVAILABLE, GMM-REGISTERED.LIMITED-SERVICE, GMM-REGISTERED.ATTEMPTING-TO-UPDATE, or GMM-REGISTERED.NORMAL-SERVICE. GMM receives the indication from MM that a cell supporting GPRS has been found. If GMM is in state GMM-REGISTERED.ATTEMPTING-TO-UPDATE, the RAU attempt counter is reset. GMM enters state GMM-REGISTERED.NORMAL-SERVICE, if necessary.

<R.GMM.ORLIMITD.M.002>, <R.GMM.RAUNORM.A.008>, <R.GMM.RAUTIMER.M.009>, <R.GMM.RAUTIMER.M.011>, <R.GMM.RAUTIMER.M.012>, <R.GMM.RAUTIMER.M.013>, <R.GMM.RAUTIMER.M.014>, <R.GMM.RAUTIMER.M.015>, <R.GMM.RAUTIMER.M.016>, <R.GMM.RAUTIMER.M.017>, <R.GMM.RAUTIMER.M.018>, <R.GMM.RAU.M.011>

(GMM 2)
If timer T3312 has expired while in state GMM-REGISTERED.NO-CELL-AVAILABLE or GMM-REGISTERED.LIMITED-SERVICE, the corresponding RAU procedure is started. Otherwise the normal or combined RAU procedure is started.

<R.GMM.RAU.M.001>, <R.GMM.RAU.M.002>, <R.GMM.RAU.M.003>, <R.GMM.RCINIT.M.001>, <R.GMM.RCINIT.M.002>, <R.GMM.RCINIT.M.003>, <R.GMM.RCINIT.M.004>, <R.GMM.RCINIT.M.005>, <R.GMM.RCINIT.M.006>

4.6.1.3 State GMM-REGISTERED, anonymous access active

(GMM 1)
GMM is in state GMM-REGISTERED.NO-CELL-AVAILABLE, GMM-REGISTERED.LIMITED-SERVICE, GMM-REGISTERED.ATTEMPTING-TO-UPDATE, or GMM-REGISTERED.NORMAL-SERVICE. GMM-AA is in state GMMAA-REGISTERED. GMM receives the indication from MM that a cell supporting GPRS has been found. If GMM is in state GMM-REGISTERED.ATTEMPTING-TO-UPDATE, the RAU attempt counter is reset. GMM enters state GMM-REGISTERED.NORMAL-SERVICE, if necessary. Timer T3316 is stopped. GMM-AA enters state GMMAA-DEREGISTERED.

<R.GMM.ORLIMITD.M.002>, <R.GMM.RAUNORM.A.008>, <R.GMM.RAUTIMER.M.009>, <R.GMM.RAUTIMER.M.011>, <R.GMM.RAUTIMER.M.012>, <R.GMM.RAUTIMER.M.013>, <R.GMM.RAUTIMER.M.014>, <R.GMM.RAUTIMER.M.015>, <R.GMM.RAUTIMER.M.016>, <R.GMM.RAUTIMER.M.017>, <R.GMM.RAUTIMER.M.018>, <R.GMM.RAU.M.011>, <R.GMM.GMMAA.A.003>, <R.GMM.GMMAAMS.M.003>, <R.GMM.GMMAAMS.M.004>

(SM 1)
GMM informs SM that the anonymous PDP contexts are deactivated.

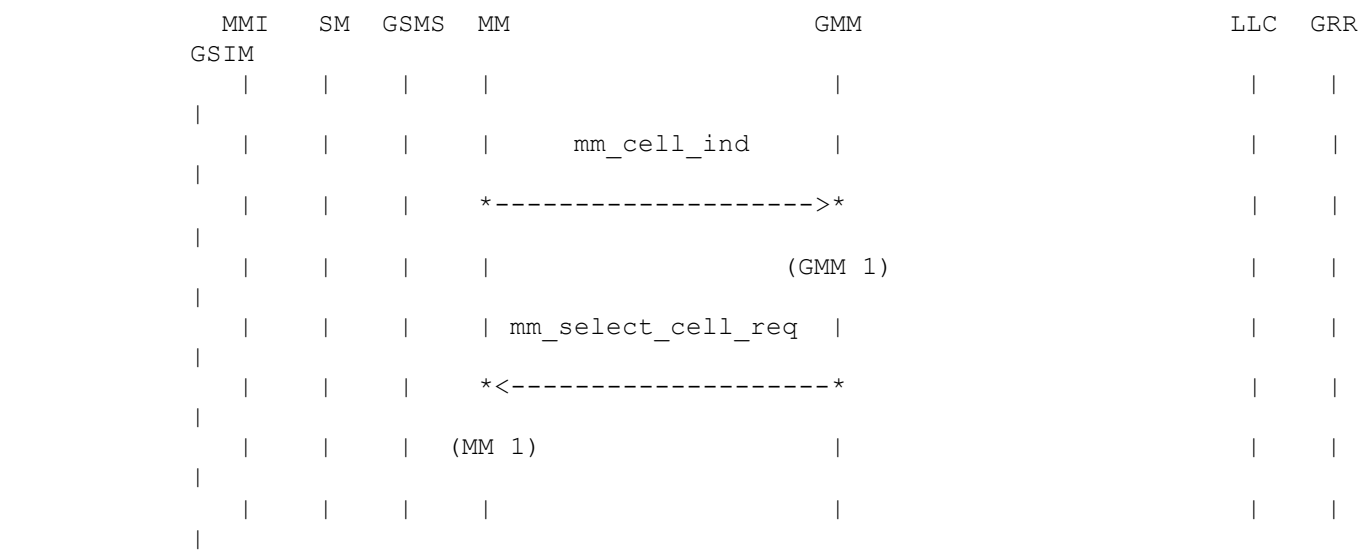
<R.GMM.PARELIND.M.001>

(GMM 2)
If timer T3312 has expired while in state GMM-REGISTERED.NO-CELL-AVAILABLE or GMM-REGISTERED.LIMITED-SERVICE, the corresponding RAU procedure is started (see section 0). Otherwise the normal or combined RAU procedure is started.

<R.GMM.RAU.M.001>, <R.GMM.RAU.M.002>, <R.GMM.RAU.M.003>, <R.GMM.RCINIT.M.001>, <R.GMM.RCINIT.M.002>, <R.GMM.RCINIT.M.003>, <R.GMM.RCINIT.M.004>, <R.GMM.RCINIT.M.005>, <R.GMM.RCINIT.M.006>

4.6.2 A cell supporting GPRS has been found which is in a forbidden PLMN/LA

4.6.2.1 State GMM-DEREGISTERED



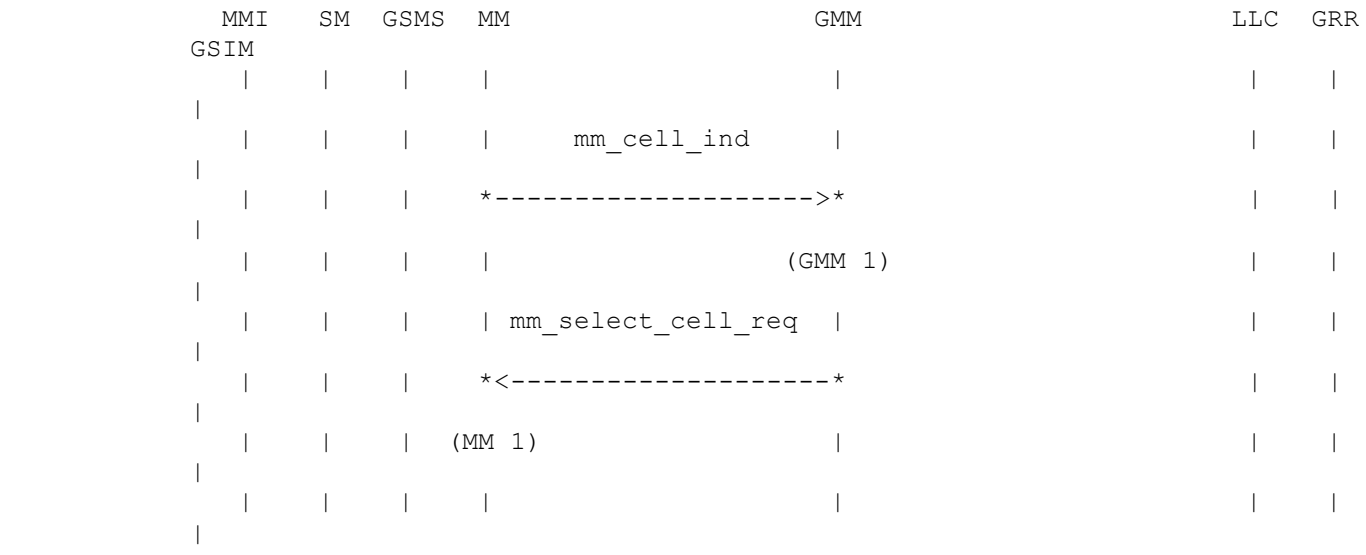
(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH, GMM-DEREGISTERED.LIMITED-SERVICE, or GMM-DEREGISTERED.NO-CELL-AVAILABLE. GMM receives the indication from MM that a cell supporting GPRS has been found but the cell is in a forbidden PLMN or a forbidden LA. GMM enters state GMM-DEREGISTERED.LIMITED-SERVICE.

<R.GMM.ODSEARCH.M.002>, <R.GMM.DSUBPWRN.M.003>, <R.GMM.DSUBPWRN.M.006>, <R.GMM.DDLIMITD.M.001>

(MM 1)
GMM requests MM to perform cell selection.

<R.GMM.DDLIMITD.M.001>

4.6.2.2 State GMM-REGISTERED



(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE, GMM-REGISTERED.UPDATE-NEEDED, GMM-REGISTERED.NO-CELL-AVAILABLE, GMM-REGISTERED.LIMITED-SERVICE. GMM receives the indication from MM that

a cell supporting GPRS has been found but the cell is in a forbidden PLMN or a forbidden LA. GMM enters state GMM-REGISTERED.LIMITED-SERVICE.

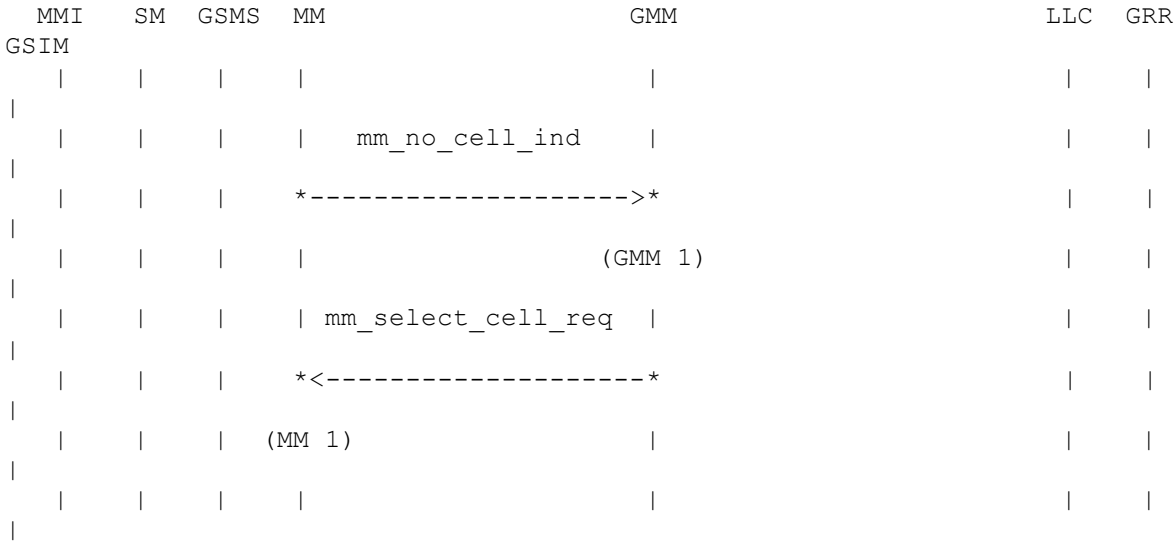
<R.GMM.DRNORMAL.M.001>, <R.GMM.DRUPDNEE.M.003>, <R.GMM.DRUPDNEE.M.004>, <R.GMM.DRNOCELL.M.001>, <R.GMM.ORLIMITD.M.001>, <R.GMM.DRLIMITD.M.001>

(MM 1)
GMM requests MM to perform cell selection.

<R.GMM.DRLIMITD.M.001>

4.6.3 No cell supporting GPRS has been found

4.6.3.1 State GMM-DEREGISTERED



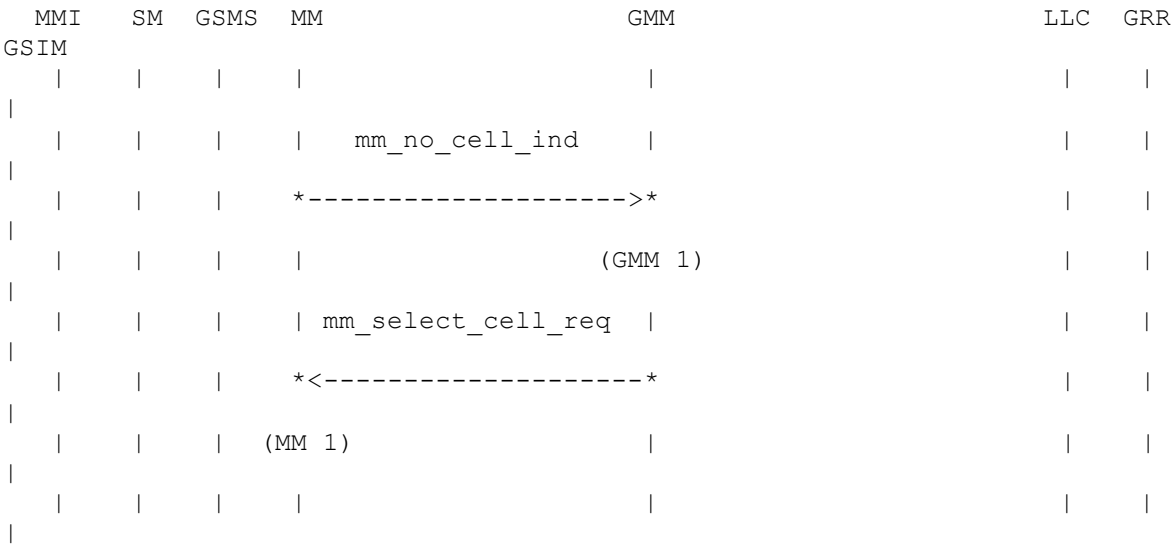
(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH, GMM-DEREGISTERED.LIMITED-SERVICE, or GMM-DEREGISTERED.NO-CELL-AVAILABLE. GMM receives the indication from MM that no cell supporting GPRS has been found. GMM enters state GMM-DEREGISTERED.NO-CELL-AVAILABLE.

<R.GMM.ODSEARCH.M.003>, <R.GMM.DSUBPWRN.M.004>, <R.GMM.DSUBPWRN.M.007>, <R.GMM.ODNOCELL.M.001>, <R.GMM.ODNOCELL.M.002>

(MM 1)
GMM requests MM to perform cell selection.

<R.GMM.ODNOCELL.M.003>, <R.GMM.DDNOCELL.M.001>

4.6.3.2 State GMM-REGISTERED



(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE, GMM-REGISTERED.NO-CELL-AVAILABLE, or GMM-REGISTERED.LIMITED-SERVICE. GMM receives the indication from MM that no cell supporting GPRS has been found. GMM enters state GMM-REGISTERED.NO-CELL-AVAILABLE.

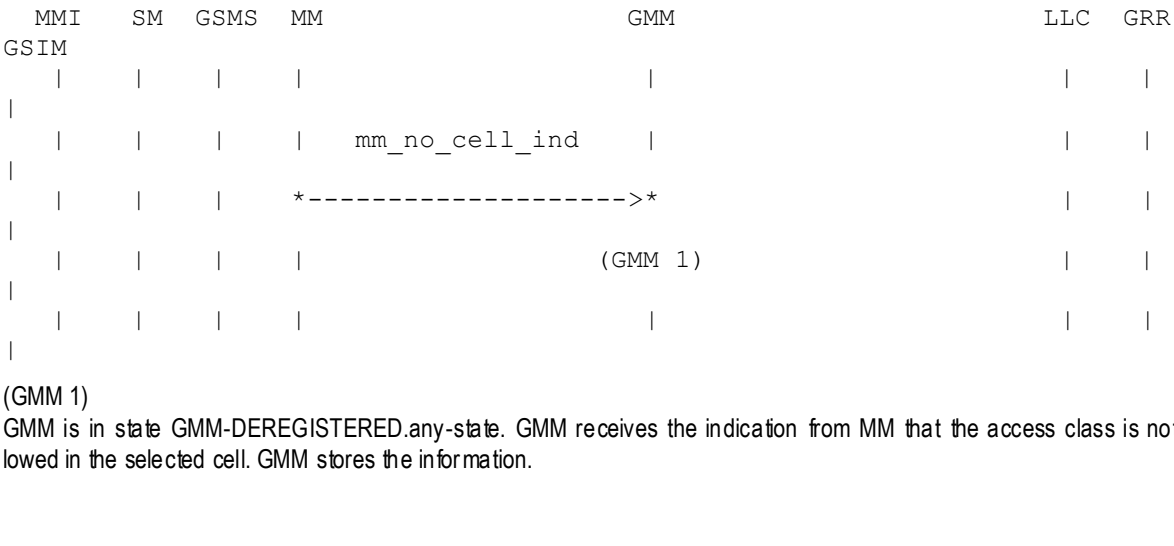
<R.GMM.DRNORMAL.M.001>, <R.GMM.DRLIMITD.M.001>, <R.GMM.ORNOCELL.M.001>, <R.GMM.ORNOCELL.M.002>

(MM 1)
GMM requests MM to perform cell selection.

<R.GMM.ORNOCELL.M.002>, <R.GMM.DRNOCELL.M.001>

4.6.4 Access class barred

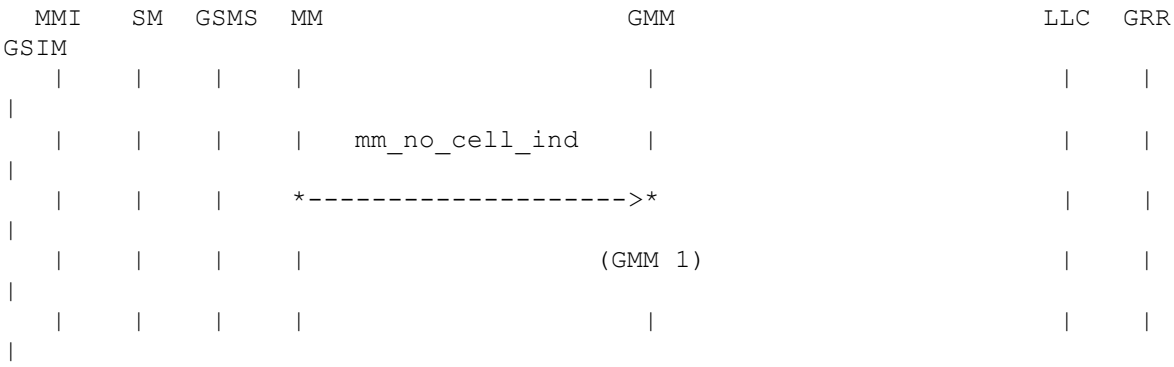
4.6.4.1 State GMM-DEREGISTERED



(GMM 1)
GMM is in state GMM-DEREGISTERED.any-state. GMM receives the indication from MM that the access class is not allowed in the selected cell. GMM stores the information.

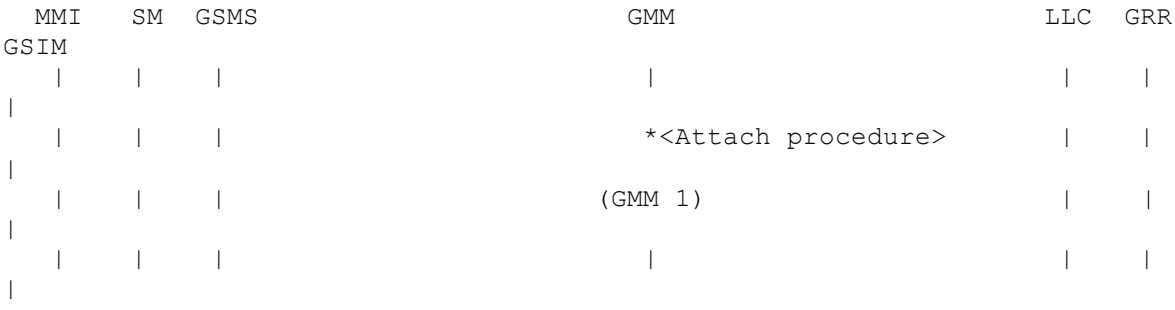
<R.GMM.ODATTNEE.M.003>

4.6.4.2 State GMM-REGISTERED



(GMM 1)
GMM is in state GMM-REGISTERED.any-state. GMM receives the indication from MM that the access class is not allowed in the selected cell. GMM stores the information.
<R.GMM.ORUPDNEE.M.001>

4.7 Normal/combined GPRS attach procedure initiation



(GMM 1)
GMM starts the normal or combined GPRS attach procedure due to one of the following reasons:
- Receipt of the primitive GMMREQ_ATTACH_REQ from MMI (see section 4.1.2).
- Receipt of the primitive GMMRR_PAGE_IND (Page ID = 'IMSI') from GRR (see section 4.17.2).
- Receipt of the DETACH REQUEST message with Detach type = 're-attach requested' (see section 4.8.4.7.1).
- GMM enters state GMM-DEREGISTERED.NORMAL-SERVICE (see section 4.6.1.1).
- GMM is in state GMM-DEREGISTERED.ATTACH-NEEDED and the access class allows network contact in the selected cell (see section 4.6.1.1).

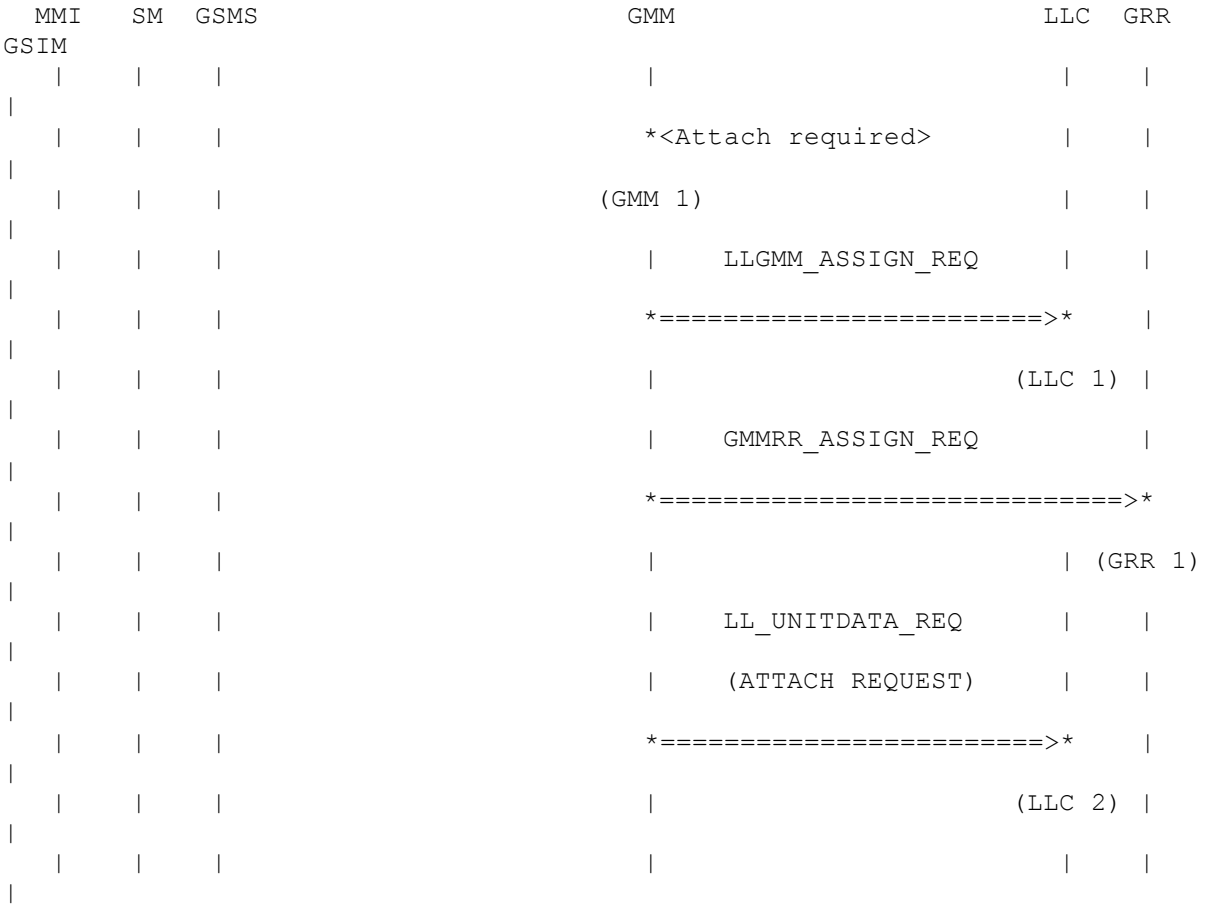
GMM is in state GMM-DEREGISTERED.LIMITED-SERVICE and a cell is entered which may provide normal service (see section 4.6.1.1).
If the network operates in mode II or III, GMM starts the normal GPRS attach procedure (see section 4.8). If the network operates in mode I, GMM starts the combined GPRS attach procedure (see section 4.9).

<R.GMM.ATTACH.M.002>, <R.GMM.ATTACH.M.003>, <R.GMM.ATTCOMBN.M.001>, <R.GMM.ATTCOMBN.M.002>

4.8 Normal GPRS attach procedure for GPRS services

4.8.1 GPRS attach procedure initiation

4.8.1.1 TLLI not yet assigned to lower layers (e.g. after power on)



(GMM 1)
Normal GPRS attach is required (see section 4.7). No TLLI has yet been assigned to the lower layers. If a valid P-TMSI is available, GMM derives a foreign TLLI from that P-TMSI, otherwise GMM generates a random TLLI.

<R.GMM.ODNORMAL.M.004>, <R.GMM.ODNORMAL.M.005>, <R.GMM.DDNORMAL.M.001>, <R.GMM.ODATTNEE.M.002>, <R.GMM.DDATTNEE.M.001>, <R.GMM.DDLIMITD.M.001>, <R.GMM.DSUBFANO.M.006>, <R.GMM.DNACM.M.004>, <R.GMM.PAGNGPRS.M.007>, <R.GMM.PAGNGPRS.M.011>, <R.GMM.TLLIUSE.M.001>, <R.GMM.TLLIUSE.M.005>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ (TLLI assignment indicator = 'assign a TLLI in LLC').

<R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>

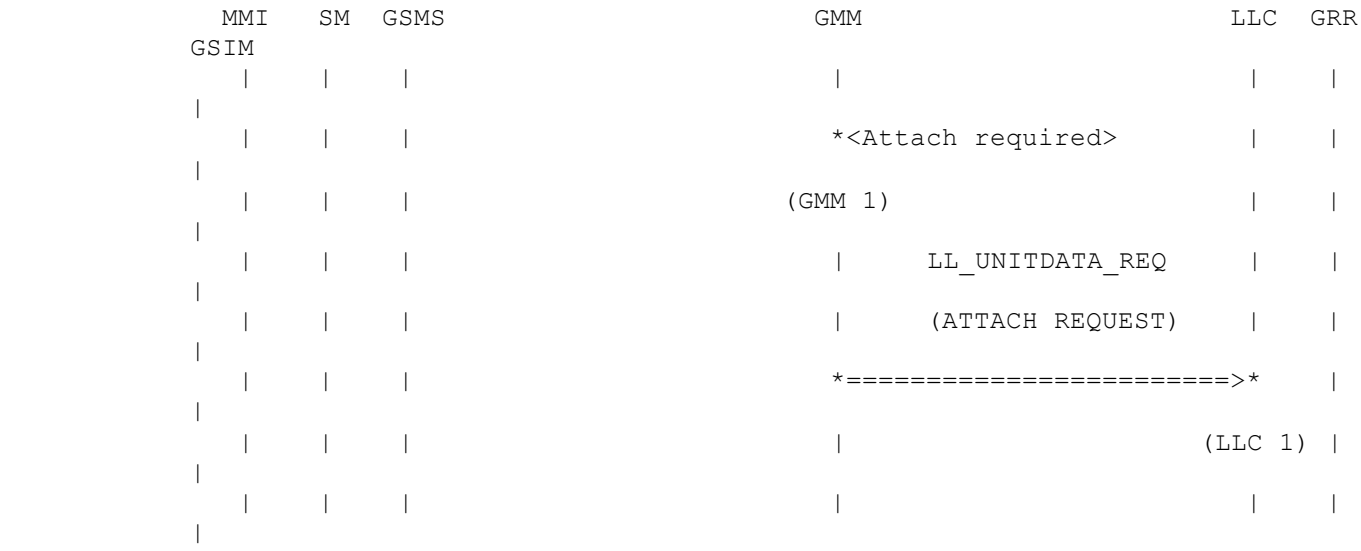
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>

(LLC 2)
GMM transmits the ATTACH REQUEST (Attach type = 'GPRS attach') message to the network. If a valid P-TMSI is available, the P-TMSI, RAI, and P-TMSI signature, if available, are included in the message. Otherwise, the IMSI is included in the message. GMM starts timer T3310 and enters state GMM-REGISTERED-INITIATED.

<R.GMM.ATTGPRS.M.001>, <R.GMM.AGINIT.M.001>, <R.GMM.AGINIT.M.002>, <R.GMM.AGINIT.M.003>, <R.GMM.AGINIT.M.004>, <R.GMM.AGINIT.M.005>, <R.GMM.AGINIT.M.006>, <R.GMM.AGINIT.M.007>, <R.GMM.AGINIT.M.008>, <R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>

4.8.1.2 TLLI already assigned to lower layers



(GMM 1)
Normal GPRS attach is required (see section 4.7). A TLLI has already been assigned to the lower layers.

<R.GMM.ODNORMAL.M.004>, <R.GMM.ODNORMAL.M.005>, <R.GMM.DDNORMAL.M.001>, <R.GMM.ODATTNEE.M.002>, <R.GMM.DDATTNEE.M.001>, <R.GMM.DDLIMITD.M.001>, <R.GMM.DSUBFANO.M.006>, <R.GMM.DNACM.M.004>, <R.GMM.PAGNGPRS.M.007>, <R.GMM.PAGNGPRS.M.011>

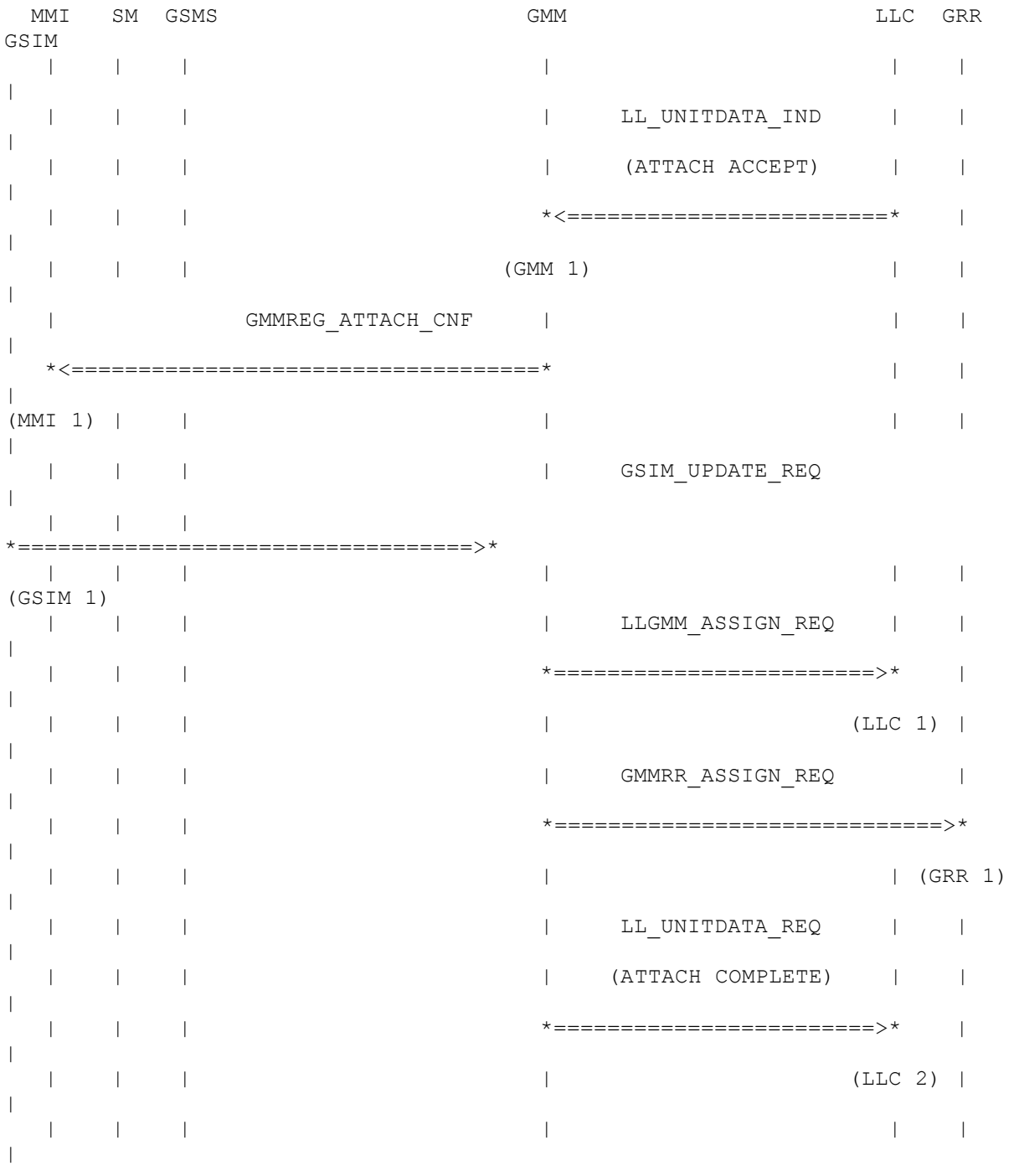
(LLC 1)
GMM transmits the message ATTACH REQUEST (Attach type = 'GRPS attach') to the network. If a valid P-TMSI is available, the P-TMSI, RAI, and P-TMSI signature, if available, are included in the message. Otherwise, the IMSI is included in the message. GMM starts timer T3310 and enters state GMM-REGISTERED-INITIATED.

<R.GMM.ATTGPRS.M.001>, <R.GMM.AGINIT.M.001>, <R.GMM.AGINIT.M.002>, <R.GMM.AGINIT.M.003>, <R.GMM.AGINIT.M.004>, <R.GMM.AGINIT.M.005>, <R.GMM.AGINIT.M.006>, <R.GMM.AGINIT.M.007>, <R.GMM.AGINIT.M.008>, <R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>

4.8.2 GPRS attach accepted by the network

4.8.2.1 MMI-initiated attach accepted

4.8.2.1.1 MMI-initiated attach accepted with implicit P-TMSI reallocation



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the ATTACH ACCEPT message from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE. GMM derives the local TLLI from the received P-TMSI. If the message contains a P-TMSI signature, GMM uses this P-TMSI signature as the new temporary signature for the GMM context.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.015>, <R.GMM.AGACCEPT.M.020>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>, <R.GMM.RAU.M.008>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.AGACCEPT.M.027>, <R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.019>, <R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.013>, <R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.PATTCNF.M.003>

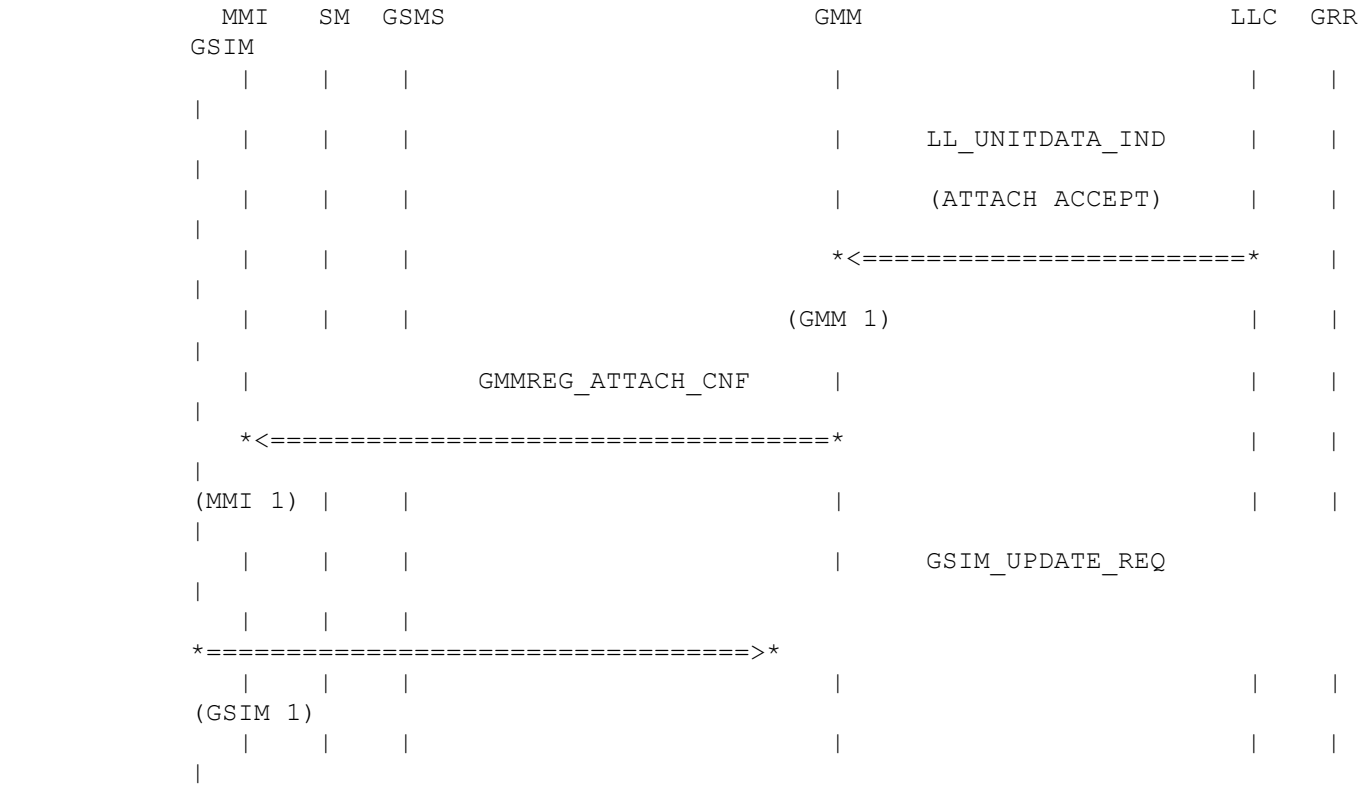
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.PATTCNF.M.003>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>

4.8.2.1.2 MMI-initiated attach accepted without implicit P-TMSI reallocation



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the ATTACH ACCEPT message from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE. GMM keeps the old P-TMSI, if any is available. If the message contains a P-TMSI signature, GMM uses this P-TMSI signature as the new temporary signature for the GMM context.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.019>, <R.GMM.AGACCEPT.M.020>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>

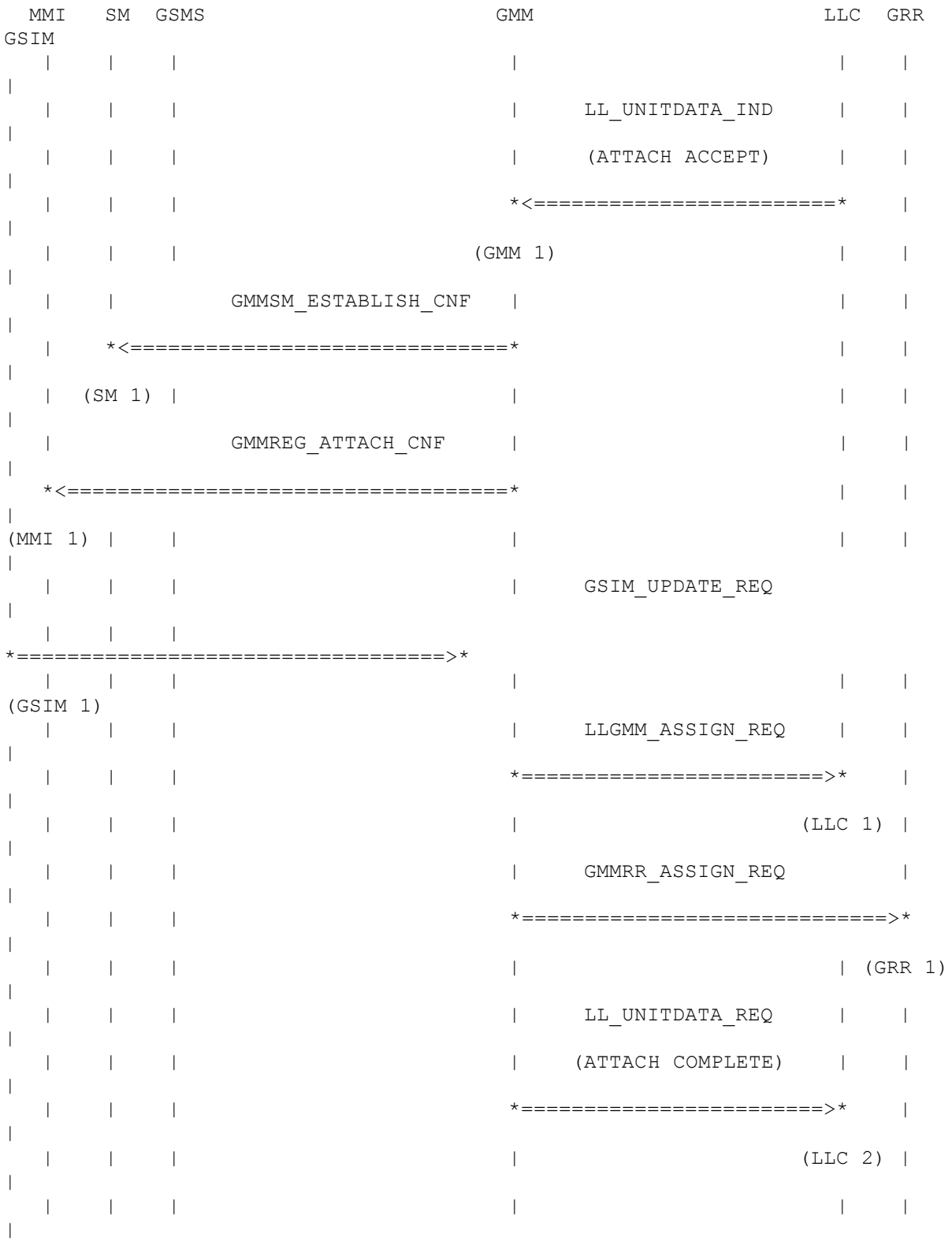
(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.AGACCEPT.M.027>, <R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>

(GSIM 1)
GMM enters GPRS update status GU1.
<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.019>, <R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>

4.8.2.2 SM-initiated attach accepted

4.8.2.2.1 SM-initiated attach accepted with implicit P-TMSI reallocation



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the ATTACH ACCEPT message from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE. GMM derives the local TLLI from the received P-TMSI. If the message contains a P-TMSI signature, GMM uses this P-TMSI signature as the new temporary signature for the GMM context.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.015>,

<R.GMM.AGACCEPT.M.020>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>, <R.GMM.RAU.M.008>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.AGACCEPT.M.027>, <R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.019>, <R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.013>, <R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.PATTCNF.M.003>

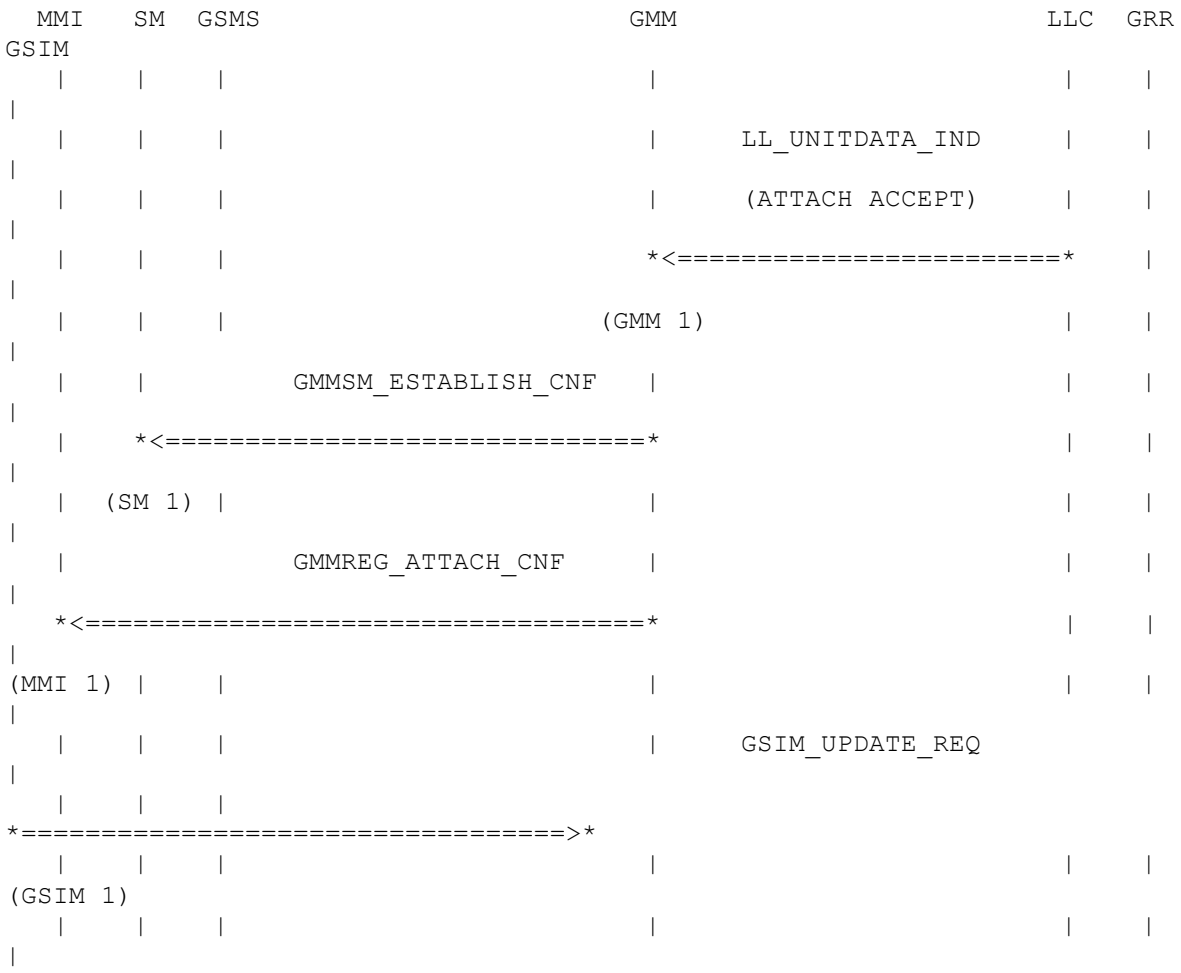
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.PATTCNF.M.003>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>

4.8.2.2.2 SM-initiated attach accepted without implicit P-TMSI reallocation



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the ATTACH ACCEPT message from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE. GMM keeps the old P-TMSI, if any is available. If the message contains a P-TMSI signature, GMM uses this P-TMSI signature as the new temporary signature for the GMM context.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.019>, <R.GMM.AGACCEPT.M.020>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.AGACCEPT.M.027>, <R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>

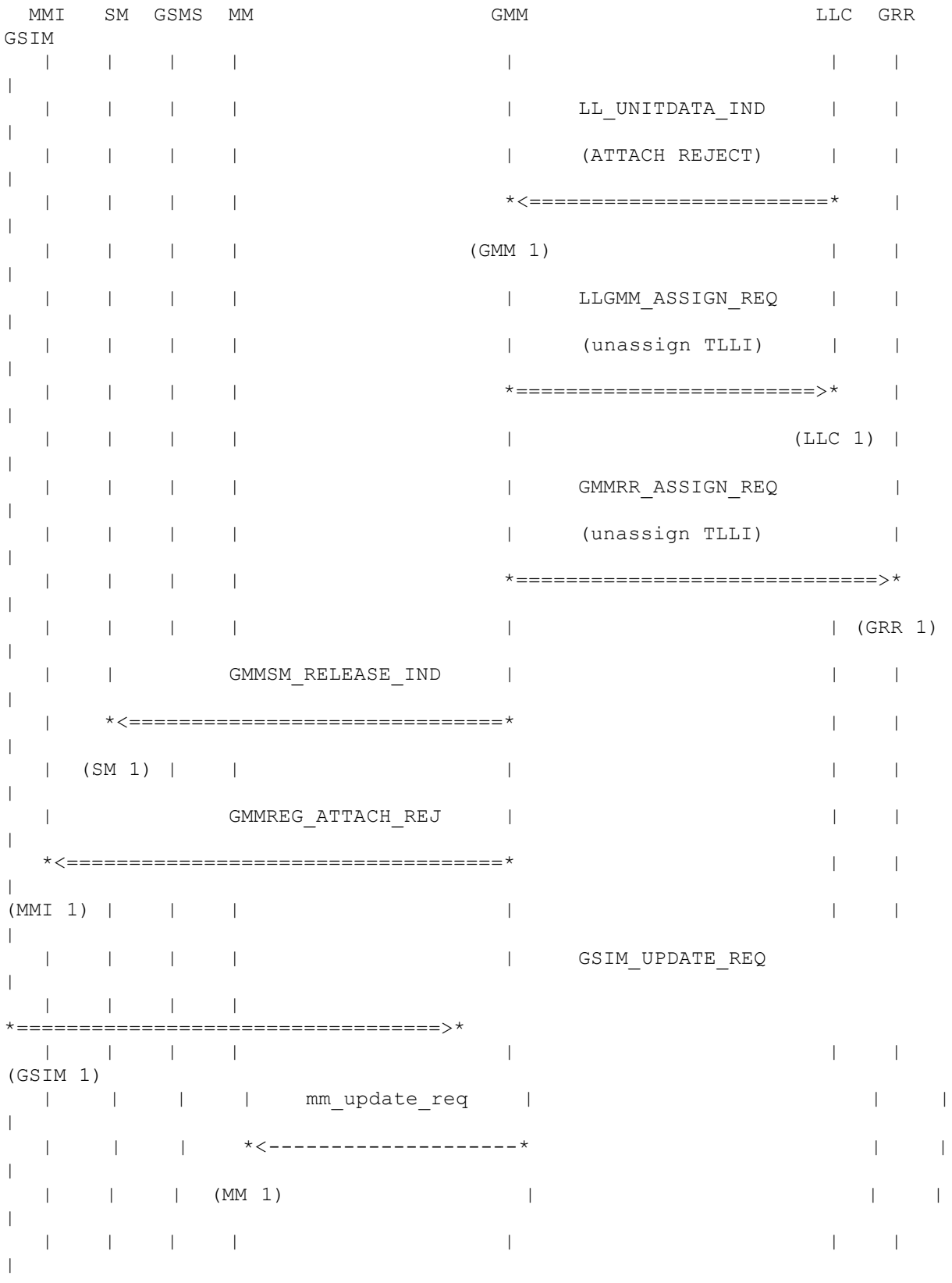
(GSIM 1)
GMM enters GPRS update status GU1.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.019>, <R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>

4.8.3 GPRS attach not accepted by the network

4.8.3.1 MMI-initiated attach

4.8.3.1.1 Reject cause #3 or #6



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #3 or #6) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.005>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGREJECT.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.AGREJECT.M.005>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.AGREJECT.M.005>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.AGREJECT.M.005>

(GSIM 1)

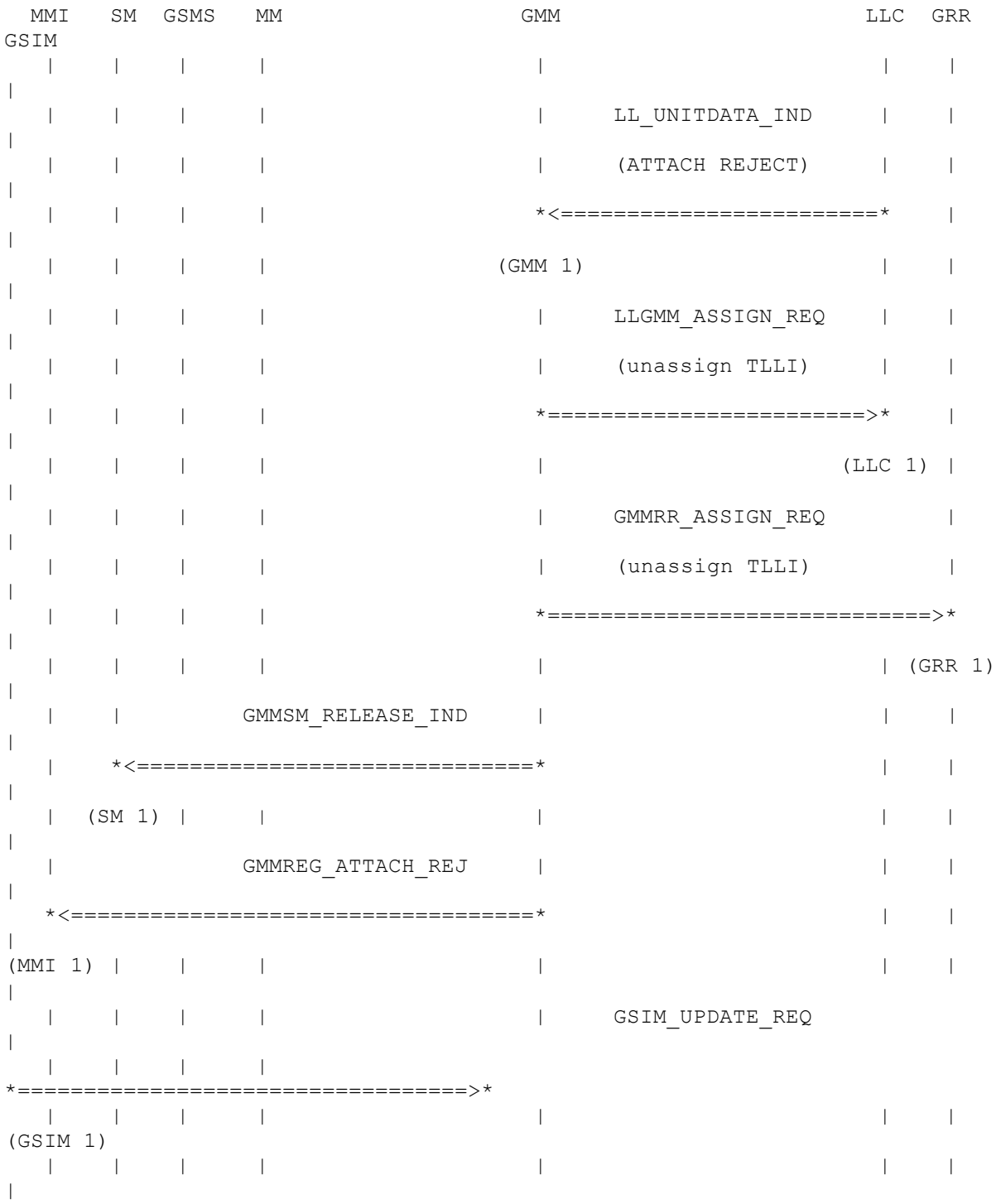
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.

<R.GMM.AGREJECT.M.003>, <R.GMM.AGREJECT.M.004>, <R.GMM.AGREJECT.M.006>

(MM 1)
If MM is not IMSI attached via MM procedure no further actions are taken. GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.AGREJECT.M.007>, <R.GMM.AGREJECT.M.008>, <R.GMM.AGREJECT.M.009>, <R.GMM.AGREJECT.M.010>

4.8.3.1.2 Reject cause #7



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #7) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.014>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGREJECT.M.014>

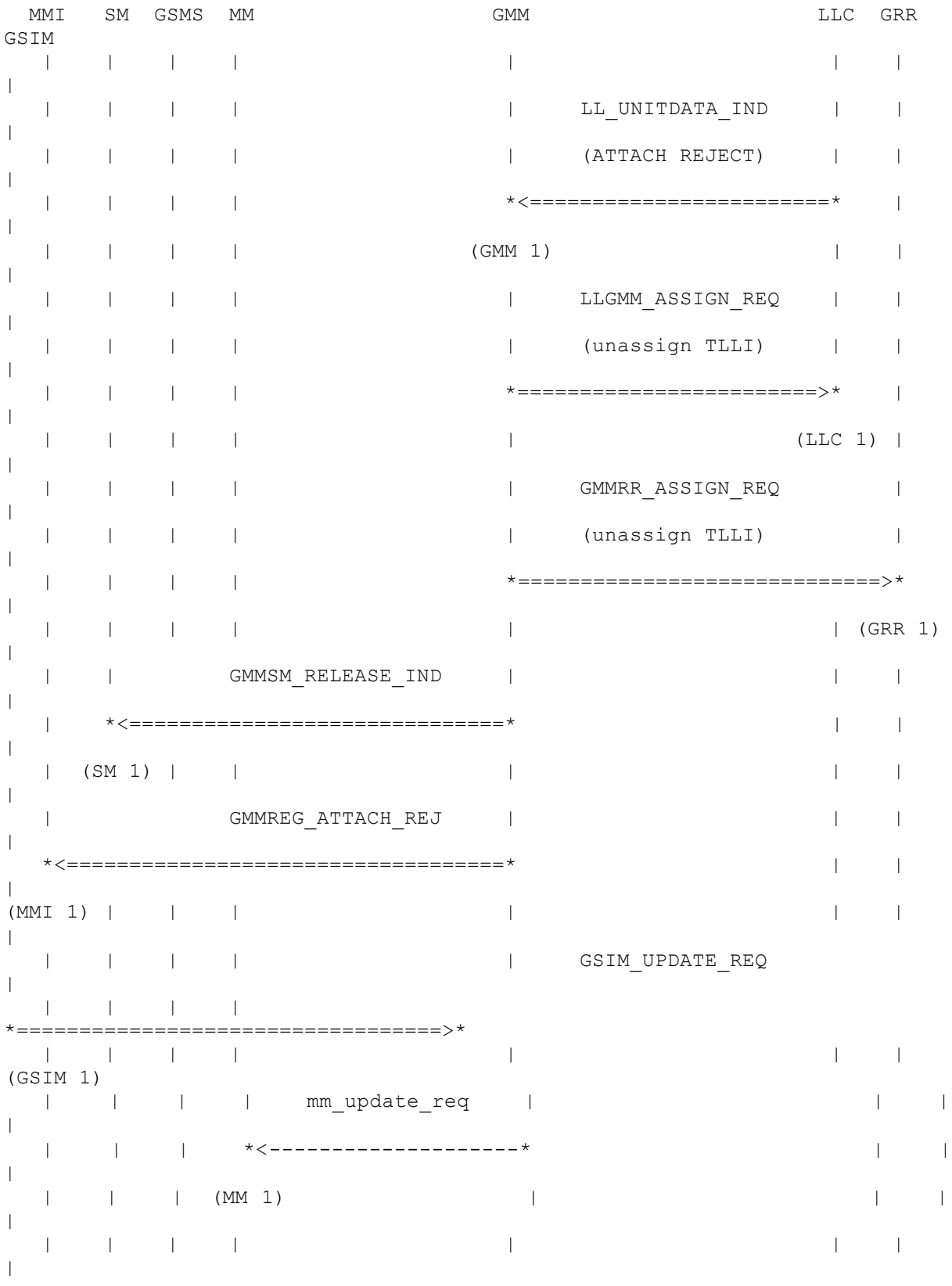
(GRR 1)
GMM informs GRR, that the GMM context is released.
<R.GMM.AGREJECT.M.014>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.AGREJECT.M.014>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.AGREJECT.M.014>

(GSIM 1)
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.
<R.GMM.AGREJECT.M.011>, <R.GMM.AGREJECT.M.012>, <R.GMM.AGREJECT.M.013>

4.8.3.1.3 Reject cause #11, #12, or #13



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3310. If the reject cause is #12, GMM enters state GMM-DEREGISTERED.LIMITED-SERVICE. If the reject cause is #11 or #13, GMM enters state GMM-DEREGISTERED.PLMN-SEARCH. GMM informs MM, that IMSI detach is requested. The GPRS attach attempt counter is reset.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.017>, <R.GMM.AGREJECT.M.022>, <R.GMM.AGREJECT.M.025>, <R.GMM.AGREJECT.M.026>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>, <R.GMM.RAU.M.013>, <R.GMM.ATTACH.M.009>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGREJECT.M.017>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.AGREJECT.M.017>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.AGREJECT.M.017>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.AGREJECT.M.017>

(GSIM 1)

GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

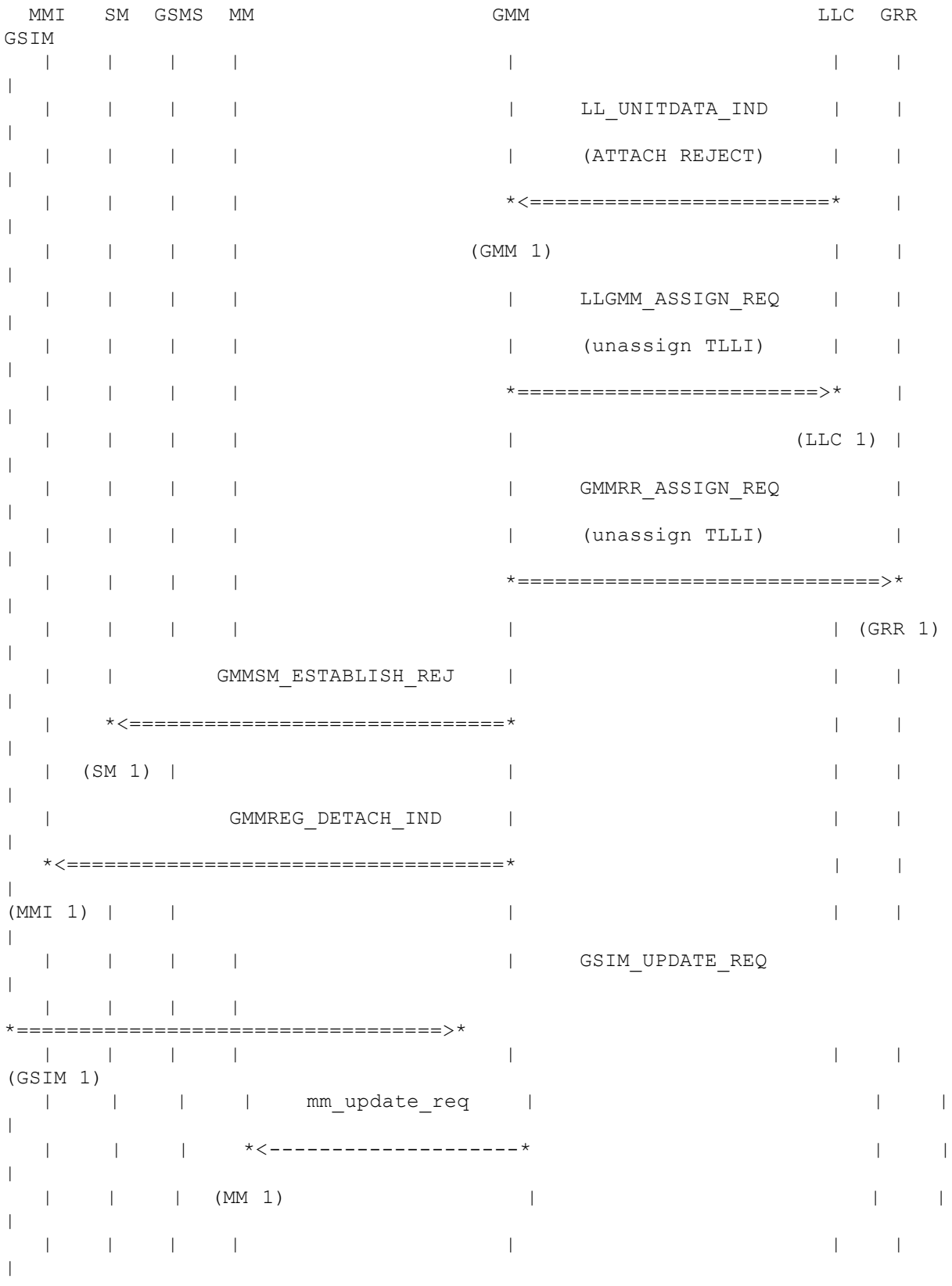
<R.GMM.AGREJECT.M.015>, <R.GMM.AGREJECT.M.016>

(MM 1)
If MM is not IMSI attached via MM procedure no further actions are taken. GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.AGREJECT.M.018>, <R.GMM.AGREJECT.M.019>, <R.GMM.AGREJECT.M.010>, <R.GMM.AGREJECT.M.021>, <R.GMM.AGREJECT.M.022>, <R.GMM.AGREJECT.M.023>, <R.GMM.AGREJECT.M.024>, <R.GMM.AGREJECT.M.025>

4.8.3.2 SM-initiated attach

4.8.3.2.1 Reject cause #3 or #6



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #3 or #6) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.005>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGREJECT.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.AGREJECT.M.005>

(SM 1)
GMM informs SM, that the GMM connection setup has failed.

<R.GMM.AGREJECT.M.005>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.AGREJECT.M.005>

(GSIM 1)

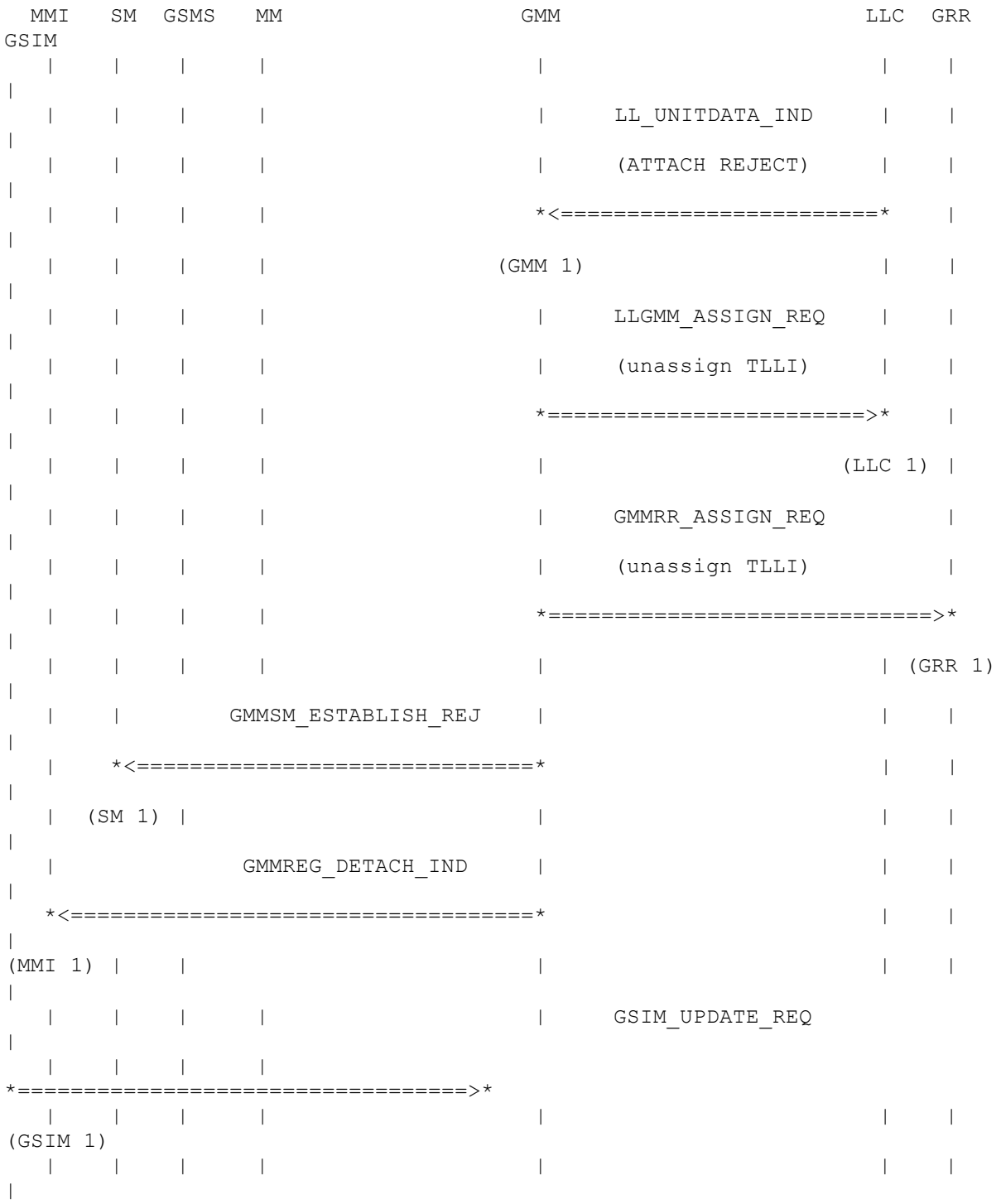
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.

<R.GMM.AGREJECT.M.003>, <R.GMM.AGREJECT.M.004>, <R.GMM.AGREJECT.M.006>

(MM 1)
If MM is not IMSI attached via MM procedure no further actions are taken. GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.AGREJECT.M.007>, <R.GMM.AGREJECT.M.008>, <R.GMM.AGREJECT.M.009>, <R.GMM.AGREJECT.M.010>

4.8.3.2.2 Reject cause #7



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #7) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.014>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGREJECT.M.014>

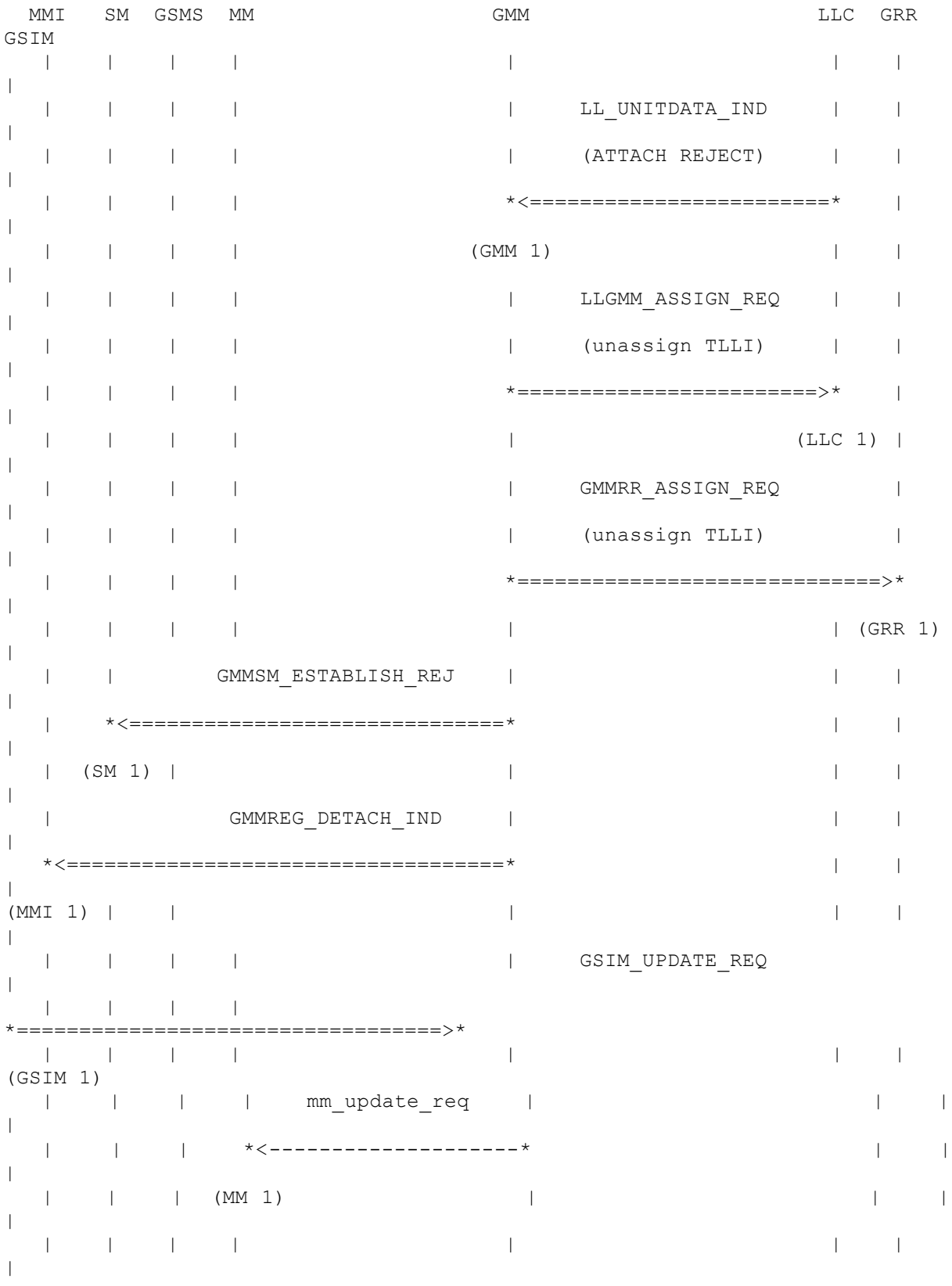
(GRR 1)
GMM informs GRR, that the GMM context is released. pest
<R.GMM.AGREJECT.M.014>

(SM 1)
GMM informs SM, that the GMM connection setup has failed.
<R.GMM.AGREJECT.M.014>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.AGREJECT.M.014>

(GSIM 1)
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.
<R.GMM.AGREJECT.M.011>, <R.GMM.AGREJECT.M.012>, <R.GMM.AGREJECT.M.013>

4.8.3.2.3 Reject cause #11, #12, or #13



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3310. If the reject cause is #12, GMM enters state GMM-DEREGISTERED.LIMITED-SERVICE. If the reject cause is #11 or #13, GMM enters state GMM-DEREGISTERED.PLMN-SEARCH. GMM informs MM, that IMSI detach is requested. The GPRS attach attempt counter is reset.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.017>, <R.GMM.AGREJECT.M.022>, <R.GMM.AGREJECT.M.025>, <R.GMM.AGREJECT.M.026>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>, <R.GMM.RAU.M.013>, <R.GMM.ATTACH.M.009>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGREJECT.M.017>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.AGREJECT.M.017>

(SM 1)
GMM informs SM, that the GMM connection setup has failed.

<R.GMM.AGREJECT.M.017>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.AGREJECT.M.017>

(GSIM 1)

GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.AGREJECT.M.015>, <R.GMM.AGREJECT.M.016>

(MM 1)
If MM is not IMSI attached via MM procedure no further actions are taken. GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.AGREJECT.M.018>, <R.GMM.AGREJECT.M.019>, <R.GMM.AGREJECT.M.010>, <R.GMM.AGREJECT.M.021>, <R.GMM.AGREJECT.M.022>, <R.GMM.AGREJECT.M.023>, <R.GMM.AGREJECT.M.024>, <R.GMM.AGREJECT.M.025>

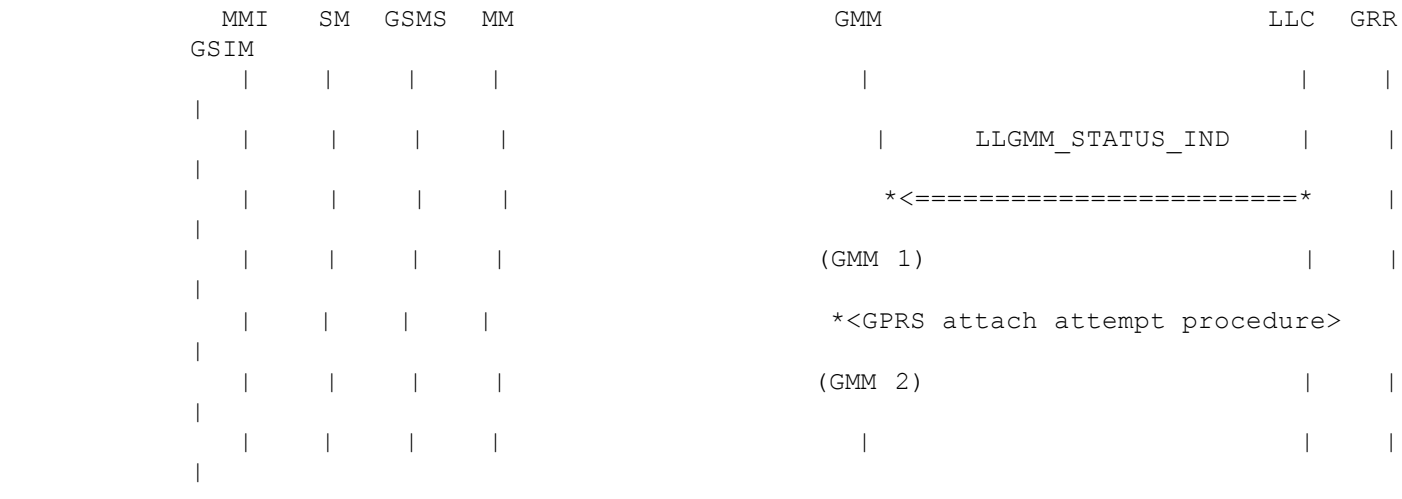
4.8.4 Abnormal cases

4.8.4.1 a) Access barred because of access class control

(GMM 1)
GMM is in state GMM-DEREGISTERED.any-state and access to the cell is barred because of access class control. GMM receives the GMMREQ_ATTACH_REQ primitive from MMI requesting normal GRPS attach. GMM enters state GMM-DEREGISTERED.ATTACH-NEEEDED.

4.8.4.2 b) Lower layer failure before the ATTACH ACCEPT or ATTACH REJECT message is received

4.8.4.2.1 Lower layer failure from GRR



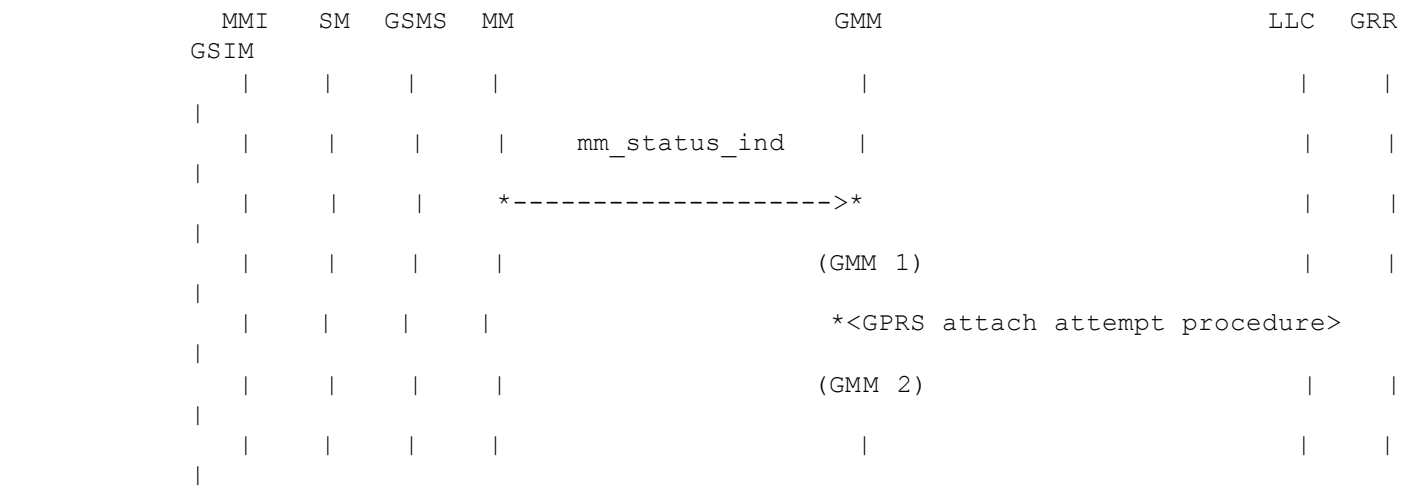
(GMM 1)
The attach procedure is aborted.

<R.GMM.RGABNORM.M.004>

(GMM 2)
The attach attempt procedure is started (see 4.12.6).

<R.GMM.RGABNORM.M.005>

4.8.4.2.2 Lower layer failure from RR over MM



(GMM 1)
The RAU procedure is aborted.

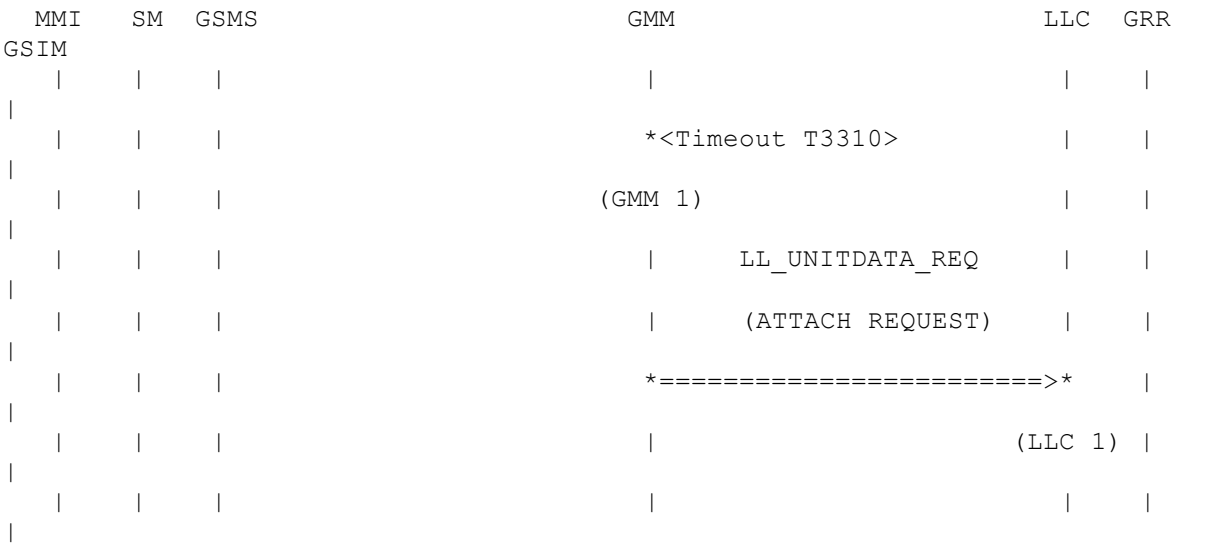
<R.GMM.RGABNORM.M.004>

(GMM 2)
The RAU attempt procedure is started (see 4.12.6).

<R.GMM.RGABNORM.M.005>

4.8.4.3 c) T3310 time-out

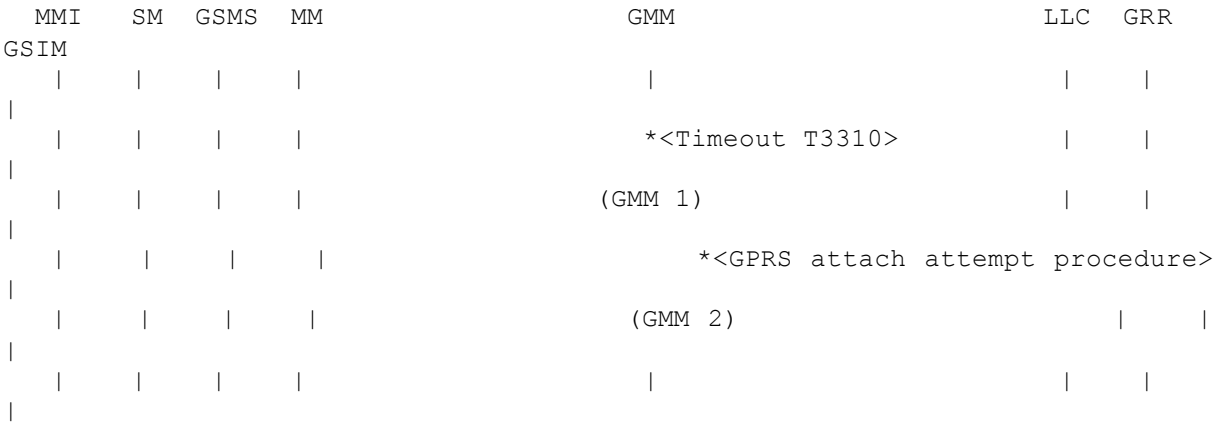
4.8.4.3.1 Maximum retransmissions not reached



(GMM 1)
Timeout of timer T3310 for the first, second, third or fourth time. GMM starts timer T3310.
<R.GMM.AGABNORM.M.006>

(LLC 1)
GMM retransmits the ATTACH REQUEST message to the network. If a valid P-TMSI is available, the P-TMSI, RAI, and P-TMSI signature, if available, are included in the message. Otherwise, the IMSI is included in the message.
<R.GMM.AGABNORM.M.007>, <R.GMM.ATTGPRS.M.001>, <R.GMM.AGINIT.M.001>, <R.GMM.AGINIT.M.002>, <R.GMM.AGINIT.M.003>, <R.GMM.AGINIT.M.004>, <R.GMM.AGINIT.M.005>, <R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>

4.8.4.3.2 Maximum retransmissions reached

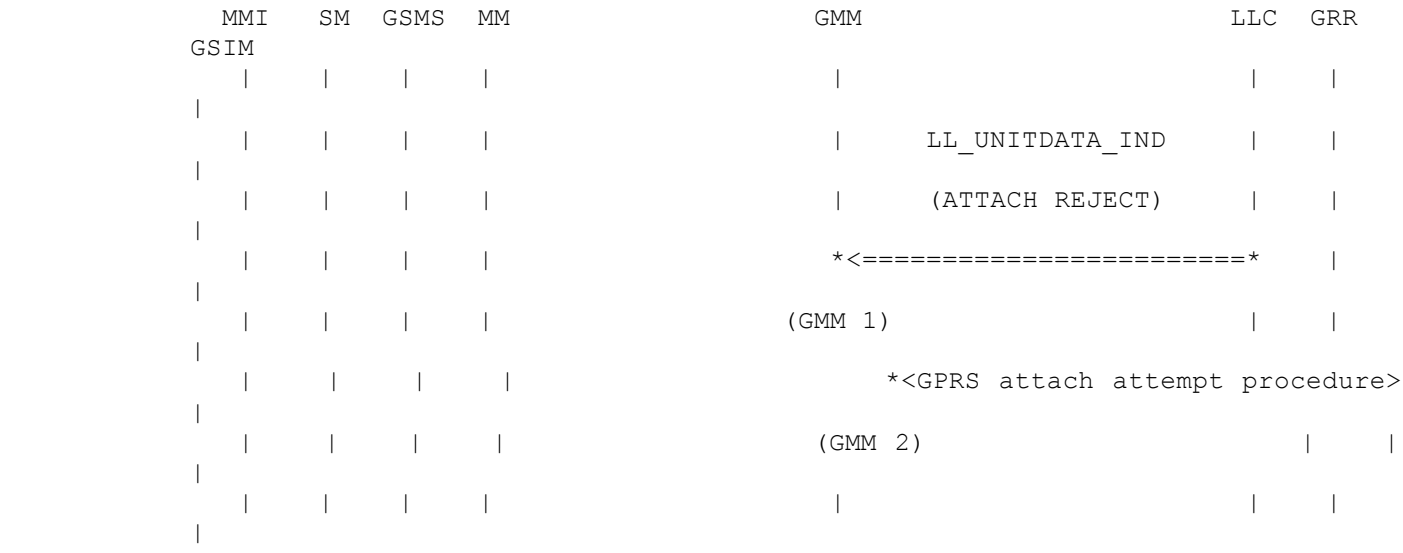


(GMM 1)
Timeout of timer T3310 for the fifth time. GMM aborts the attach procedure.
<R.GMM.AGABNORM.M.008>

(GMM 2)
The GPRS attach attempt procedure is started (see 4.8.5).

<R.GMM.RGABNORM.M.009>

4.8.4.4 d) ATTACH REJECT, other causes than #3, #6, #7, #11, #12, or #13



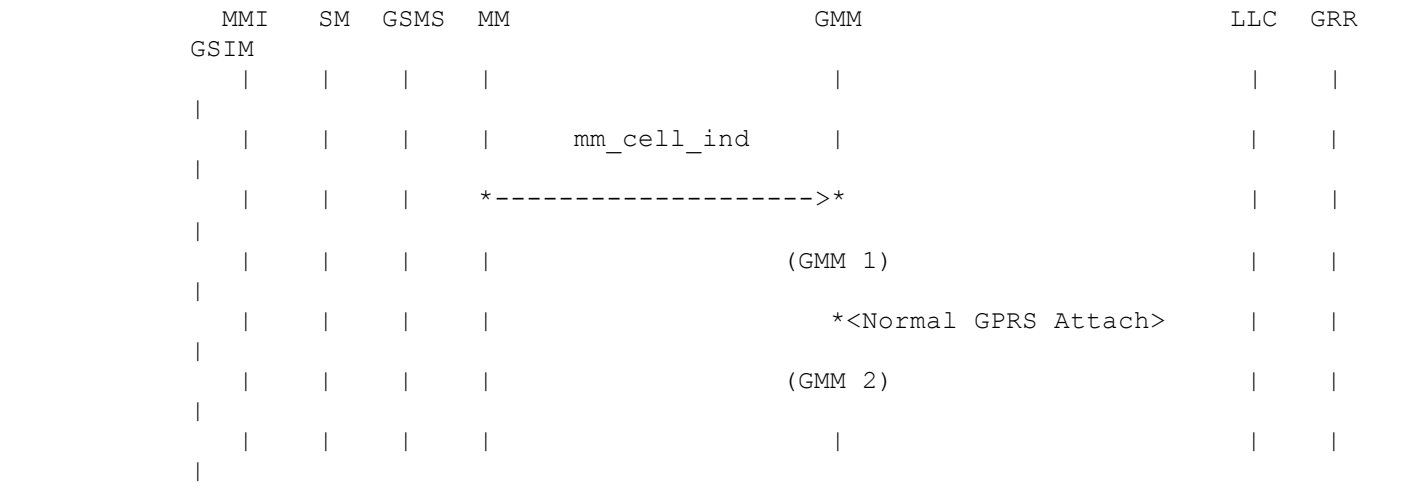
(GMM 1)
GMM receives the ATTACH REJECT message with any other cause than #3, #6, #7, #11, #12, or #13. The RAU attempt counter is reset, if reject cause is #8, #9 or #16.

<R.GMM.RAU.M.013>, <R.GMM.ATTACH.M.009>

(GMM 2)
The GPRS attach attempt procedure is started (see 4.8.5).

<R.GMM.RGABNORM.M.028>

4.8.4.5 e) Change of cell into a new RA (i.e. ATTACH ACCEPT or ATTACH REJECT not yet received)



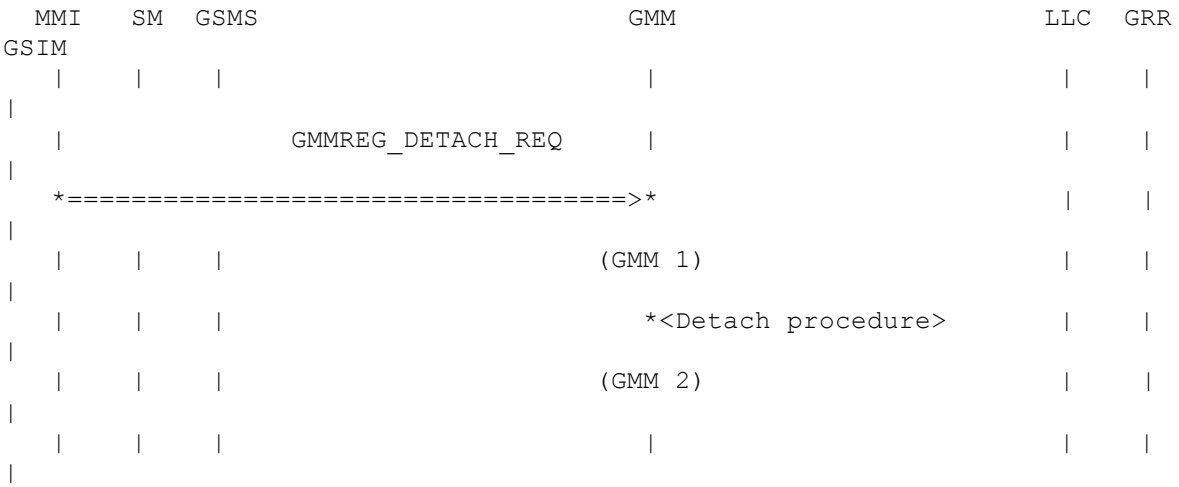
(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the indication that a new RA has been entered.

<R.GMM.AGABNORM.M.010>

(GMM 2)
The GPRS attach procedure is aborted and re-initiated immediately.

<R.GMM.AGABNORM.M.010>

4.8.4.6 f) Power off



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive GMMREG_DETACH_REQ (Power off = 'power switched off') from MMI.

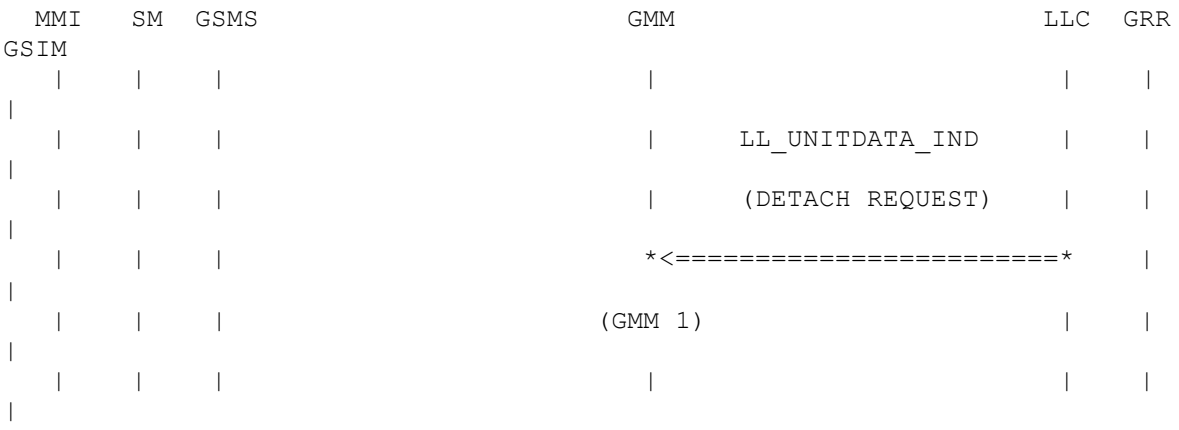
<R.GMM.AGABNORM.M.015>

(GMM 2)
The GPRS detach procedure is performed.

<R.GMM.AGABNORM.M.015>

4.8.4.7 g) Procedure collision

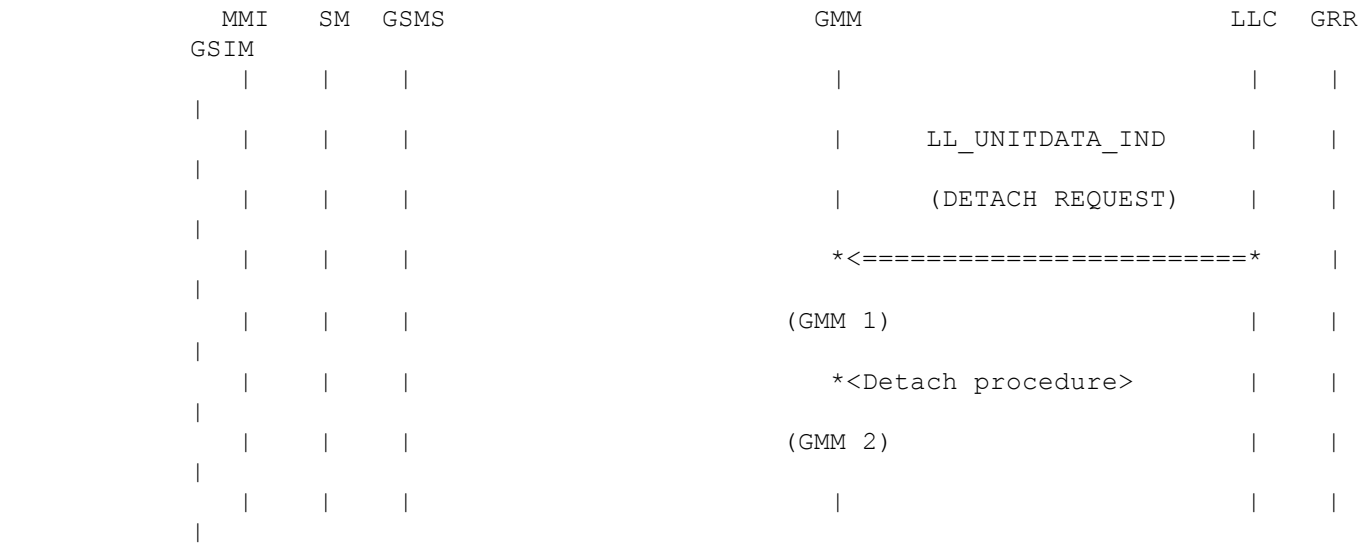
4.8.4.7.1 Re-attach requested



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the message DETACH REQUEST (Detach type = 're-attach required') from the network. GMM ignores the DETACH REQUEST message.

<R.GMM.AGABNORM.M.016>, <R.GMM.AGABNORM.M.017>

4.8.4.7.2 Re-attach not requested



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the message DETACH REQUEST (Detach type = 're-attach not required') from the network. GMM aborts the GPRS attach procedure.
<R.GMM.AGABNORM.M.018>

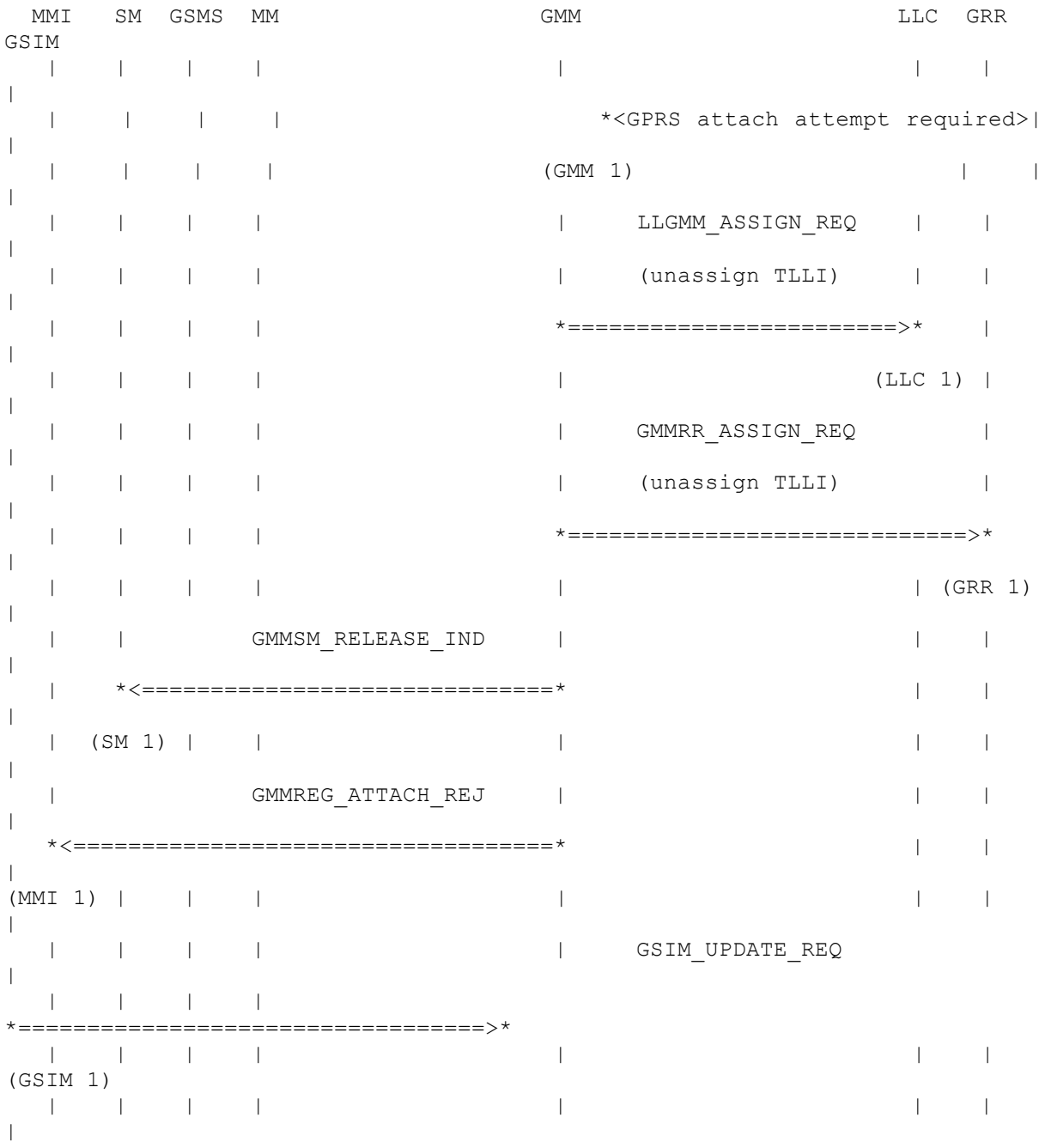
(GMM 2)
GMM follows the GPRS detach procedure.
<R.GMM.AGABNORM.M.019>

4.8.5 GPRS attach attempt procedure

4.8.5.1.1.1 GPRS attach attempt counter less than 45

(GMM 1)
The GPRS attach attempt counter is incremented and does not reach 45. The timer T3310 is stopped, if still running. GMM starts timer T3311. GMM enters state GMM-DEREGISTERED.ATTEMPTING-TO-ATTACH.
<R.GMM.AGABNORM.M.020>, <R.GMM.AGABNORM.M.021>, <R.GMM.AGABNORM.M.022>, <R.GMM.AGABNORM.M.023>

4.8.5.1.1.2 GPRS attach attempt counter greater than or equal to 45 with MMI-initiated attach



(GMM 1)
The GPRS attach attempt counter is incremented and is greater than or equal to 45. The timer T3310 is stopped, if still running. GMM starts timer T3302.

<R.GMM.AGABNORM.M.020>, <R.GMM.AGABNORM.M.021>, <R.GMM.AGABNORM.M.026>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGABNORM.M.024>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.AGABNORM.M.024>

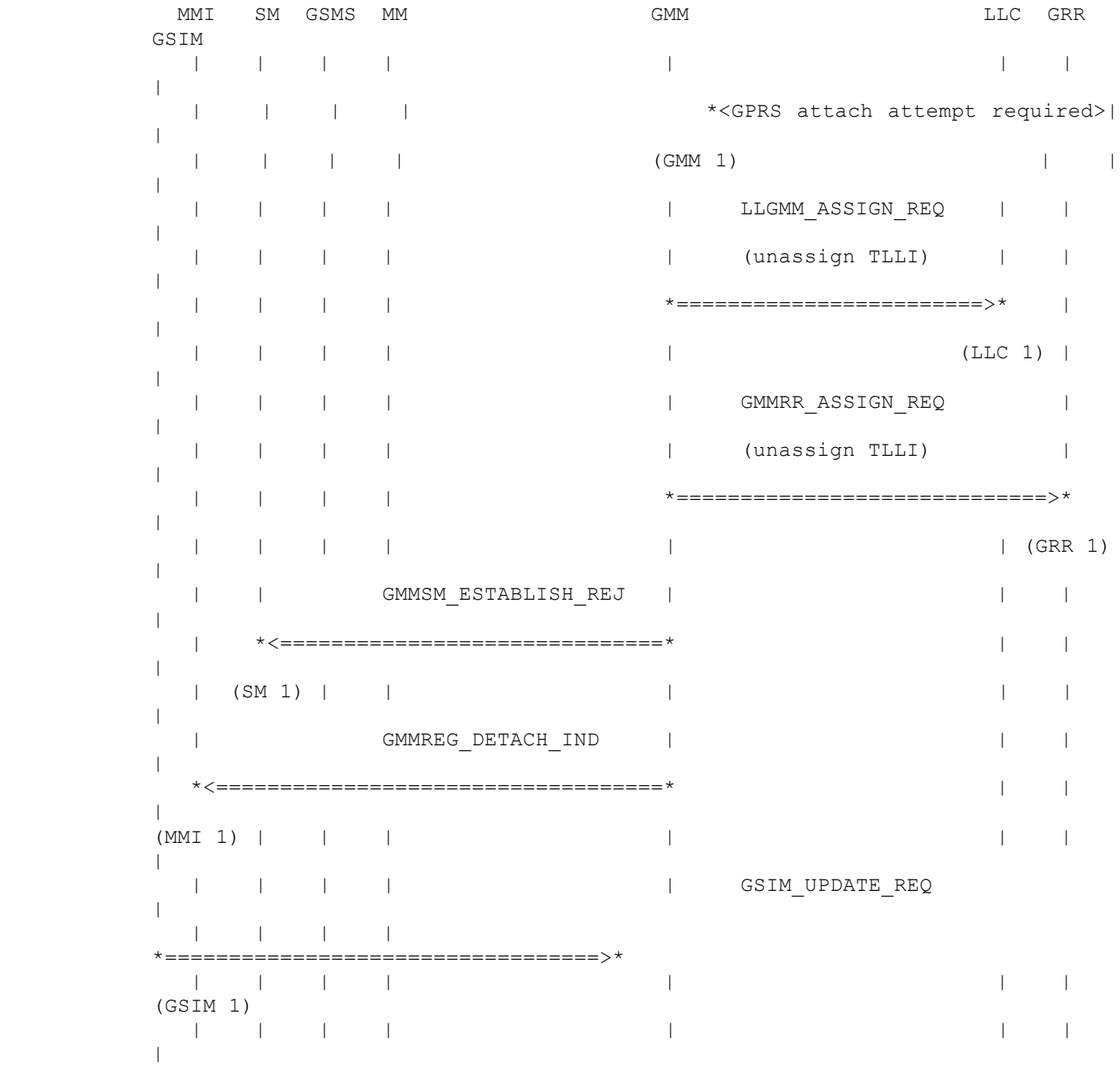
(SM 1)
GMM informs SM, that the GPRS attach procedure has failed.

<R.GMM.AGABNORM.M.024>, <R.GMM.PRELIND.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.AGABNORM.M.024>

(GSIM 1)
GMM enters GPRS update status GU2 NOT UPDATED.
<R.GMM.AGABNORM.M.024>, <R.GMM.AGABNORM.M.025>

4.8.5.1.1.3 GPRS attach attempt counter greater than or equal to 45 with SM-initiated attach



(GMM 1)
The GPRS attach attempt counter is incremented and is greater than or equal to 45. The timer T3310 is stopped, if still running. GMM starts timer T3302.

<R.GMM.AGABNORM.M.020>, <R.GMM.AGABNORM.M.021>, <R.GMM.AGABNORM.M.026>

(LLC 1)
GMM informs LLC, that the GMM context is released.
<R.GMM.AGABNORM.M.024>

(GRR 1)
GMM informs GRR, that the GMM context is released.
<R.GMM.AGABNORM.M.024>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.AGABNORM.M.024>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.AGABNORM.M.024>

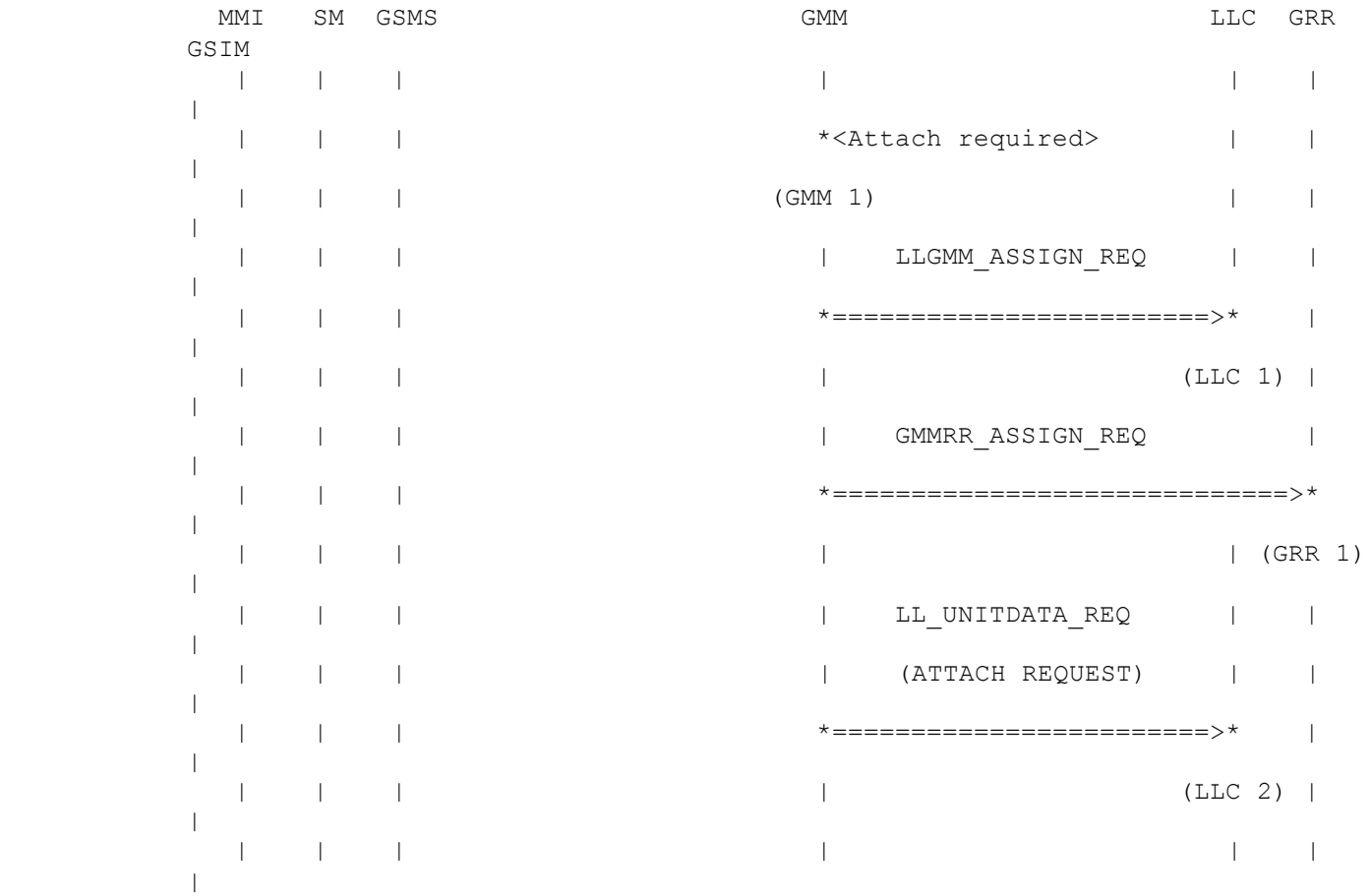
(GSIM 1)
GMM enters GPRS update status GU2 NOT UPDATED.

<R.GMM.AGABNORM.M.024>, <R.GMM.AGABNORM.M.025>

4.9 Combined GPRS attach procedure for GPRS and non-GPRS services

4.9.1 Combined GPRS attach procedure initiation

4.9.1.1 TLLI not yet assigned to lower layers (e.g. after power on)



(GMM 1)
Combined GPRS attach is required (see section 4.7). No TLLI has yet been assigned to the lower layers. If a valid P-TMSI is available, GMM derives a foreign TLLI from that P-TMSI, otherwise GMM generates a random TLLI.

<R.GMM.ATTCOMBN.M.002>, <R.GMM.ACINIT.M.001>, <R.GMM.ODNORMAL.M.004>, <R.GMM.ODNORMAL.M.005>, <R.GMM.DDNORMAL.M.001>, <R.GMM.ODATTNEE.M.002>, <R.GMM.DDATTNEE.M.001>, <R.GMM.DDLIMITD.M.001>, <R.GMM.DSUBFANO.M.006>, <R.GMM.DNACM.M.004>, <R.GMM.PAGNGPRS.M.007>, <R.GMM.PAGNGPRS.M.011>, <R.GMM.TLLIUSE.M.001>, <R.GMM.TLLIUSE.M.005>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ (TLLI assignment indicator = ‘assign a TLLI in LLC’).

<R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>

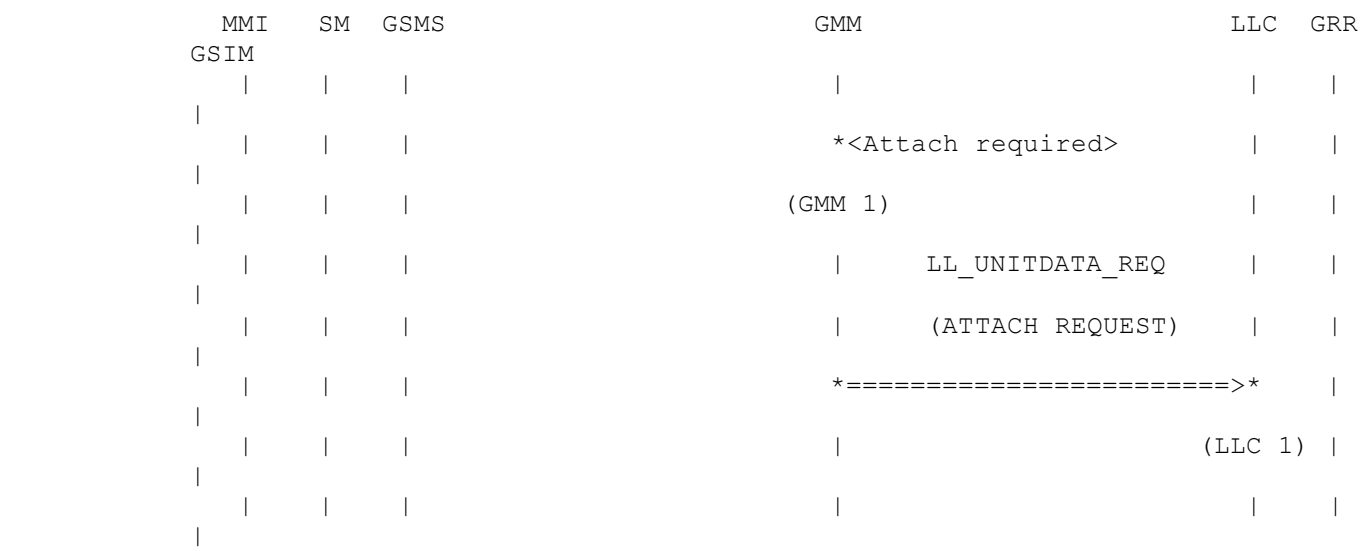
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>

(LLC 2)
GMM transmits the message ATTACH REQUEST (Attach type = 'Combined GPRS/IMSI attach') to the network. If a valid P-TMSI is available, the P-TMSI, RAI, and P-TMSI signature, if available, are included in the message. Otherwise, the IMSI is included in the message. GMM starts timer T3310 and enters state GMM-REGISTERED-INITIATED.

<R.GMM.ATTCOMBN.M.003>, <R.GMM.ACINIT.M.002>, <R.GMM.ACINIT.M.003>, <R.GMM.ACINIT.M.004>, <R.GMM.ACINIT.M.005>, <R.GMM.ACINIT.M.006>, <R.GMM.ACINIT.M.007>, <R.GMM.ACINIT.M.008>, <R.GMM.AGINIT.M.006>, <R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>

4.9.1.2 TLLI already assigned to lower layers



(GMM 1)
Combined GPRS attach is required (see section 4.7). A TLLI has already been assigned to the lower layers.

<R.GMM.ATTCOMBN.M.002>, <R.GMM.ACINIT.M.001>, <R.GMM.ODNORMAL.M.004>, <R.GMM.ODNORMAL.M.005>, <R.GMM.DDNORMAL.M.001>, <R.GMM.ODATTNEE.M.002>, <R.GMM.DDATTNEE.M.001>, <R.GMM.DDLIMITD.M.001>, <R.GMM.DSUBFANO.M.006>, <R.GMM.DNACM.M.004>, <R.GMM.PAGNGPRS.M.007>, <R.GMM.PAGNGPRS.M.011>

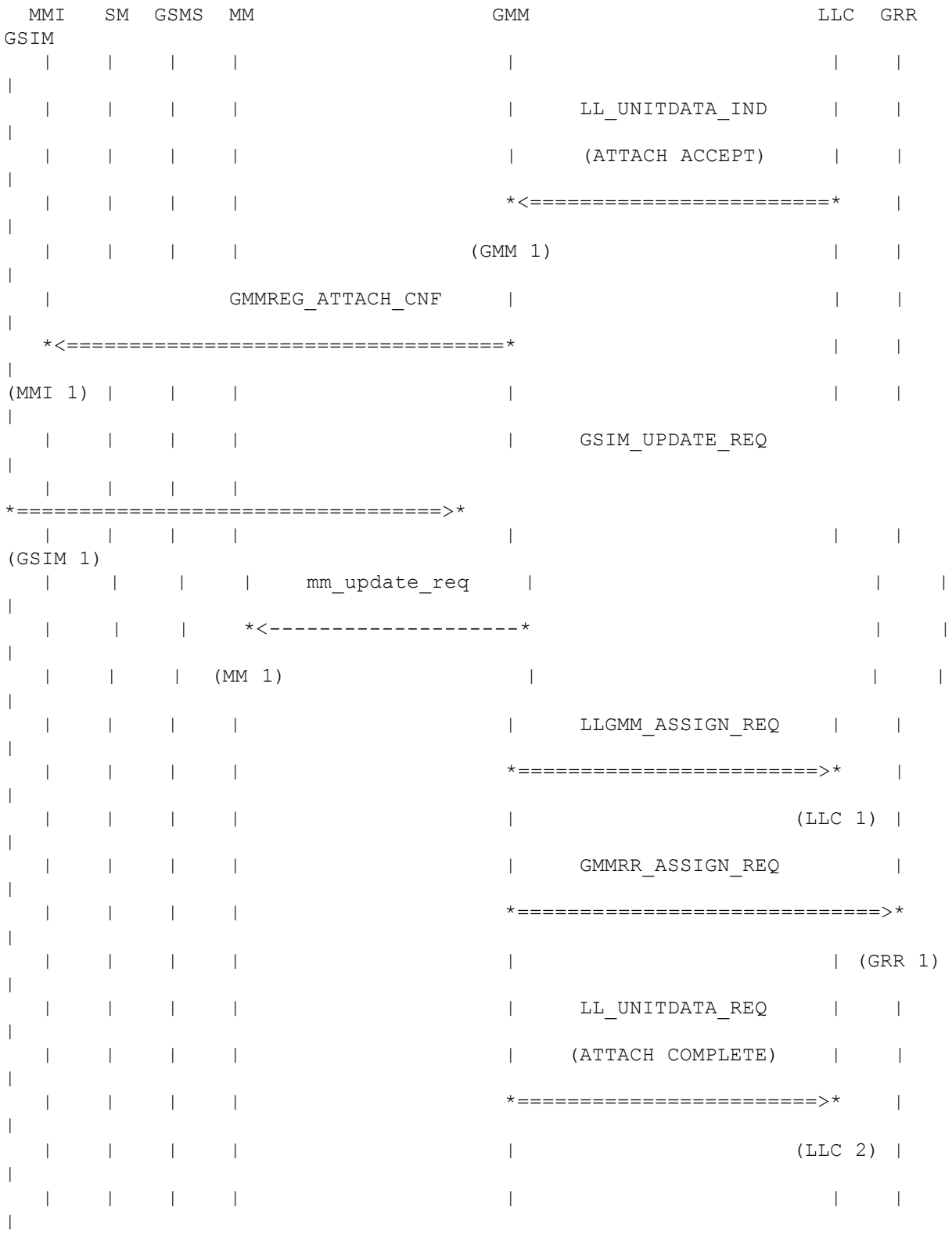
(LLC 1)
GMM transmits the message ATTACH REQUEST (Attach type = 'Combined GPRS/IMSI attach') to the network. If a valid P-TMSI is available, the P-TMSI, RAI, and P-TMSI signature, if available, are included in the message. Otherwise, the IMSI is included in the message. GMM starts timer T3310 and enters state GMM-REGISTERED-INITIATED.

<R.GMM.ATTCOMBN.M.003>, <R.GMM.ACINIT.M.002>, <R.GMM.ACINIT.M.003>, <R.GMM.ACINIT.M.004>, <R.GMM.ACINIT.M.005>, <R.GMM.ACINIT.M.006>, <R.GMM.ACINIT.M.007>, <R.GMM.ACINIT.M.008>, <R.GMM.AGINIT.M.006>, <R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>

4.9.2 Combined GPRS attach accepted by the network for GPRS and non-GPRS services

4.9.2.1 MMI-initiated attach accepted

4.9.2.1.1 MMI-initiated attach accepted with implicit P-TMSI or TMSI reallocation



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'Combined GPRS/IMSI attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>,

<R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>, <R.GMM.ACACCEPT.M.001>, <R.GMM.ACSUBOTH.M.001>, <R.GMM.ACSUBOTH.A.002>, <R.GMM.ACSUBOTH.M.007>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'Combined GPRS/IMSI attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUBOTH.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.015>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.020>, <R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>, <R.GMM.ACSUBOTH.M.001>,

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. The LAU attempt counter has to reset.

<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>,, <R.GMM.ACSUBOTH.M.009>, <R.GMM.ACSUBOTH.M.010>, <R.GMM.ACSUBOTH.M.011>, <R.GMM.ACSUBOTH.M.012>, <R.GMM.ACSUBOTH.M.013>, , <R.GMM.ACSUBOTH.M.014>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUBOTH.M.001>

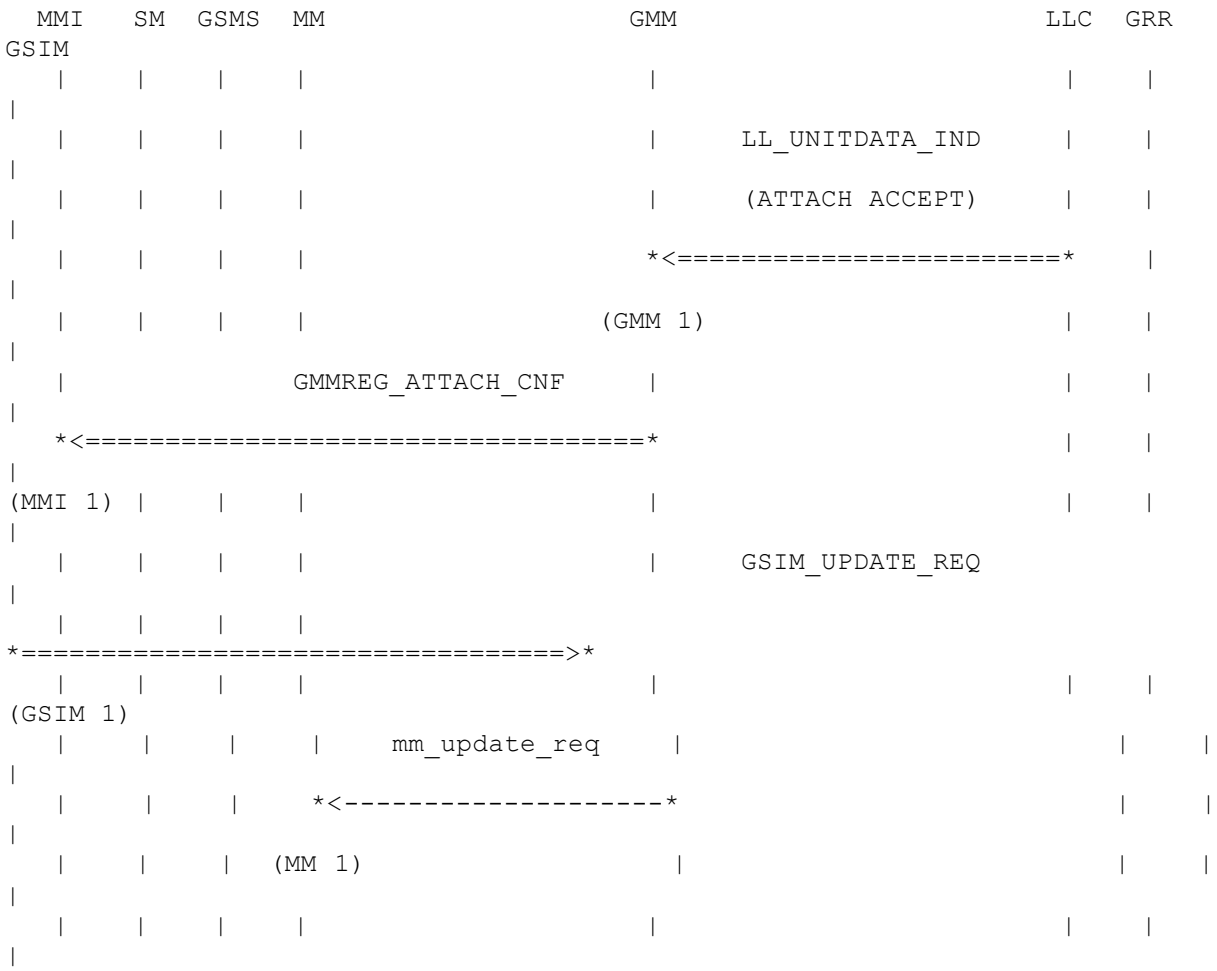
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUBOTH.M.001>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>, <R.GMM.ACSUBOTH.M.001>, <R.GMM.ACSUBOTH.M.015>

4.9.2.1.2 MMI-initiated attach accepted without implicit P-TMSI or TMSI reallocation



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'Combined GPRS/IMSI attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>, <R.GMM.ACACCEPT.M.001>, <R.GMM.ACSUBOTH.M.001>, <R.GMM.ACSUBOTH.M.002>, <R.GMM.ACSUBOTH.M.007>

(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'Combined GPRS/IMSI attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUBOTH.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

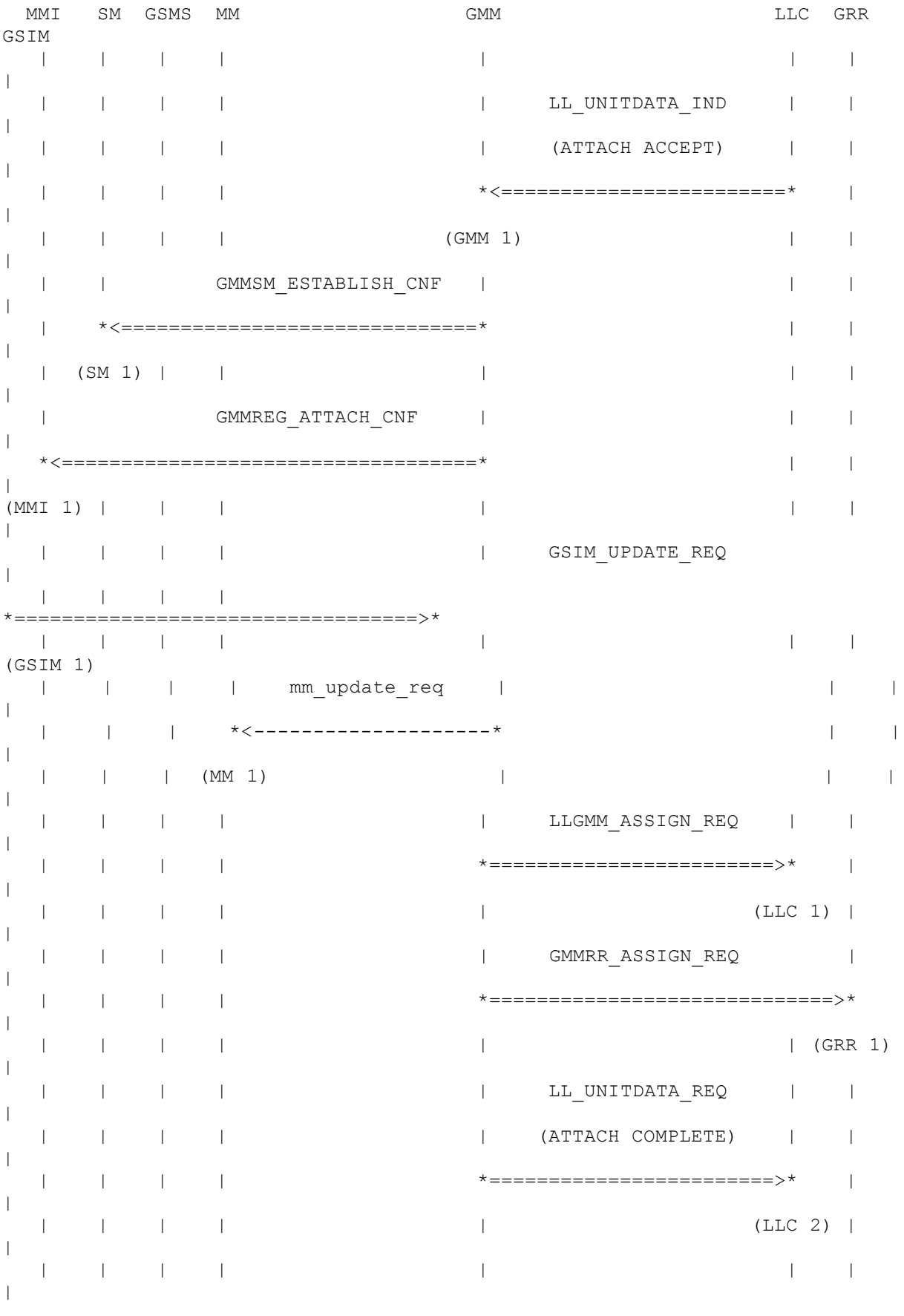
<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.019>, <R.GMM.ACSUBOTH.M.001>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. The LAU attempt counter has to reset.

<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>,, <R.GMM.ACSUBOTH.M.009>, <R.GMM.ACSUBOTH.M.010>, <R.GMM.ACSUBOTH.M.016>

4.9.2.2 SM-initiated attach accepted

4.9.2.2.1 SM-initiated attach accepted with implicit P-TMSI or TMSI reallocation


MMI
SM
GSMS
MM
GMM
LLC
GRR
GSIM
LL_UNITDATA_IND
(ATTACH ACCEPT)
(GMM 1)
GMMSM_ESTABLISH_CNF
(SM 1)
GMMREG_ATTACH_CNF
(MMI 1)
GSIM_UPDATE_REQ
(GSIM 1)
mm_update_req
(MM 1)
LLGMM_ASSIGN_REQ
(LLC 1)
GMMRR_ASSIGN_REQ
(GRR 1)
LL_UNITDATA_REQ
(ATTACH COMPLETE)
(LLC 2)

(GMM 1)

GMM receives the message ATTACH ACCEPT (Attach result = 'Combined GPRS/IMSI attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>, <R.GMM.ACACCEPT.M.001>, <R.GMM.ACSUBOTH.M.001>, <R.GMM.ACSUBOTH.A.002>, <R.GMM.ACSUBOTH.M.007>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'Combined GPRS/IMSI attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUBOTH.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.015>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.020>, <R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>, <R.GMM.ACSUBOTH.M.001>,

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. The LAU attempt counter has to reset.

<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>,, <R.GMM.ACSUBOTH.M.009>, <R.GMM.ACSUBOTH.M.010>, <R.GMM.ACSUBOTH.M.011>, <R.GMM.ACSUBOTH.M.012>, <R.GMM.ACSUBOTH.M.013>, , <R.GMM.ACSUBOTH.M.014>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUBOTH.M.001>

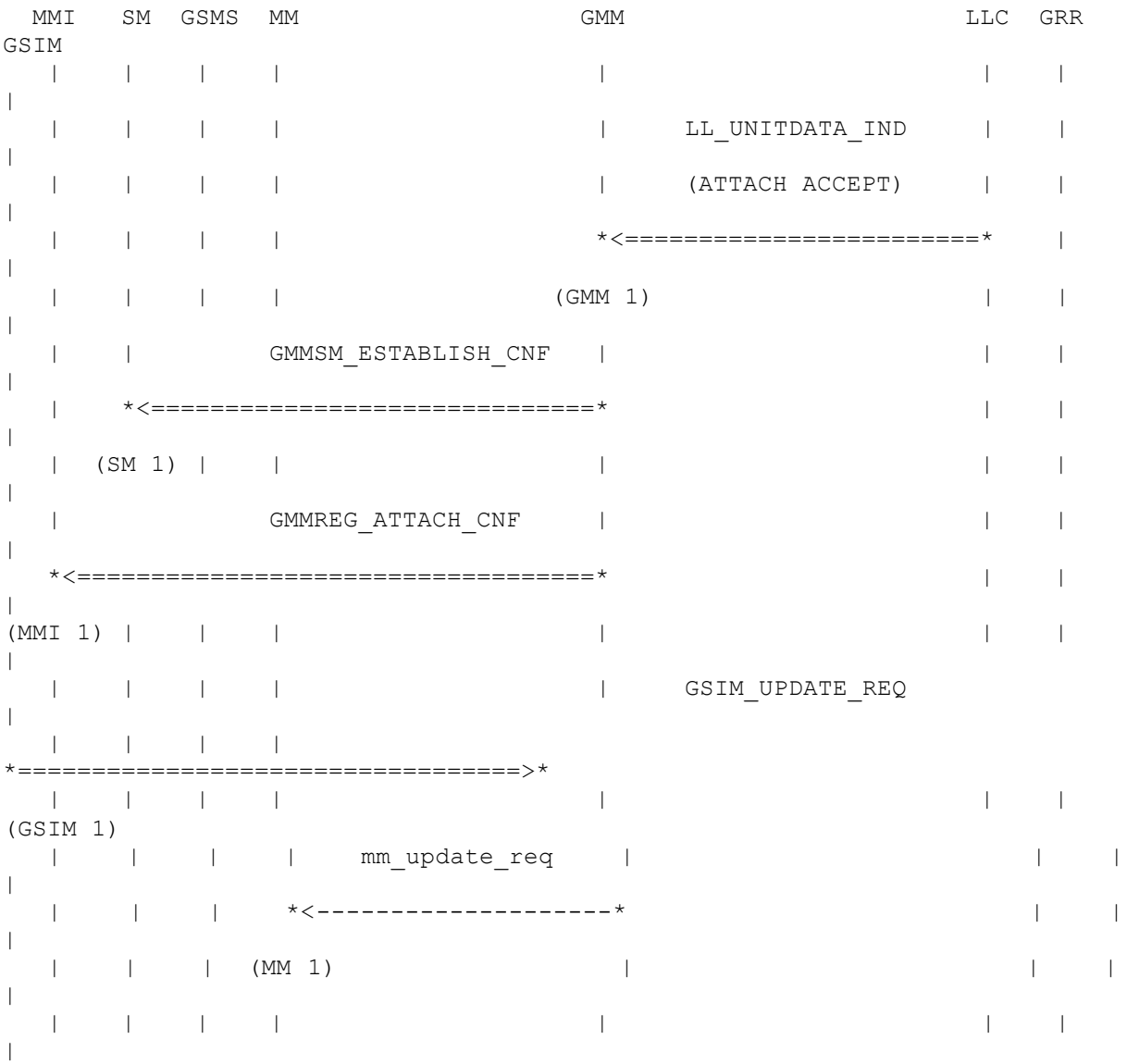
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUBOTH.M.001>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>, <R.GMM.ACSUBOTH.M.001>, <R.GMM.ACSUBOTH.M.015>

4.9.2.2.2 SM-initiated attach accepted without implicit P-TMSI or TMSI reallocation



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'Combined GPRS/IMSI attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ATTACH.M.008>, <R.GMM.ACACCEPT.M.001>, <R.GMM.ACSUBOTH.M.001>, <R.GMM.ACSUBOTH.M.002>, <R.GMM.ACSUBOTH.M.007>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'Combined GPRS/IMSI attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUBOTH.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.019>, <R.GMM.ACSUBOTH.M.001>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. The LAU attempt counter has to reset.

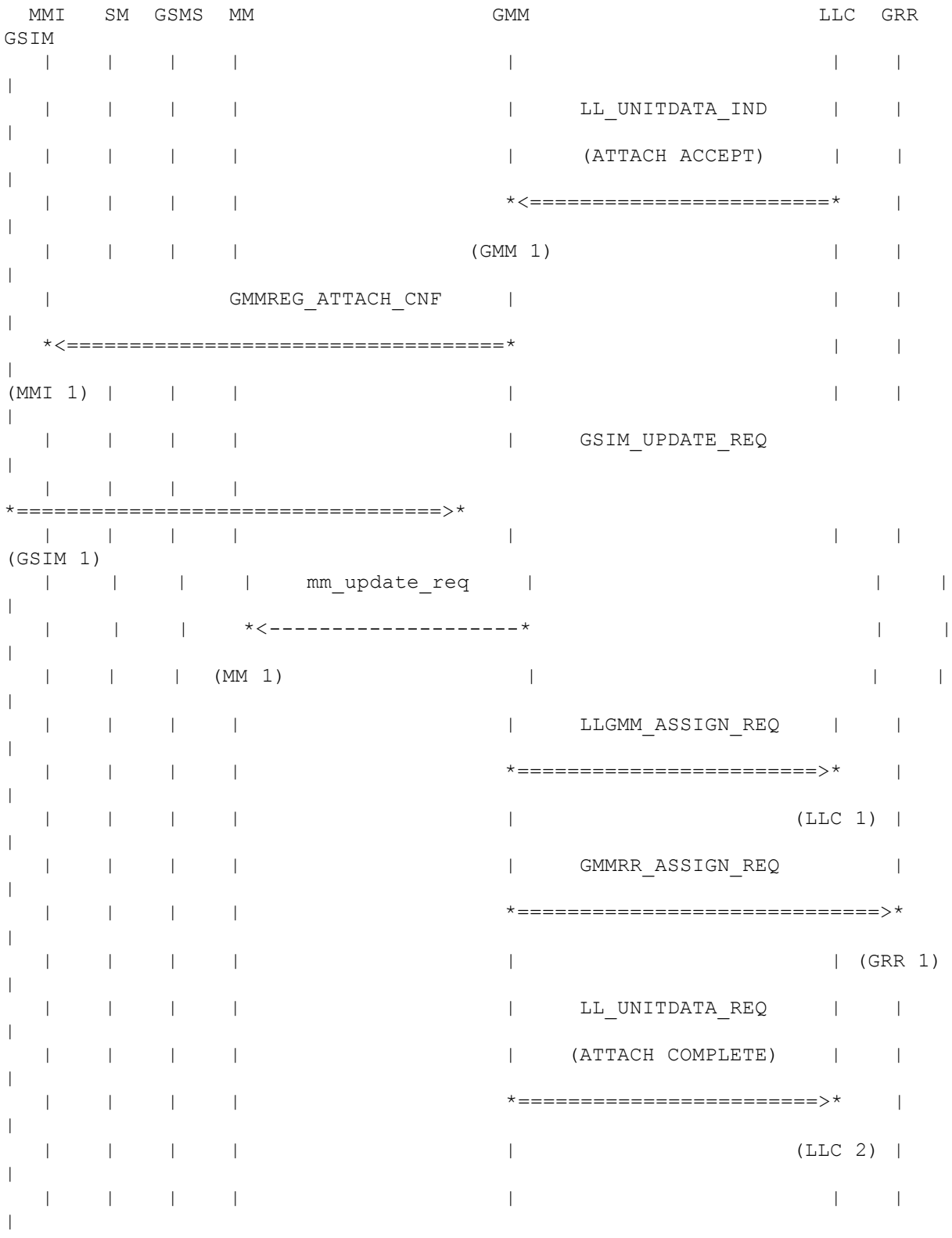
<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>,, <R.GMM.ACSUBOTH.M.009>, <R.GMM.ACSUBOTH.M.010>, <R.GMM.ACSUBOTH.M.016>

4.9.3 Combined GPRS attach accepted by the network for GPRS services only

4.9.3.1 MMI-initiated attach accepted

4.9.3.1.1 MMI-initiated attach accepted with implicit P-TMSI reallocation

4.9.3.1.1.1 Reject cause #2



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.020>,

<R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>, <R.GMM.ACSUGPRS.M.004>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.015>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.020>,<R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>, <R.GMM.ACSUGPRS.M.001>, <R.GMM.ACSUGPRS.M.002>, <R.GMM.ACSUGPRS.M.003>, <R.GMM.ACSUGPRS.M.005>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. The LAU attempt counter has to reset.

<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>,, <R.GMM.ACSUBOTH.M.009>, <R.GMM.ACSUBOTH.M.010>, <R.GMM.ACSUBOTH.M.011>, <R.GMM.ACSUBOTH.M.012>, <R.GMM.ACSUBOTH.M.013>, , <R.GMM.ACSUBOTH.M.014>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

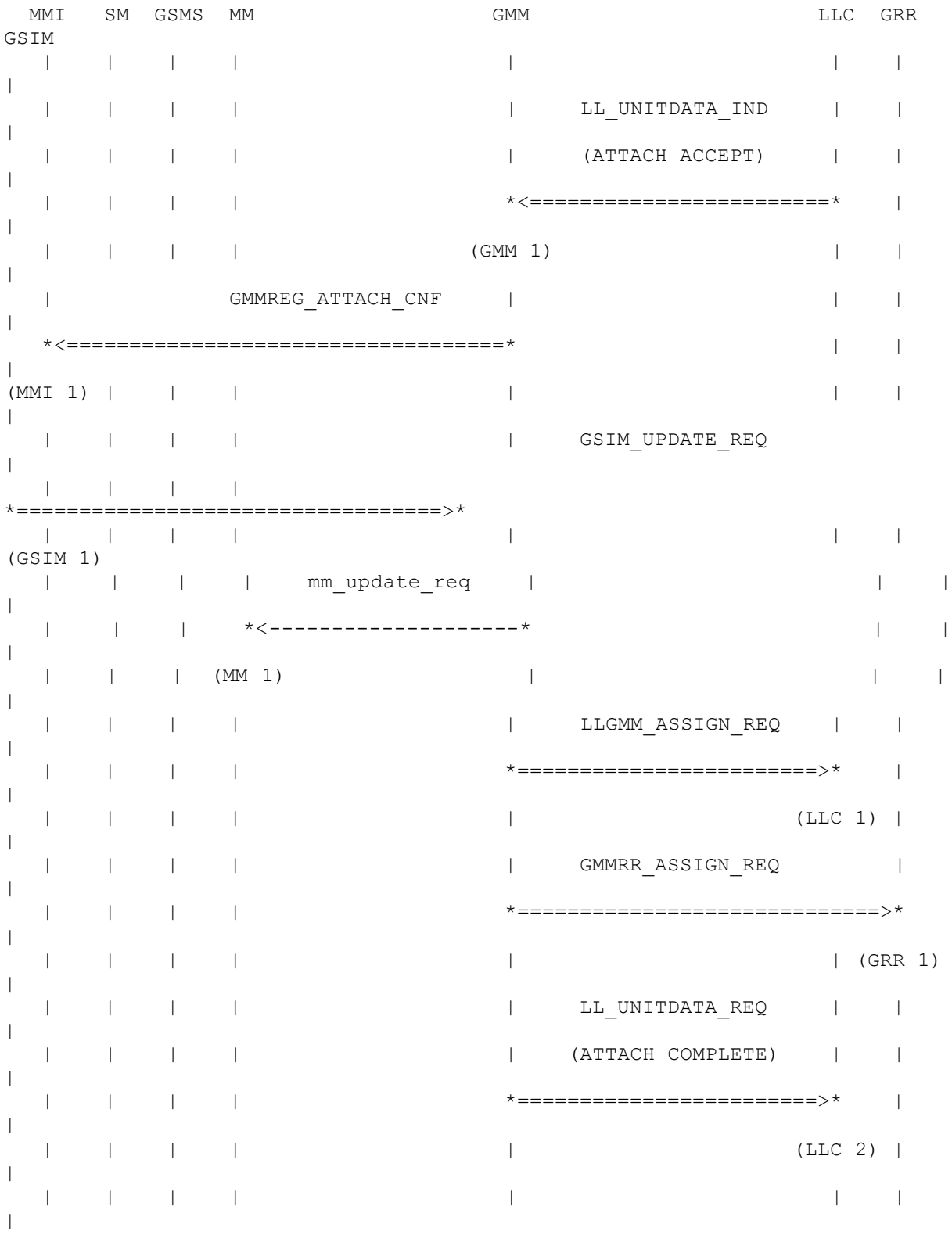
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network by sending the LL_UNITDATA_REQ primitive to LLC.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>, <R.GMM.ACSUGPRS.M.001>

4.9.3.1.1.2 Reject cause #16, #17, or #22



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.020>,

<R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>, <R.GMM.ACSUGPRS.M.004>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.015>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.020>,<R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>, <R.GMM.ACSUGPRS.M.001>, <R.GMM.ACSUGPRS.M.002>, <R.GMM.ACSUGPRS.M.003>, <R.GMM.ACSUGPRS.M.005>

(MM 1)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.

<R.GMM.ACSUGPRS.M.006>, <R.GMM.ACSUGPRS.M.006>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

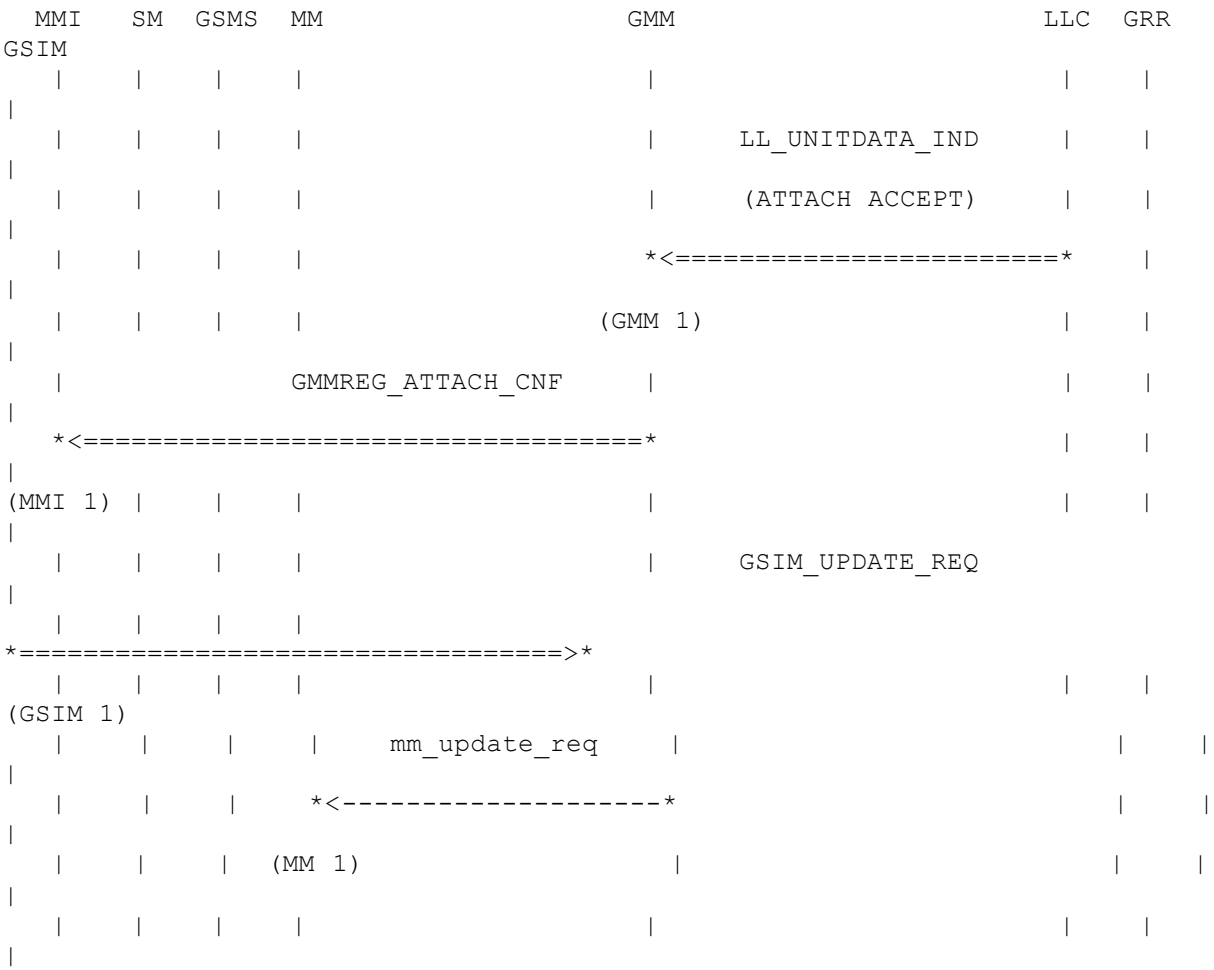
<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network by sending the LL_UNITDATA_REQ primitive to LLC.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>, <R.GMM.ACSUGPRS.M.001>

4.9.3.1.2 MMI-initiated attach accepted without implicit P-TMSI reallocation

4.9.3.1.2.1 Reject cause #2



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>

(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

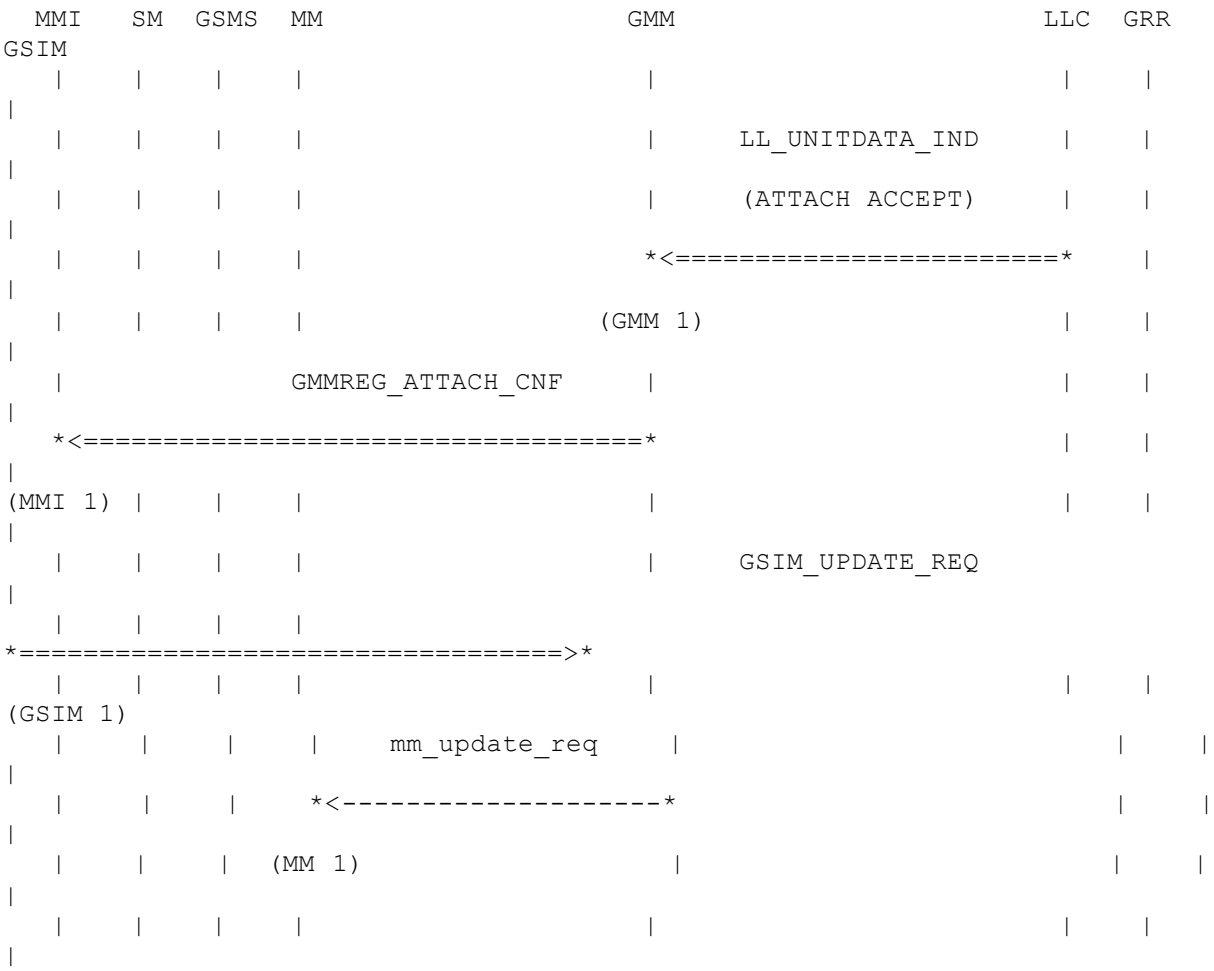
(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.019>, <R.GMM.ACSUGPRS.M.001>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. The SIM is considered as invalid for non-GPRS services until switching off or the SIM is removed.

<R.GMM.ACSUGPRS.M.002>, <R.GMM.ACSUGPRS.M.003>, <R.GMM.ACSUGPRS.M.004>, <R.GMM.ACSUGPRS.M.005>

4.9.3.1.2.2 Reject cause #16, #17, or #22



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>

(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.019>, <R.GMM.ACSUGPRS.M.001>

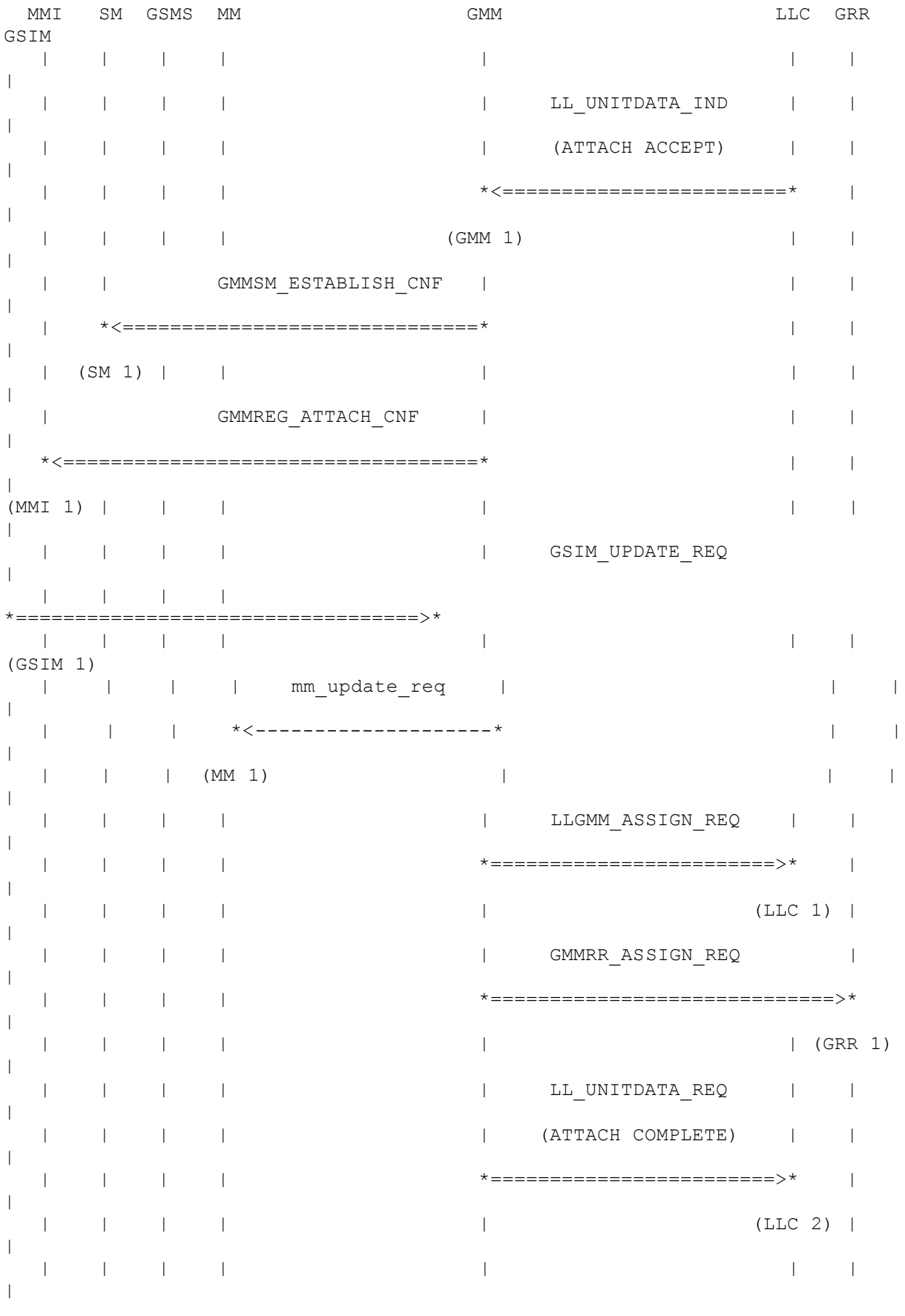
(MM 1)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.

<R.GMM.ACSUGPRS.M.006>, <R.GMM.ACSUGPRS.M.006>

4.9.3.2 SM-initiated attach accepted

4.9.3.2.1 SM-initiated attach accepted with implicit P-TMSI reallocation

4.9.3.2.1.1 Reject cause #2


MMI
SM
GSMS
MM
GMM
LLC
GRR
GSIM
LL_UNITDATA_IND
(ATTACH ACCEPT)
(GMM 1)
GMMSM_ESTABLISH_CNF
(SM 1)
GMMREG_ATTACH_CNF
(MMI 1)
GSIM_UPDATE_REQ
(GSIM 1)
mm_update_req
(MM 1)
LLGMM_ASSIGN_REQ
(LLC 1)
GMMRR_ASSIGN_REQ
(GRR 1)
LL_UNITDATA_REQ
(ATTACH COMPLETE)
(LLC 2)

(GMM 1)

GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>,
<R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.020>,
<R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>,
<R.GMM.ACSUGPRS.M.004>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.015>,
<R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>,
<R.GMM.AGACCEPT.M.020>,<R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>,
<R.GMM.AGACCEPT.M.023>, <R.GMM.ACSUGPRS.M.001>, <R.GMM.ACSUGPRS.M.002>,
<R.GMM.ACSUGPRS.M.003>, <R.GMM.ACSUGPRS.M.005>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. The LAU attempt counter has to reset.

<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>,, <R.GMM.ACSUBOTH.M.009>,
<R.GMM.ACSUBOTH.M.010>, <R.GMM.ACSUBOTH.M.011>, <R.GMM.ACSUBOTH.M.012>,
<R.GMM.ACSUBOTH.M.013>, , <R.GMM.ACSUBOTH.M.014>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

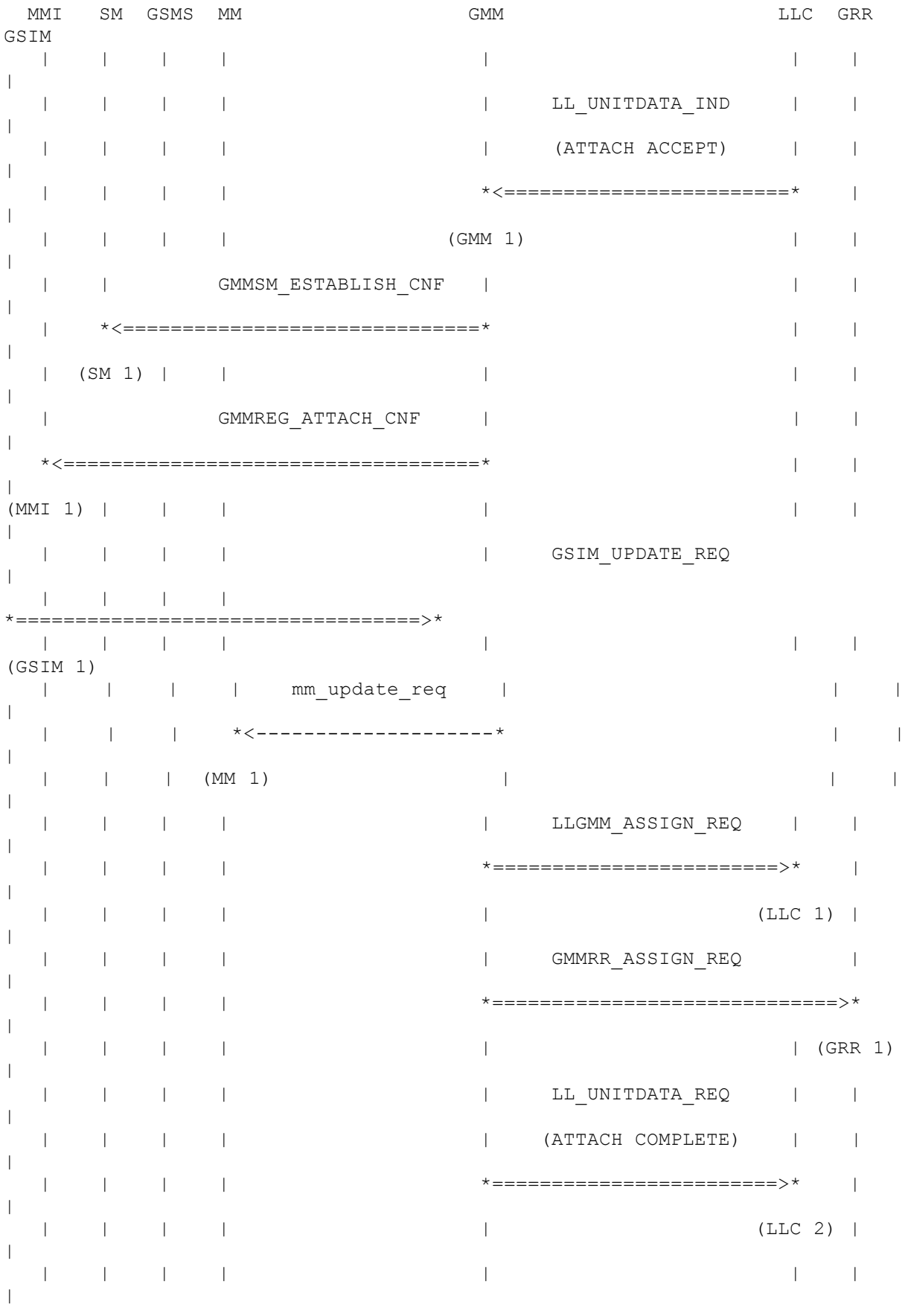
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network by sending the LL_UNITDATA_REQ primitive to LLC.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>, <R.GMM.ACSUGPRS.M.001>

4.9.3.2.1.2 Reject cause #16, #17, or #22


MMI
SM
GSMS
MM
GMM
LLC
GRR
GSIM
LL_UNITDATA_IND
(ATTACH ACCEPT)
(GMM 1)
GMMSM_ESTABLISH_CNF
(SM 1)
GMMREG_ATTACH_CNF
(MMI 1)
GSIM_UPDATE_REQ
(GSIM 1)
mm_update_req
(MM 1)
LLGMM_ASSIGN_REQ
(LLC 1)
GMMRR_ASSIGN_REQ
(GRR 1)
LL_UNITDATA_REQ
(ATTACH COMPLETE)
(LLC 2)

(GMM 1)

GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.AGACCEPT.M.020>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>, <R.GMM.ACSUGPRS.M.004>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREQ_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.015>, <R.GMM.AGACCEPT.M.016>, <R.GMM.AGACCEPT.M.017>, <R.GMM.AGACCEPT.M.020>,<R.GMM.AGACCEPT.M.021>, <R.GMM.AGACCEPT.M.022>, <R.GMM.AGACCEPT.M.023>, <R.GMM.ACSUGPRS.M.001>, <R.GMM.ACSUGPRS.M.002>, <R.GMM.ACSUGPRS.M.003>, <R.GMM.ACSUGPRS.M.005>

(MM 1)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.

<R.GMM.ACSUGPRS.M.006>, <R.GMM.ACSUGPRS.M.006>

(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

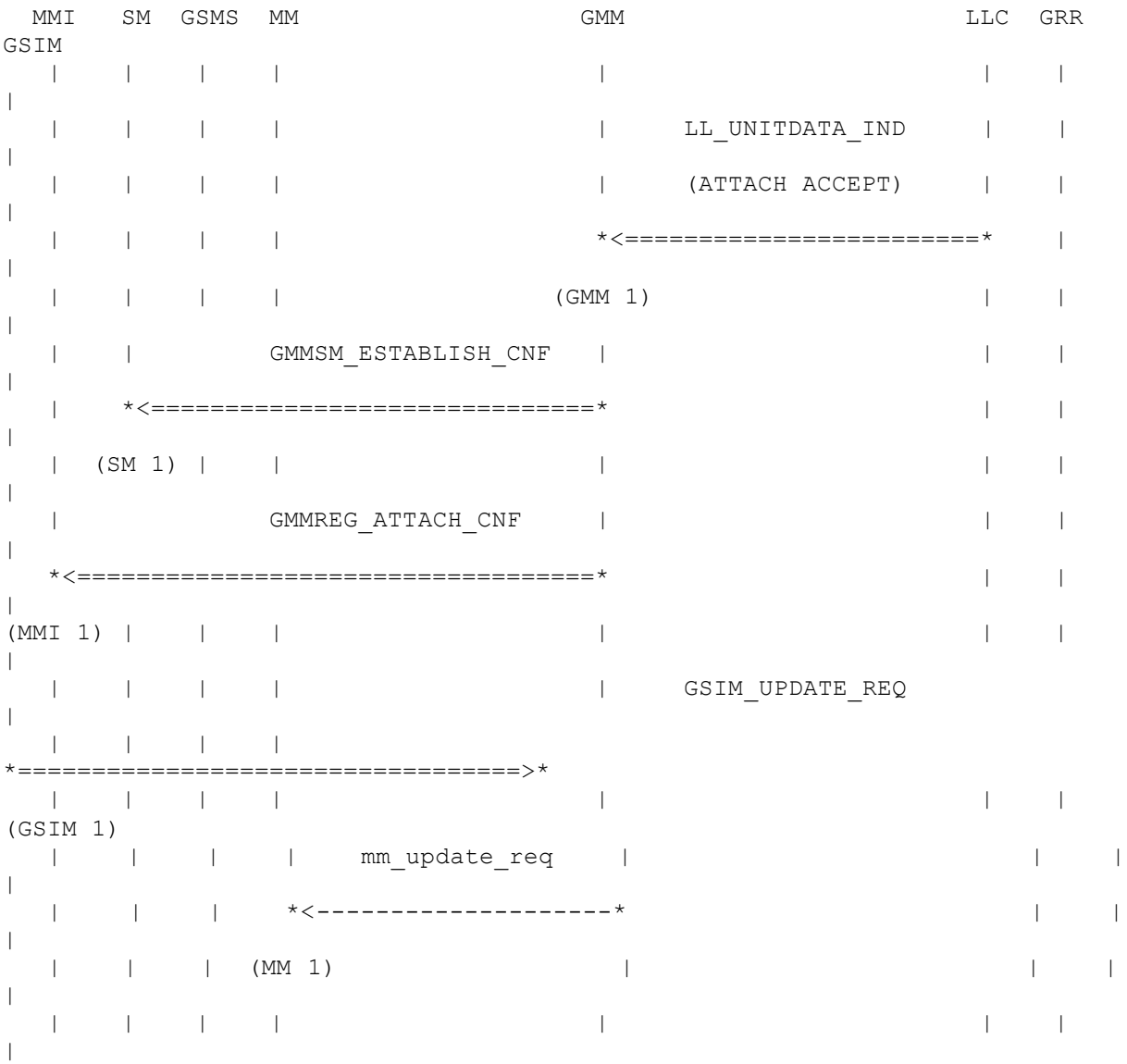
<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.ACSUGPRS.M.001>

(LLC 2)
GMM transmits the ATTACH COMPLETE message to the network by sending the LL_UNITDATA_REQ primitive to LLC.

<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>, <R.GMM.ACSUGPRS.M.001>

4.9.3.2.2 SM-initiated attach accepted without implicit P-TMSI reallocation

4.9.3.2.2.1 Reject cause #2



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.

<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

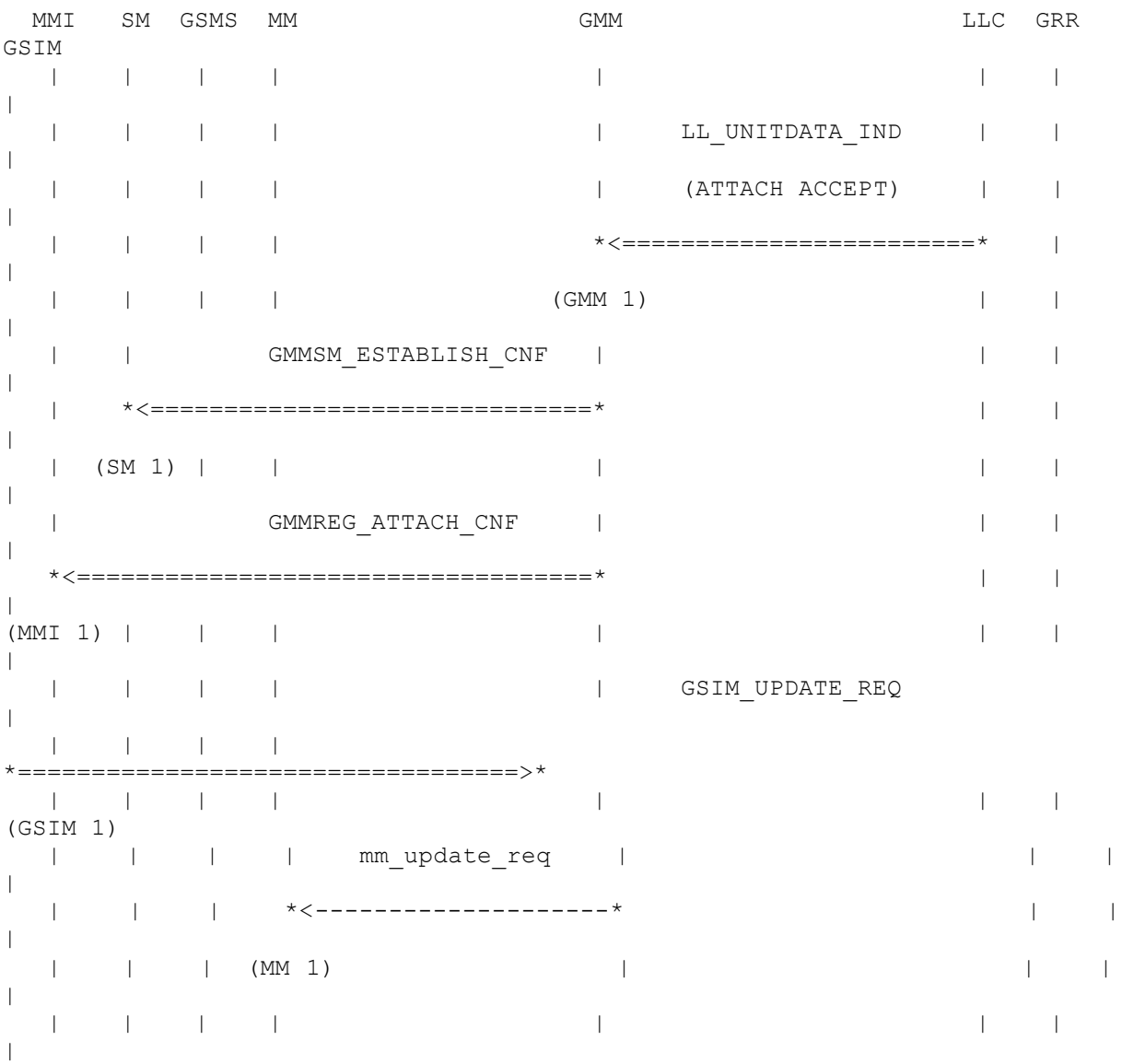
(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.019>, <R.GMM.ACSUGPRS.M.001>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. The SIM is considered as invalid for non-GPRS services until switching off or the SIM is removed.

<R.GMM.ACSUGPRS.M.002>, <R.GMM.ACSUGPRS.M.003>, <R.GMM.ACSUGPRS.M.004>, <R.GMM.ACSUGPRS.M.005>

4.9.3.2.2.2 Reject cause #16, #17, or #22



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'GPRS only attached') from the network. GMM stops timer T3310. GMM resets the GPRS attach attempt counter and the RAU attempt counter. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.AGACCEPT.M.010>, <R.GMM.AGACCEPT.M.011>, <R.GMM.AGACCEPT.M.012>, <R.GMM.AGACCEPT.M.013>, <R.GMM.MSREG.M.001>, <R.GMM.MSREG.M.002>, <R.GMM.TLLIUSE.M.009>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.ACSUGPRS.M.001>

(SM 1)
GMM confirms the successful completion of the indirect attach to SM.

<R.GMM.PESTCNF.M.001>

(MMI 1)
GMM sends the primitive GMMREG_ATTACH_CNF (PLMNs MT-caps, Attach type = 'GPRS attach') to MMI.
<R.GMM.PATTCNF.M.001>, <R.GMM.PATTCNF.M.002>, <R.GMM.ACSUGPRS.M.001>

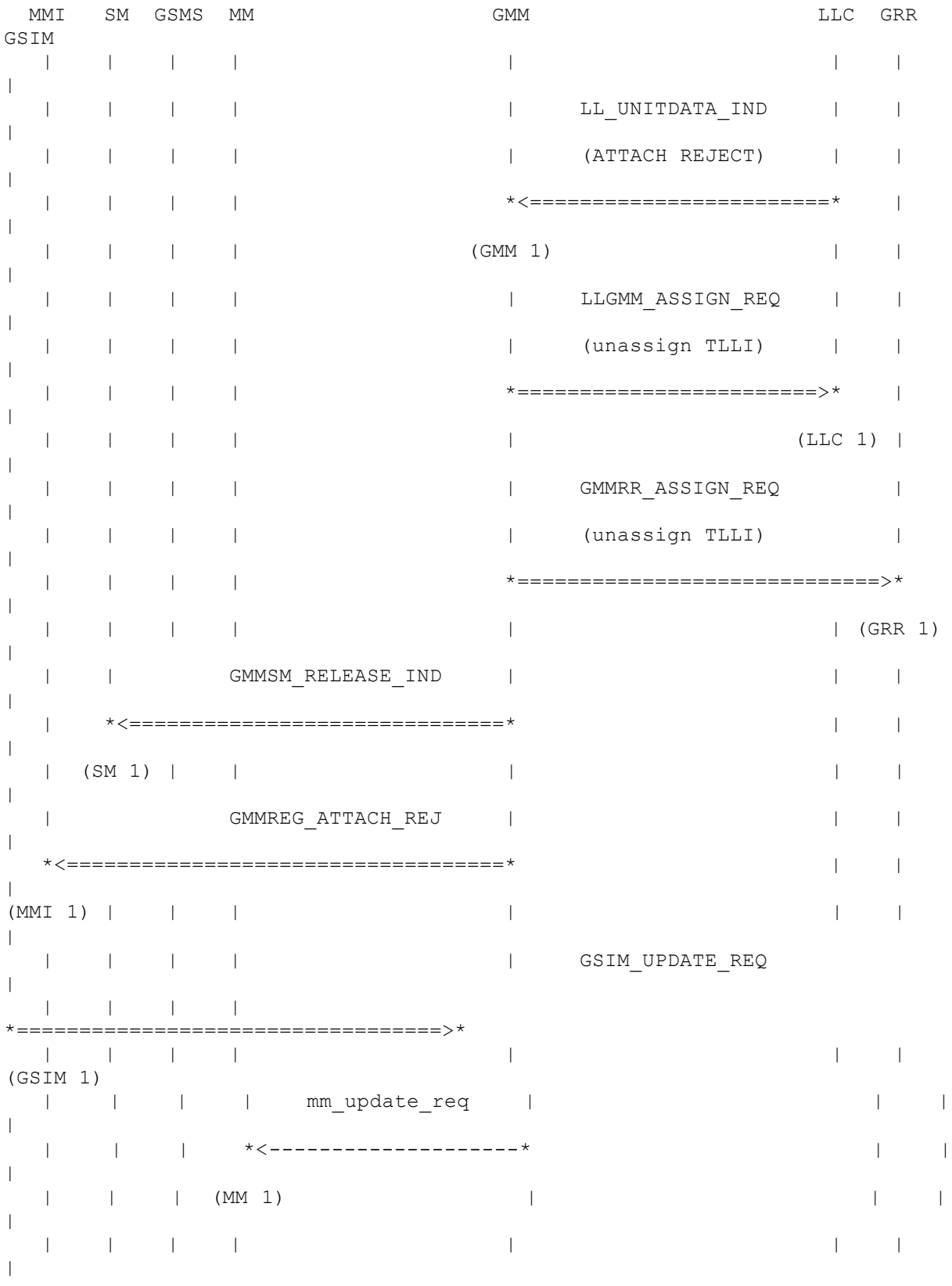
(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.
<R.GMM.AGACCEPT.M.009>, <R.GMM.AGACCEPT.M.014>, <R.GMM.AGACCEPT.M.019>,
<R.GMM.ACSUGPRS.M.001>

(MM 1)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.
<R.GMM.ACSUGPRS.M.006>, <R.GMM.ACSUGPRS.M.006>

4.9.4 Combined GPRS attach not accepted by the network

4.9.4.1 MMI-initiated attach

4.9.4.1.1 Reject cause #3 or #6



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #3 or #6) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.ACREJECT.M.002>, <R.GMM.ACREJECT.M.005>, , <R.GMM.ACREJECT.M.009>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.ACREJECT.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.ACREJECT.M.005>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.ACREJECT.M.005>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.ACREJECT.M.005>

(GSIM 1)

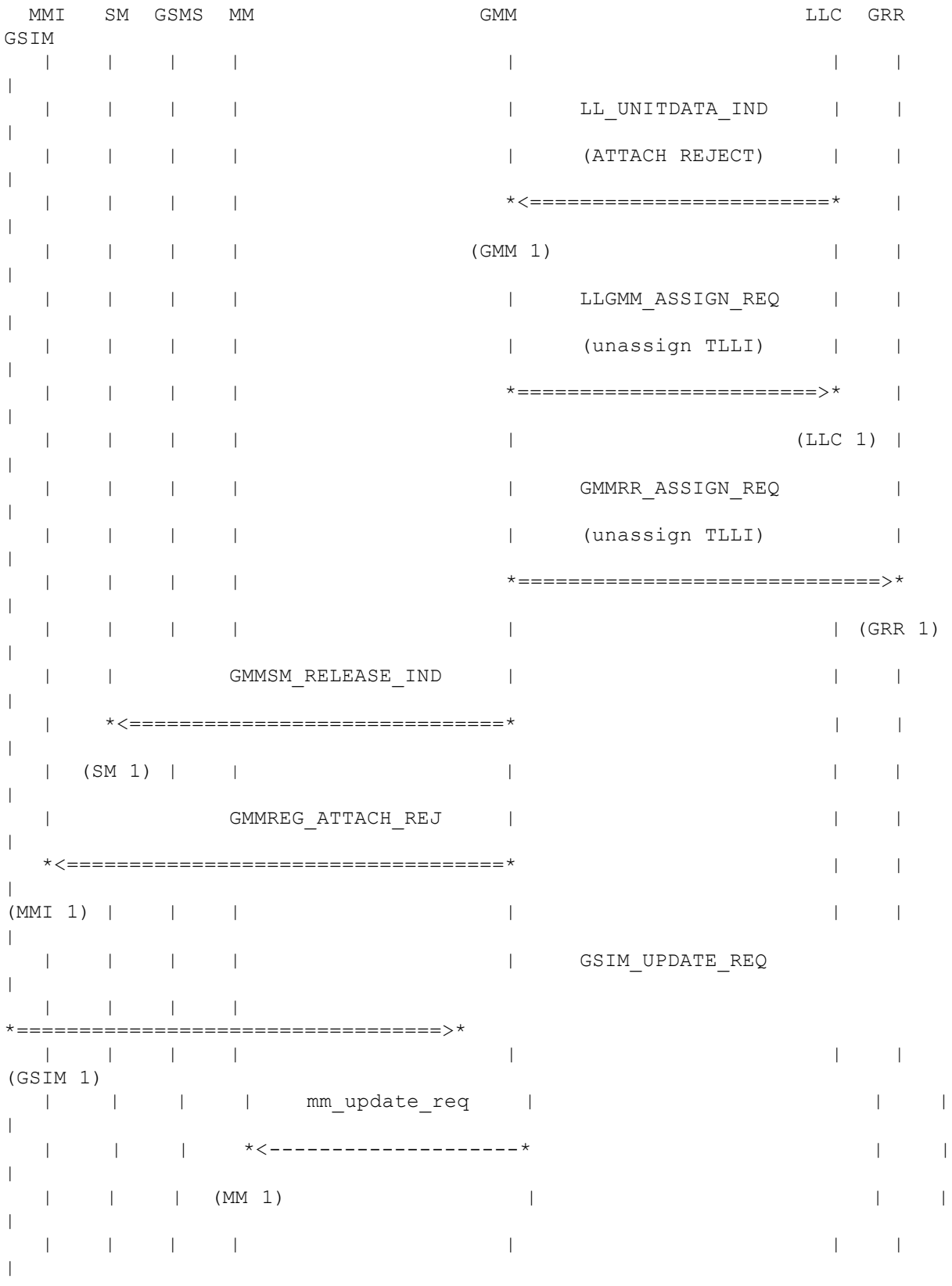
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.003>, <R.GMM.ACREJECT.M.004>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.006>, <R.GMM.ACREJECT.M.007>, <R.GMM.AGREJECT.M.008>, <R.GMM.AGREJECT.M.009>

4.9.4.1.2 Reject cause #7



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #7) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.ACREJECT.M.002>, <R.GMM.ACREJECT.M.013>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.ACREJECT.M.013>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.ACREJECT.M.013>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.ACREJECT.M.013>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.ACREJECT.M.013>

(GSIM 1)

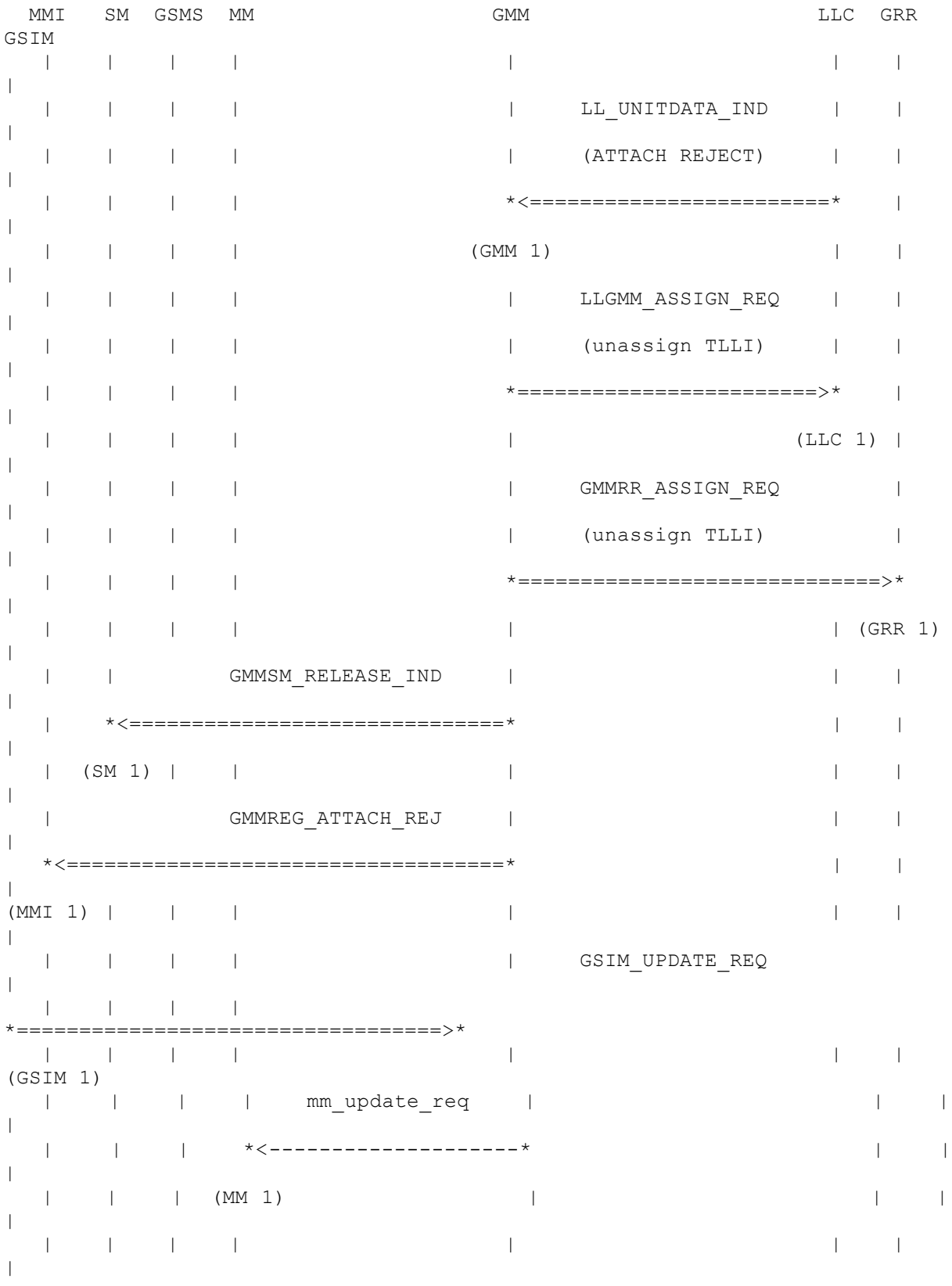
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.010>, <R.GMM.ACREJECT.M.011>, <R.GMM.AGREJECT.M.012>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.014>, <R.GMM.ACREJECT.M.015>, <R.GMM.ACREJECT.M.015>

4.9.4.1.3 Reject cause #11, #12, or #13



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3310. If the reject cause is #12, GMM enters state GMM-DEREGISTERED.LIMITED-SERVICE. If the reject cause is #11 or #13, GMM enters state GMM-DEREGISTERED.PLMN-SEARCH. GMM informs MM, that IMSI detach is requested. The RAU and GPRS attach attempt counter are reset.

<R.GMM.ACREJECT.M.002>, <R.GMM.ACREJECT.M.019>, <R.GMM.ACREJECT.M.020>, <R.GMM.ACREJECT.M.021>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>, <R.GMM.RAU.M.013>, <R.GMM.ATTACH.M.009>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.ACREJECT.M.021>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.ACREJECT.M.021>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.ACREJECT.M.021>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.ACREJECT.M.021>

(GSIM 1)

GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

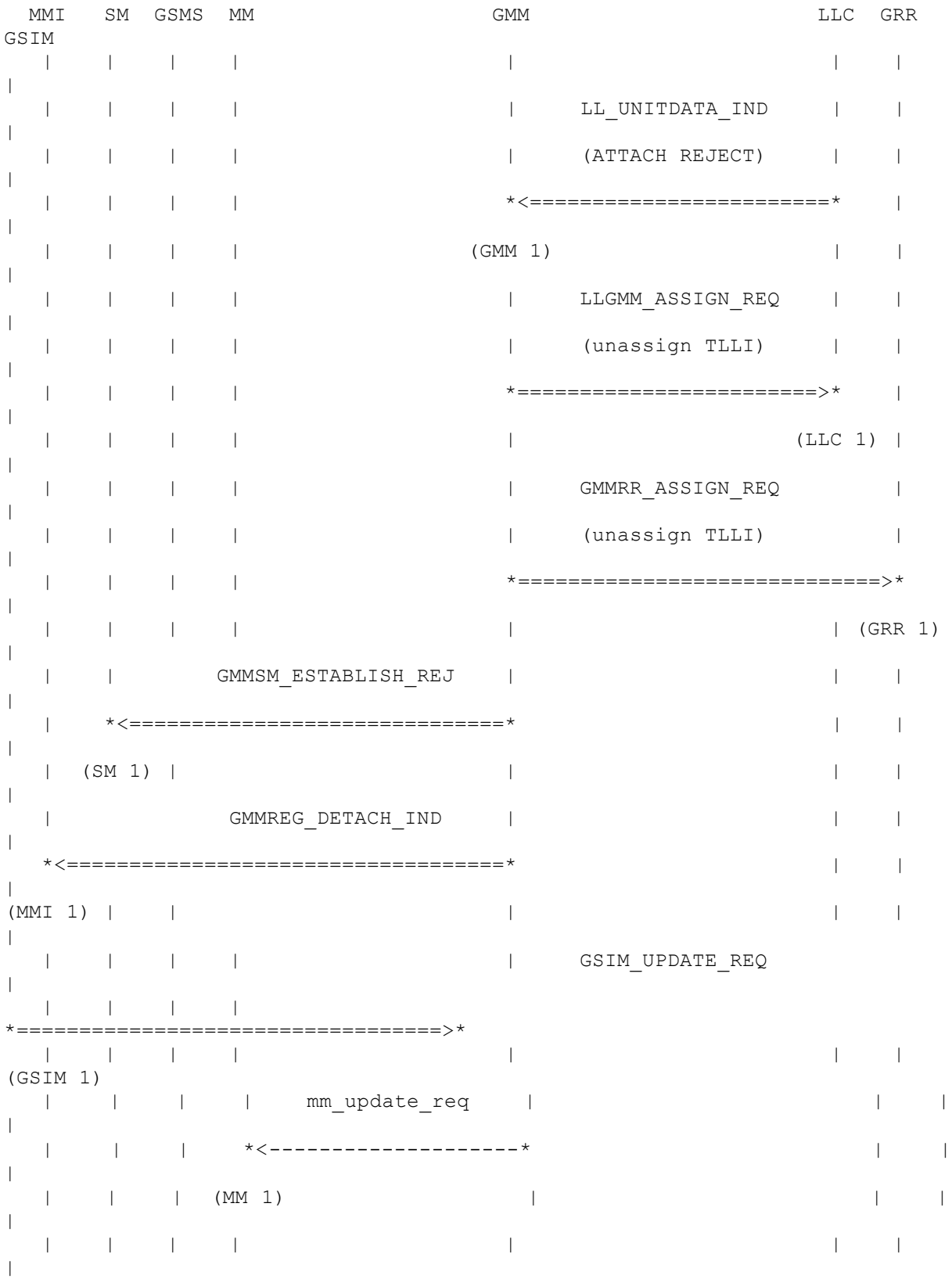
<R.GMM.ACREJECT.M.017>, <R.GMM.ACREJECT.M.018>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. The LAU attempt counter has to reset.

<R.GMM.ACREJECT.M.022>, <R.GMM.ACREJECT.M.023>, <R.GMM.ACREJECT.M.024>, <R.GMM.ACREJECT.M.025>, <R.GMM.ACREJECT.M.026>, <R.GMM.ACREJECT.M.027>, <R.GMM.ACREJECT.M.028>, <R.GMM.ACREJECT.M.029>, <R.GMM.ACREJECT.M.030>

4.9.4.2 SM-initiated attach

4.9.4.2.1 Reject cause #3 or #6



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #3 or #6) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.ACREJECT.M.002>, <R.GMM.ACREJECT.M.005>, , <R.GMM.ACREJECT.M.009>,
<R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>,
<R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>,
<R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.ACREJECT.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.ACREJECT.M.005>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.ACREJECT.M.005>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.ACREJECT.M.005>

(GSIM 1)

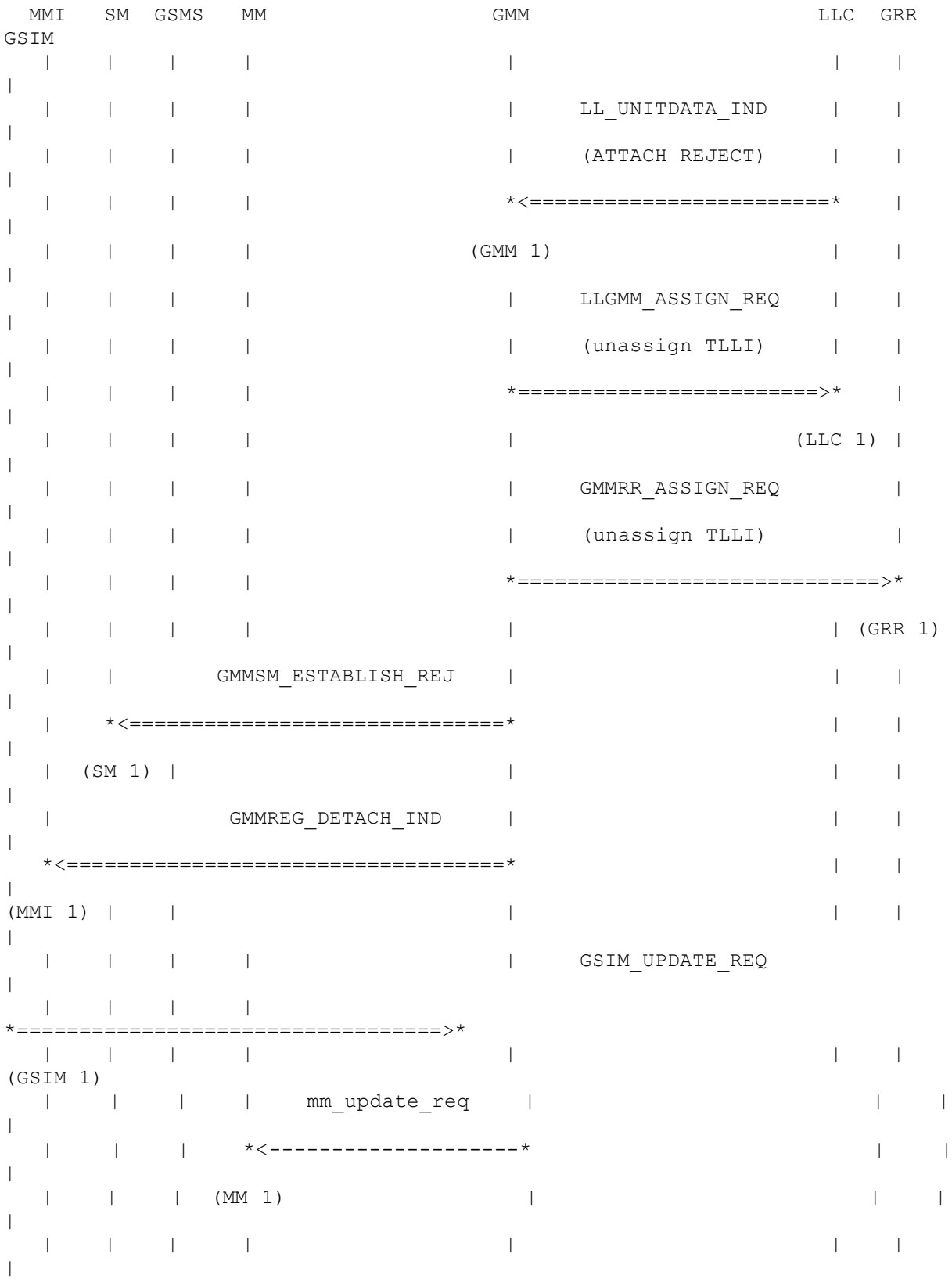
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.003>, <R.GMM.ACREJECT.M.004>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.006>, <R.GMM.ACREJECT.M.007>, <R.GMM.AGREJECT.M.008>, <R.GMM.AGREJECT.M.009>

4.9.4.2.2 Reject cause #7



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #7) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.ACREJECT.M.002>, <R.GMM.ACREJECT.M.013>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.ACREJECT.M.013>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.ACREJECT.M.013>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.ACREJECT.M.013>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.ACREJECT.M.013>

(GSIM 1)

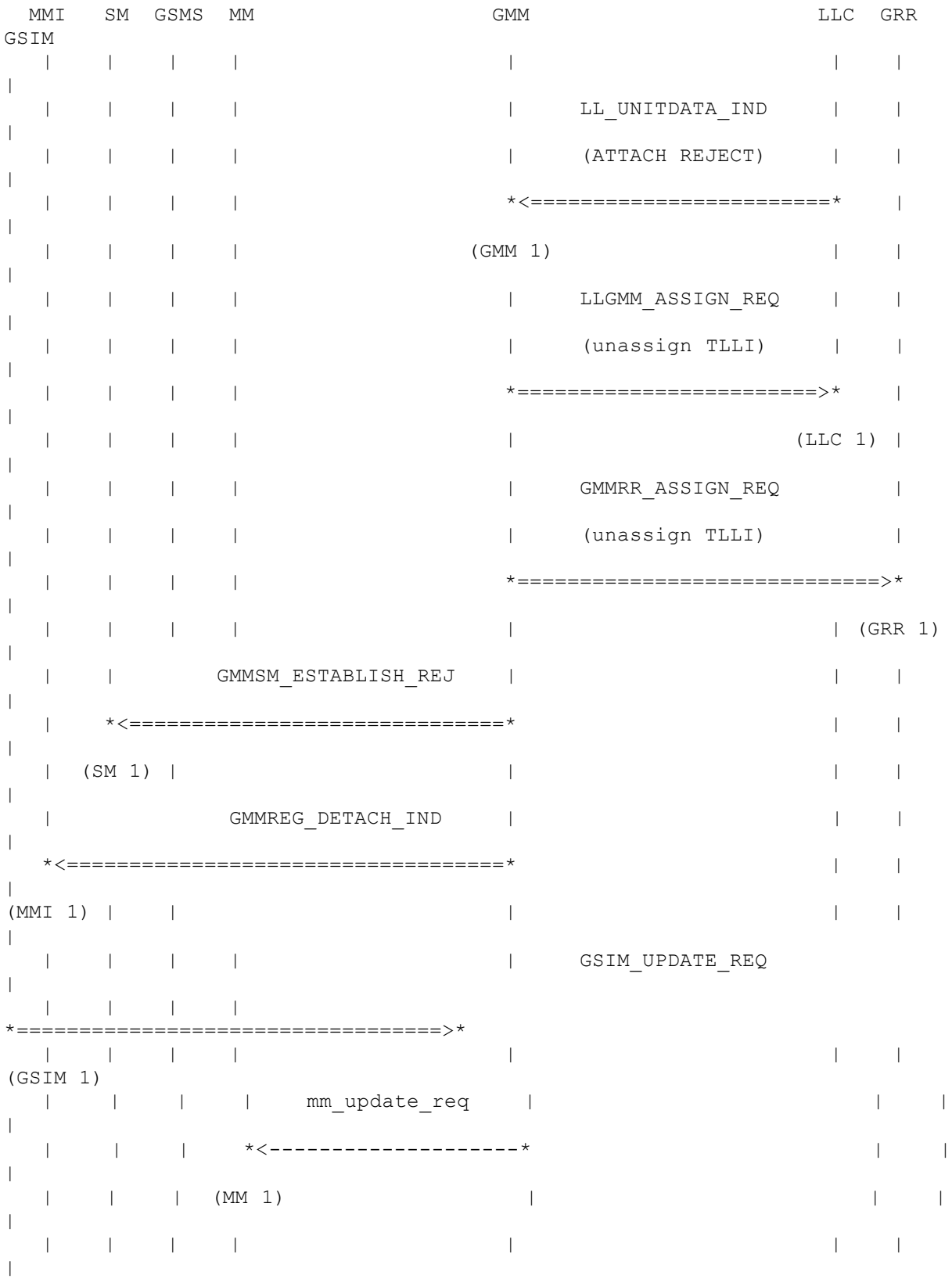
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.010>, <R.GMM.ACREJECT.M.011>, <R.GMM.AGREJECT.M.012>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.014>, <R.GMM.ACREJECT.M.015>, <R.GMM.ACREJECT.M.015>

4.9.4.2.3 Reject cause #11, #12, or #13



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3310. If the reject cause is #12, GMM enters state GMM-DEREGISTERED.LIMITED-SERVICE. If the reject cause is #11 or #13, GMM enters state GMM-DEREGISTERED.PLMN-SEARCH. GMM informs MM, that IMSI detach is requested. The RAU and GPRS attach attempt counter are reset.

<R.GMM.ACREJECT.M.002>, <R.GMM.ACREJECT.M.019>, <R.GMM.ACREJECT.M.020>, <R.GMM.ACREJECT.M.021>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.M.001>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.001>, <R.GMM.ODLIMITD.M.002>, <R.GMM.ODLIMITD.M.003>, <R.GMM.DSUBFANO.M.007>, <R.GMM.ODSEARCH.M.001>, <R.GMM.RAU.M.013>, <R.GMM.ATTACH.M.009>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.ACREJECT.M.021>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.ACREJECT.M.021>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.ACREJECT.M.021>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.ACREJECT.M.021>

(GSIM 1)

GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.017>, <R.GMM.ACREJECT.M.018>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. The LAU attempt counter has to reset.

<R.GMM.ACREJECT.M.022>, <R.GMM.ACREJECT.M.023>, <R.GMM.ACREJECT.M.024>, <R.GMM.ACREJECT.M.025>, <R.GMM.ACREJECT.M.026>, <R.GMM.ACREJECT.M.027>, <R.GMM.ACREJECT.M.028>, <R.GMM.ACREJECT.M.029>, <R.GMM.ACREJECT.M.030>

4.9.5 Abnormal cases

Equivalent to section 4.8.4, with additionally informing MM (according to 4.9.6.2).

<R.GMM.ACABNORM.M.001>

4.9.6 GPRS attach attempt procedure

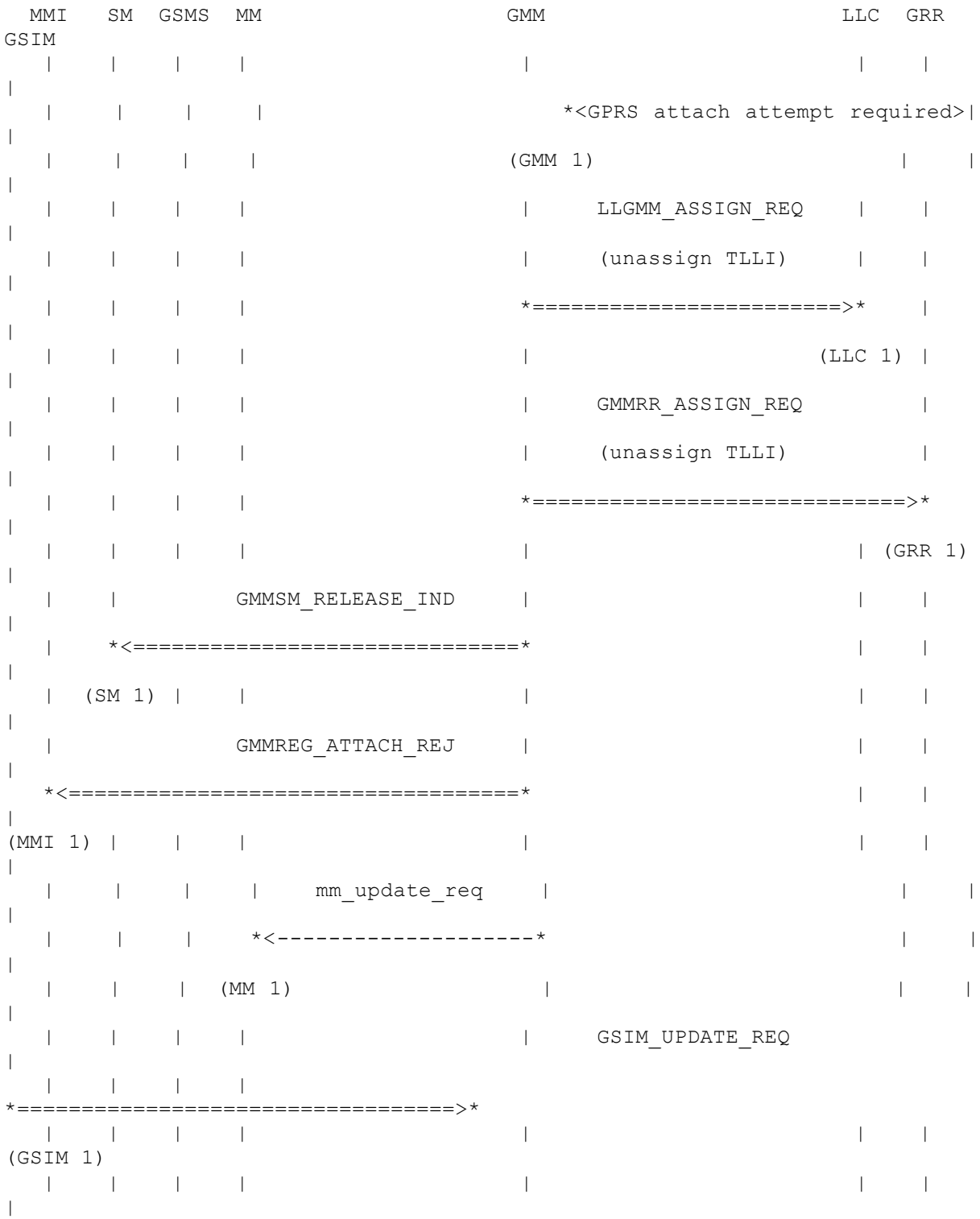
4.9.6.1 GPRS attach attempt counter less than 45

Equivalent to section 4.8.5.

<R.GMM.ACABNORM.M.001>

4.9.6.2 GPRS attach attempt counter greater than or equal to 45

4.9.6.2.1 GPRS attach attempt counter greater than or equal to 45 with MMI-initiated attach



(GMM 1)
The GPRS attach attempt counter is incremented and is greater than or equal to 45. The timer T3310 is stopped, if still running. GMM starts timer T3302 and enters state GMM-DEREGISTERED.PLMN-SEARCH.

<R.GMM.ACABNORM.M.004>, <R.GMM.ACABNORM.M.005>, <R.GMM.AGABNORM.M.020>, <R.GMM.AGABNORM.M.021>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGABNORM.M.024>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.AGABNORM.M.024>

(SM 1)
GMM informs SM, that the GPRS attach procedure has failed.

<R.GMM.AGABNORM.M.024>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.

<R.GMM.AGABNORM.M.024>

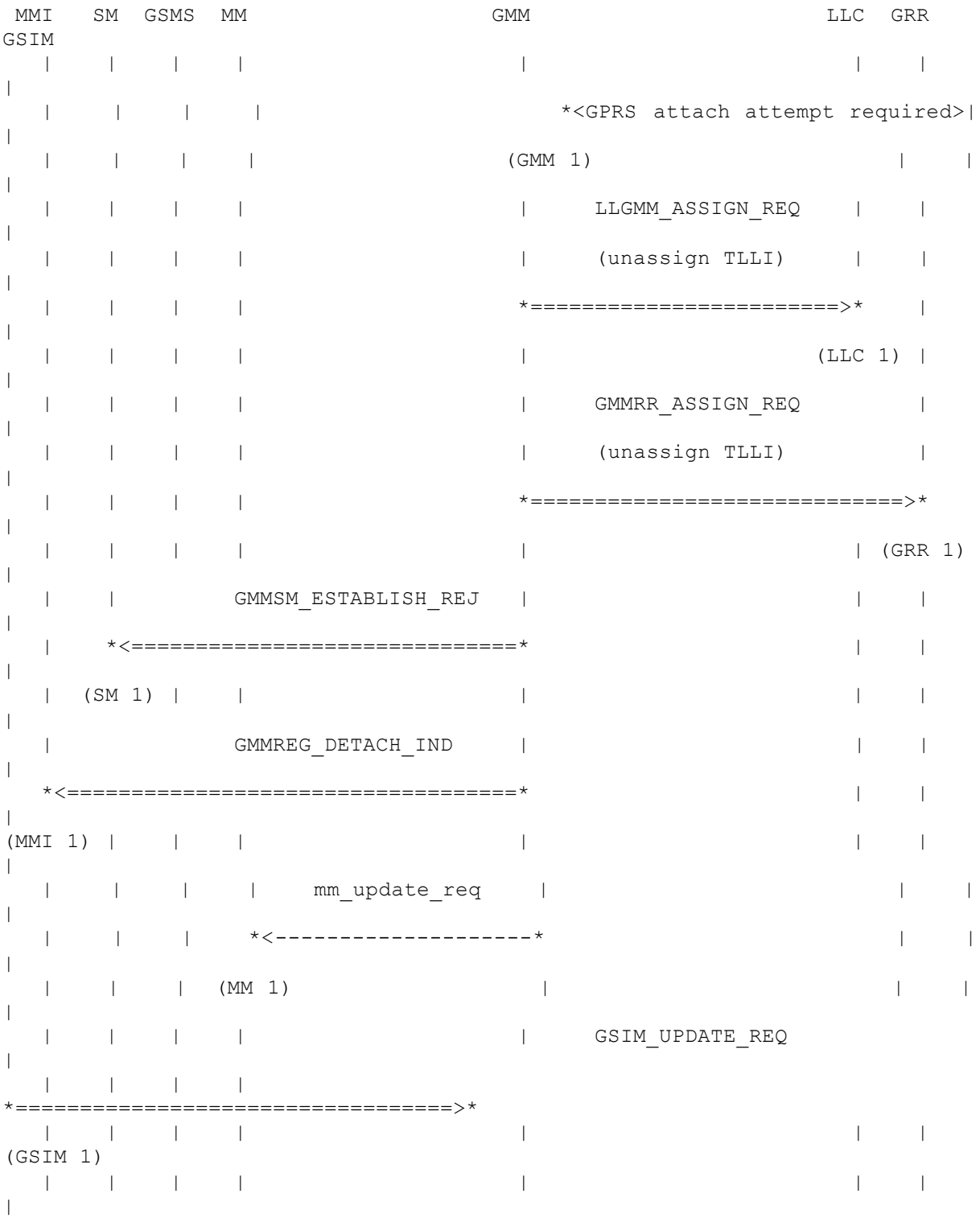
(MM 1)
GMM informs MM, that MM has to enter state MM ATTEMPTING TO UPDATE and has to enter update state U2 NOT UPDATED.

<R.GMM.AGABNORM.M.006>, <R.GMM.AGABNORM.M.007>, <R.GMM.AGABNORM.M.008>

(GSIM 1)
GMM enters GPRS update status GU2 NOT UPDATED.

<R.GMM.ACABNORM.M.002>, <R.GMM.ACABNORM.M.003>

4.9.6.2.2 GPRS attach attempt counter greater than or equal to 45 with SM-initiated attach



(GMM 1)
The GPRS attach attempt counter is incremented and is greater than or equal to 45. The timer T3310 is stopped, if still running. GMM starts timer T3302 and enters state GMM-DEREGISTERED.PLMN-SEARCH.

<R.GMM.ACABNORM.M.004>, <R.GMM.ACABNORM.M.005>, <R.GMM.AGABNORM.M.020>, <R.GMM.AGABNORM.M.021>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.AGABNORM.M.024>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.AGABNORM.M.024>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.AGABNORM.M.024>, <R.GMM.PESTREJ.M.001>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.AGABNORM.M.024>

(MM 1)
GMM informs MM, that MM has to enter state MM ATTEMPTING TO UPDATE and has to enter update state U2 NOT UPDATED.

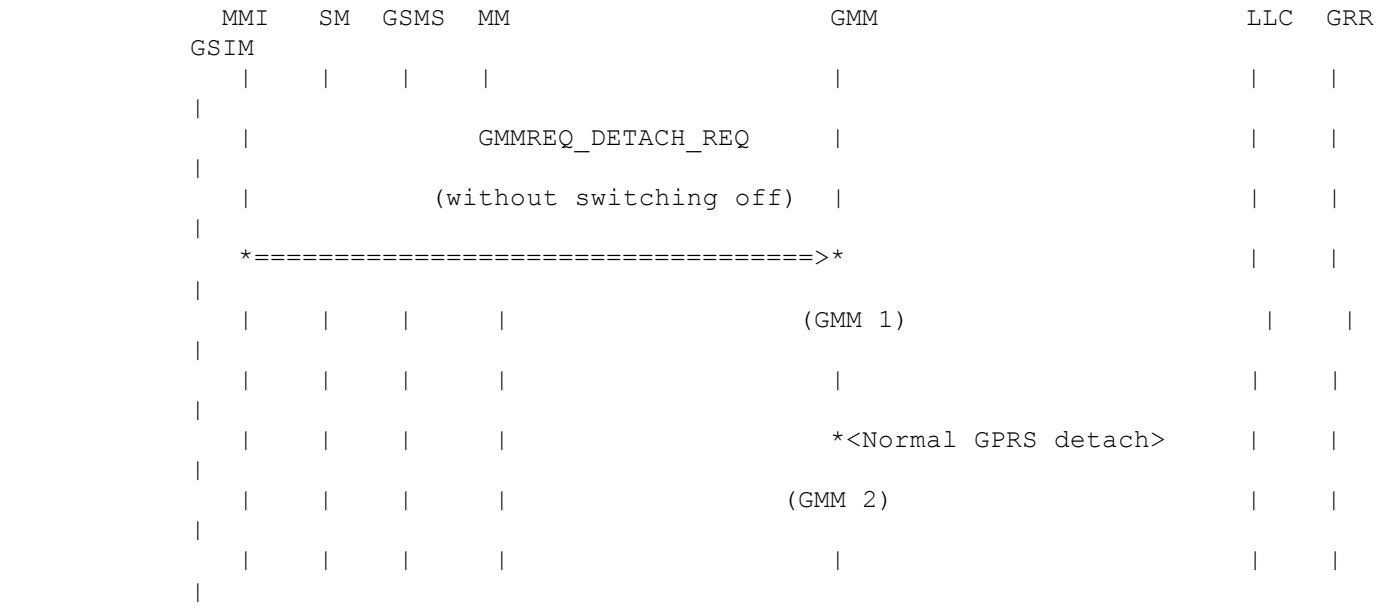
<R.GMM.AGABNORM.M.006>, <R.GMM.AGABNORM.M.007>, <R.GMM.AGABNORM.M.008>

(GSIM 1)
GMM enters GPRS update status GU2 NOT UPDATED.
<R.GMM.ACABNORM.M.002>, <R.GMM.ACABNORM.M.003>

4.10 GPRS detach procedure

<R.GMM.DETACH.M.001>, <R.GMM.DETACH.M.002>

4.10.1 Receipt of GMMREG_DETACH_REQ without switching off



(GMM 1)
MMI initiates the detach procedure by sending the 'GMMREG_DETACH_REQ without switching off' primitive to GMM. GMM enters state GMM-DEREGISTERED-INITIATED.

<R.GMM.PATTREQ.M.001>, <R.GMM.PATTREQ.M.002>

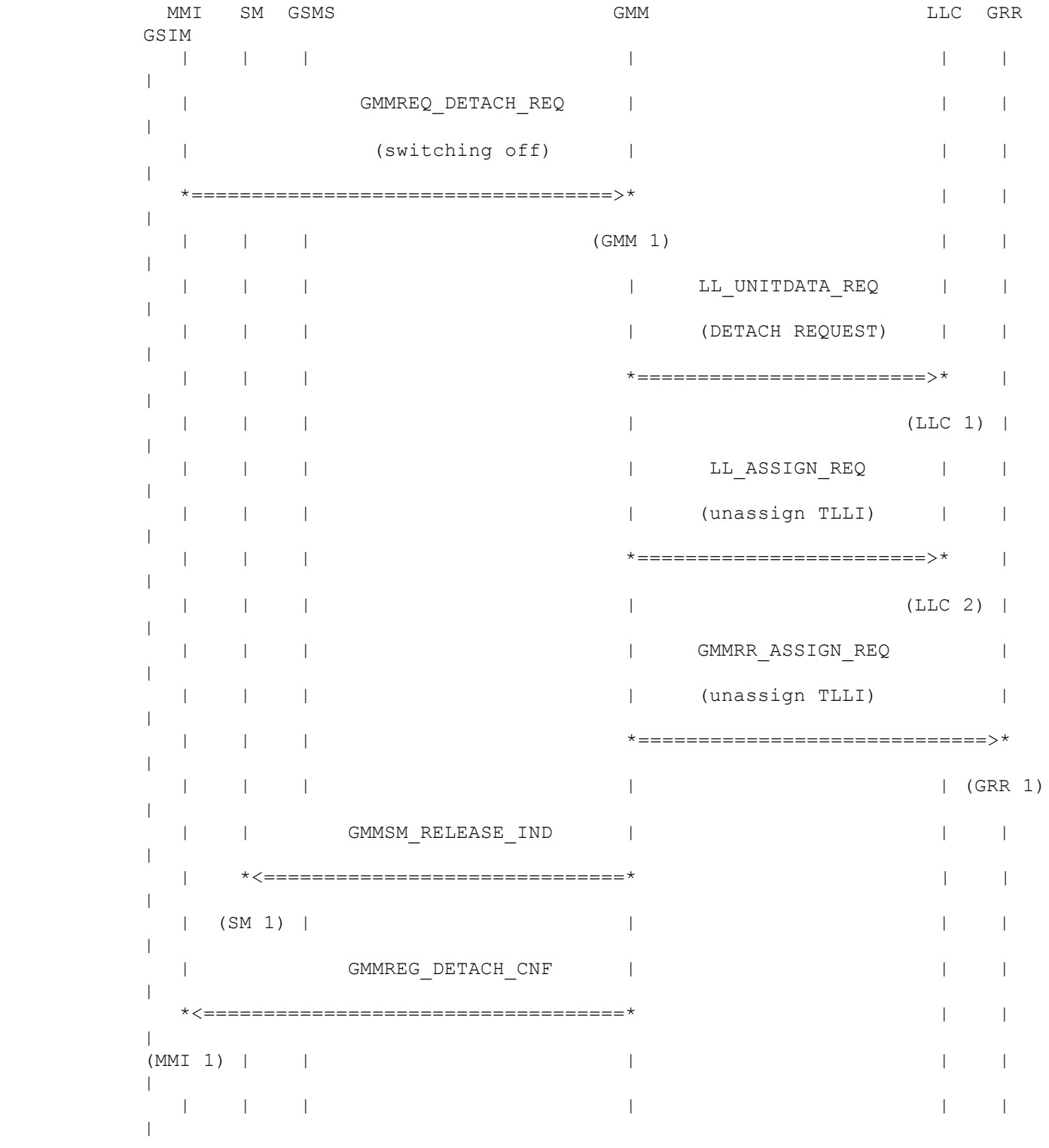
(GMM 2)
The normal GPRS detach procedure without switching off for GPRS services (see section 4.10.2.2) is being followed.

<R.GMM.PATTREQ.M.001>

4.10.2 MS initiated GPRS detach procedure initiation

4.10.2.1 With switching off (detach completion)

4.10.2.1.1 GPRS detach only



(GMM 1)
MMI initiates the detach procedure by sending the 'GMMREG_DETACH_REQ with switching off' primitive to GMM.

<R.GMM.PATTREQ.M.001>

(LLC 1)
GMM transmits the 'DETACH REQUEST with switching off' message to the network by sending the LL_UNITDATA_REQ primitive to LLC. GMM enters state GMM-DEREGISTERED.

<R.GMM.DINIT.M.001>, <R.GMM.DINIT.M.002>, <R.GMM.DMACGPRS.M.008>

(LLC 2)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.DMACGPRS.M.008>

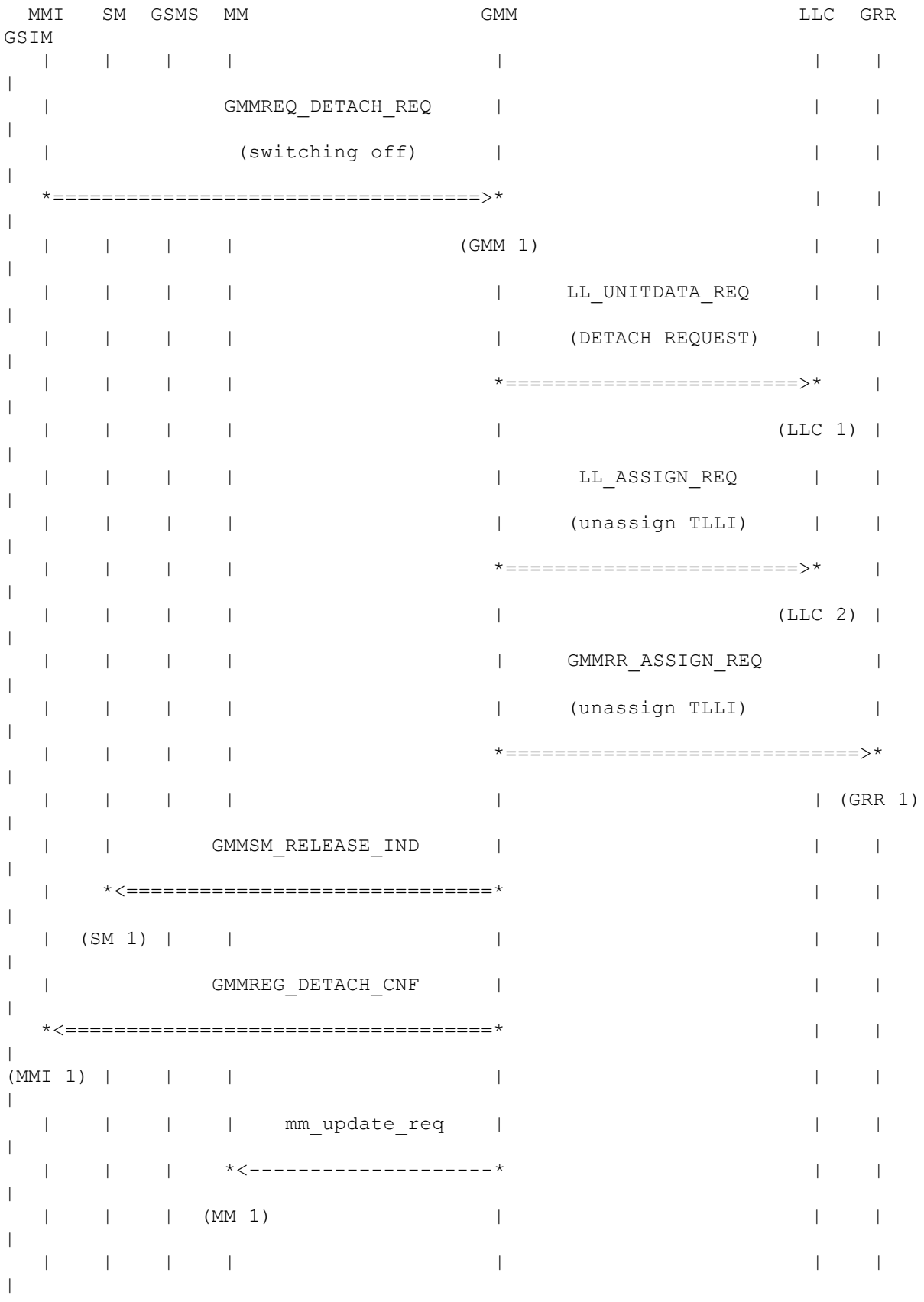
(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMACGPRS.M.008>

4.10.2.1.2 GPRS/IMSI detach



(GMM 1)
MMI initiates the detach procedure by sending the 'GMMREG_DETACH_REQ with switching off' primitive to GMM.

<R.GMM.PATTREQ.M.001>

(LLC 1)
GMM transmits the 'DETACH REQUEST with switching off' message to the network by sending the LL_UNITDATA_REQ primitive to LLC.

<R.GMM.DINIT.M.001>, <R.GMM.DINIT.M.002>

(LLC 2)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.DMACBOTH.M.008>

(SM 1)
GMM informs SM, that the GMM context is released. GMM enters state GMM_DEREGISTERED.

<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>

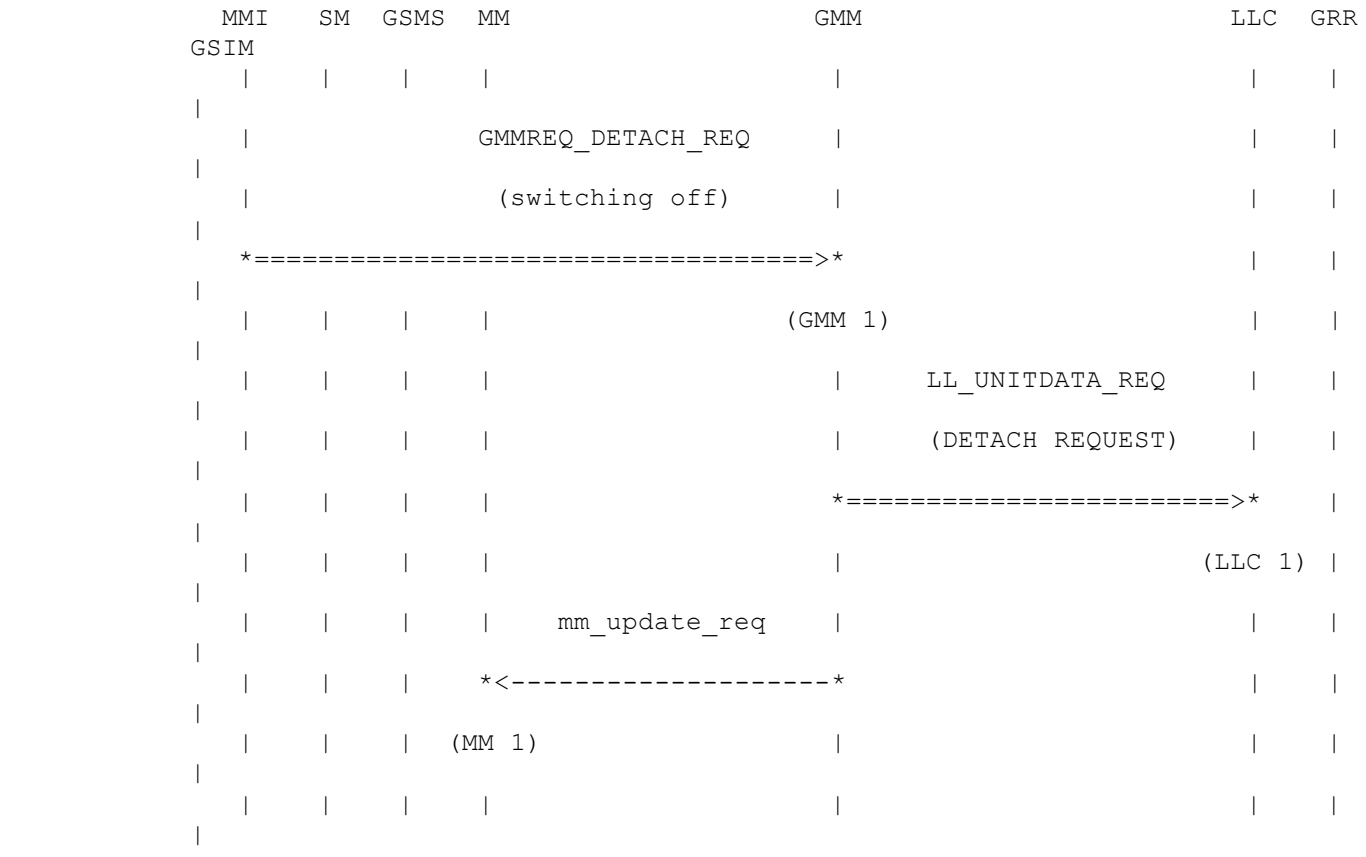
(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMACGPRS.M.008>

(MM 1)
MM has to enter state MM NULL.

<R.GMM.DMACBOTH.M.009>

4.10.2.1.3 IMSI detach



(GMM 1)
MMI initiates the detach procedure by sending the 'GMMREG_DETACH_REQ with switching off' primitive to GMM.

<R.GMM.PATTREQ.M.001>

(LLC 1)
GMM transmits the 'DETACH REQUEST with switching off' message to the network by sending the LL_UNITDATA_REQ primitive to LLC.

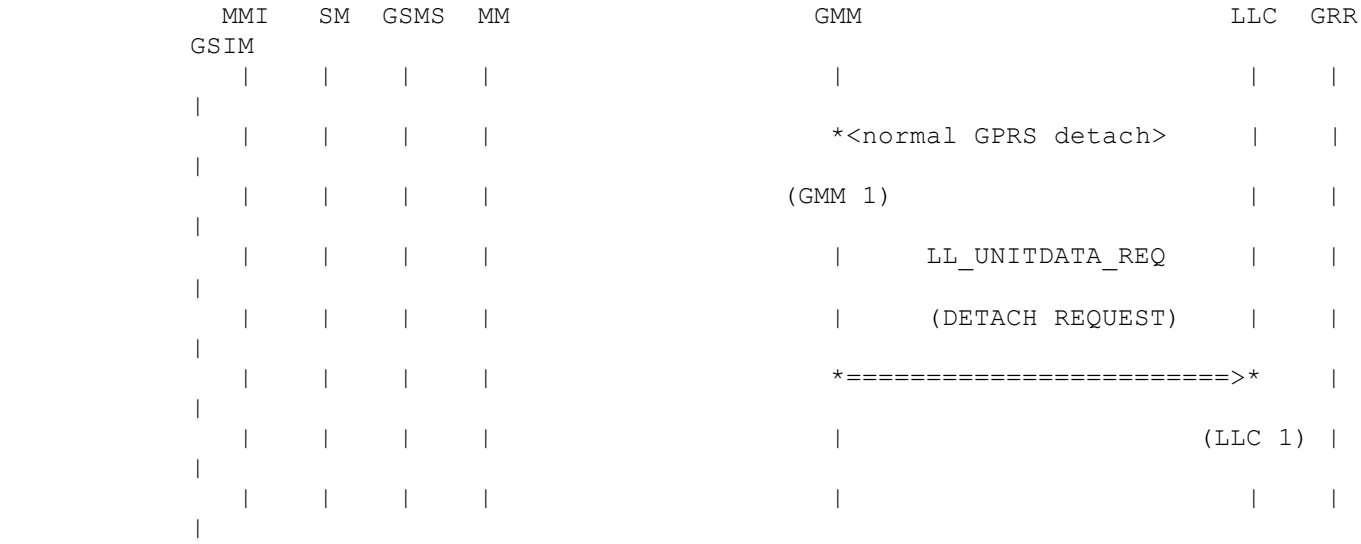
<R.GMM.DINIT.M.001>, <R.GMM.DINIT.M.002>

(MM 1)
MM has to enter state MM NULL.

<R.GMM.DMACBOTH.M.009>

4.10.2.2 Without switching off

4.10.2.2.1 GPRS detach only



(GMM 1)
GMM starts the GPRS detach procedure due to one of the following reasons:
- Receipt of the primitive GMMREQ_DETACH_REQ from the MMI.
- SIM card is removed from the MS.
- GPRS capability is disabled.

<R.GMM.DETACH.M.005>

(LLC 1)
GMM transmits the 'DETACH REQUEST without switching off' message to the network by sending the LL_UNITDATA_REQ primitive to LLC. The timer T3321 is started. GMM enters state GMM-DEREGISTERED-INITIATED.

<R.GMM.DINIT.M.001>, <R.GMM.DINIT.M.002>, <R.GMM.DINIT.M.003>, <R.GMM.DINIT.M.004>

4.10.2.2.2 IMSI detach or GPRS/IMSI detach

GMM starts the GPRS detach procedure due to one of the following reasons:

- Receipt of the primitive GMMREQ_DETACH_REQ from the MMI.
- SIM card is removed from the MS.
- GPRS or non-GPRS capability is disabled.

<R.GMM.DETACH.M.005>

(LLC 1)
GMM transmits the 'DETACH REQUEST without switching off' message to the network by sending the LL_UNITDATA_REQ primitive to LLC. The timer T3321 is started. GMM enters state GMM-DEREGISTERED-INITIATED.

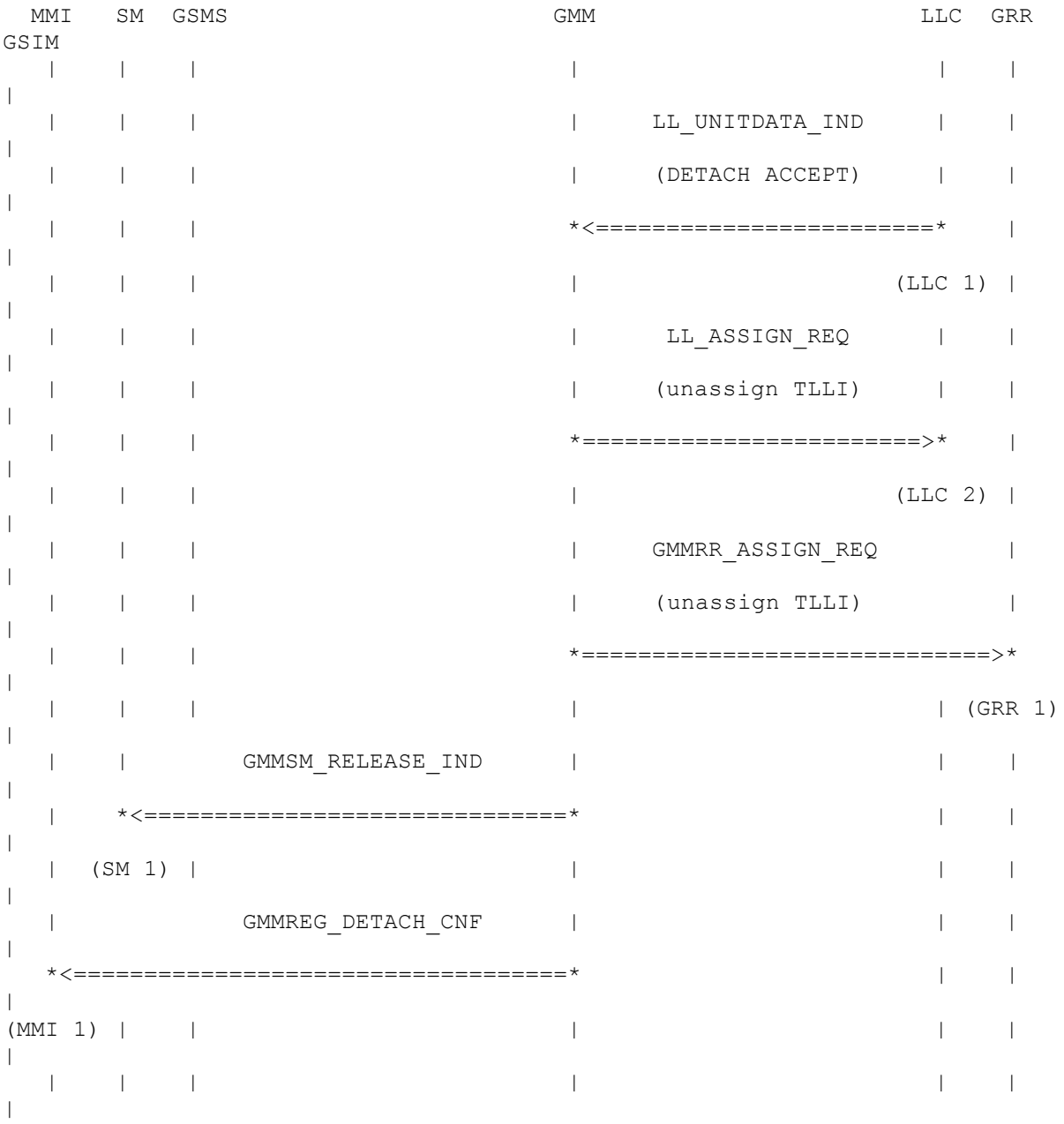
<R.GMM.DINIT.M.001>, <R.GMM.DINIT.M.002>, <R.GMM.DINIT.M.003>, <R.GMM.DINIT.M.004>
<R.GMM.DMACBOTH.M.007>

(MM 1)
MM has to enter state MM IMSI DETACH PENDING.

<R.GMM.DINIT.M.005>

4.10.3 MS initiated GPRS detach procedure completion (without switching off)

4.10.3.1 GPRS detach only



(LLC 1)
GMM receives a 'DETACH ACCEPT' message from the network by getting the LL_UNITDATA_IND primitive from LLC.

<R.GMM.DMACBOTH.I.001>

(LLC 2)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.007>, <R.GMM.DETACH.A.004>

(GRR 1)
GMM informs GRR, that the GMM context is released.

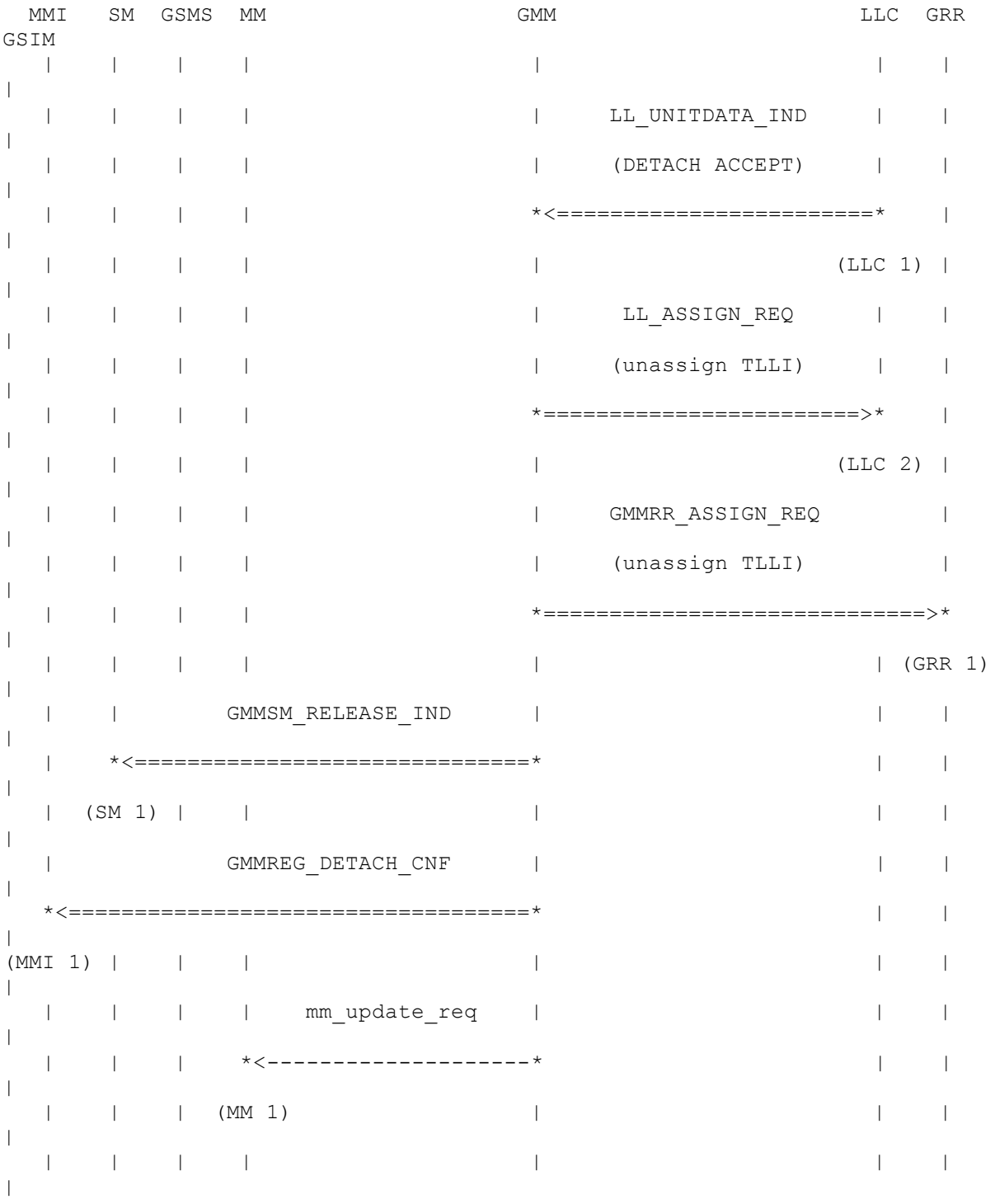
<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>, <R.GMM.DETACH.A.004>

(SM 1)
GMM informs SM, that the GMM context is released. GMM enters state GMM-DEREGISTERED.
<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>, <R.GMM.DETACH.A.004>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>, <R.GMM.DETACH.A.004>

4.10.3.2 GPRS/IMSI detach



(LLC 1)
GMM receives a 'DETACH ACCEPT' message from the network by getting the LL_UNITDATA_IND primitive from LLC.
<R.GMM.DMACBOTH.I.001>

(LLC 2)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DETACH.A.004>

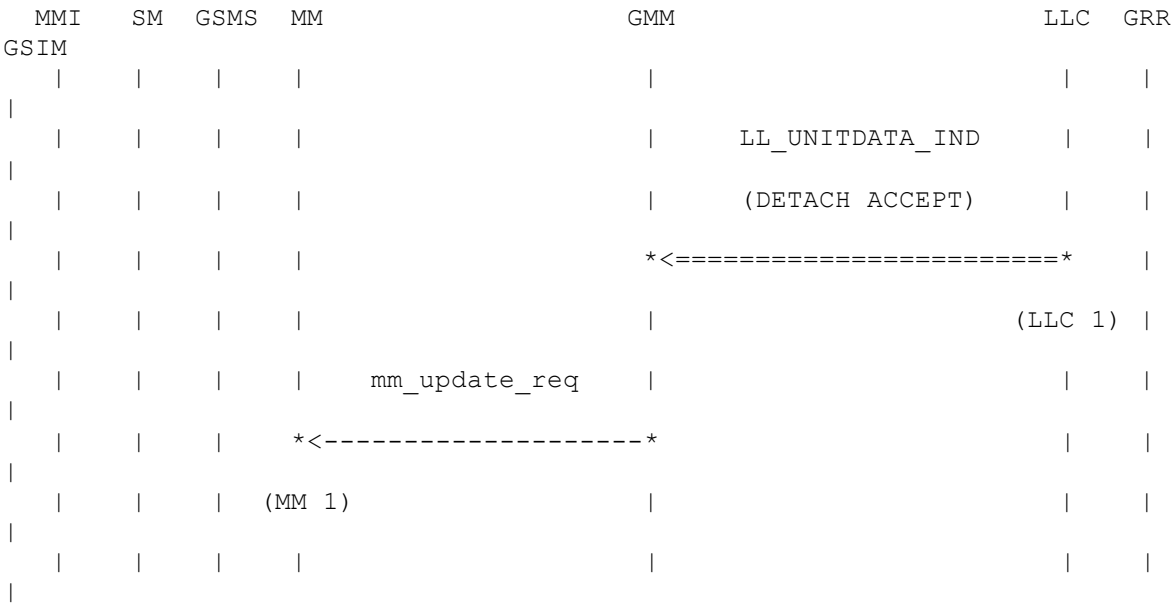
(GRR 1)
GMM informs GRR, that the GMM context is released.
<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DETACH.A.004>

(SM 1)
GMM informs SM, that the GMM context is released. GMM enters state GMM-DEREGISTERED. If (also) IMSI detach was requested, than MM enters state MM NULL.
<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DETACH.A.004>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DETACH.A.004>

(MM 1)
MM has to enter state MM NULL.
<R.GMM.DMACBOTH.M.008>

4.10.3.3 IMSI detach



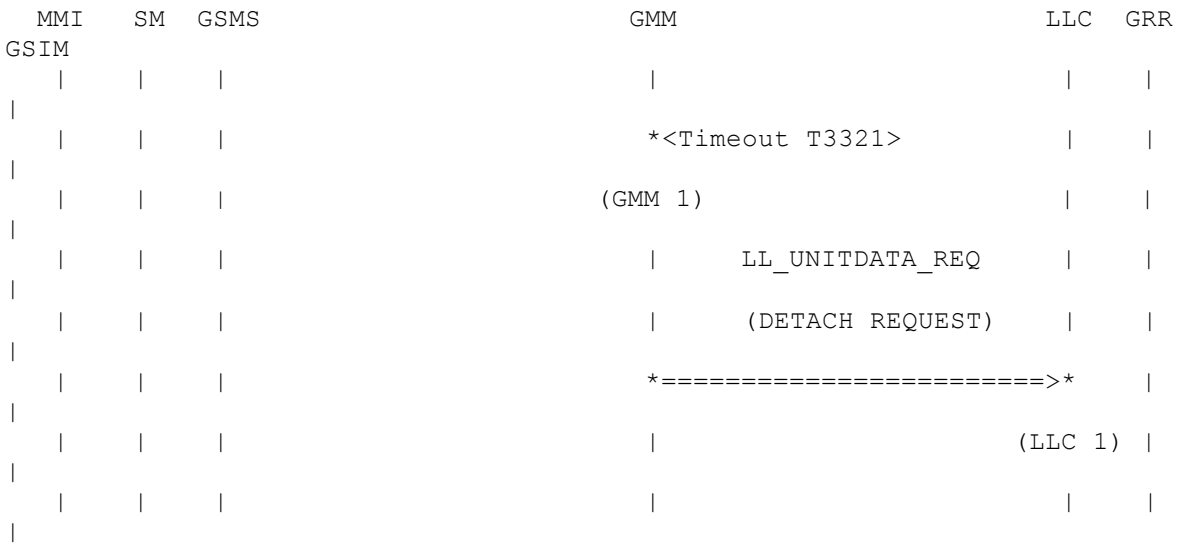
(LLC 1)
GMM receives a 'DETACH ACCEPT' message from the network by getting the LL_UNITDATA_IND primitive from LLC.
<R.GMM.DMACBOTH.I.001>

(MM 1)
MM has to enter state MM NULL.
<R.GMM.DMACBOTH.M.009>

4.10.4 Abnormal cases

4.10.4.1 a) Timeout of timer T3321

4.10.4.1.1 Maximum retransmissions not reached



(GMM 1)
Timeout of timer T3321 first, second, third or fourth time. The timer T3321 is restarted.

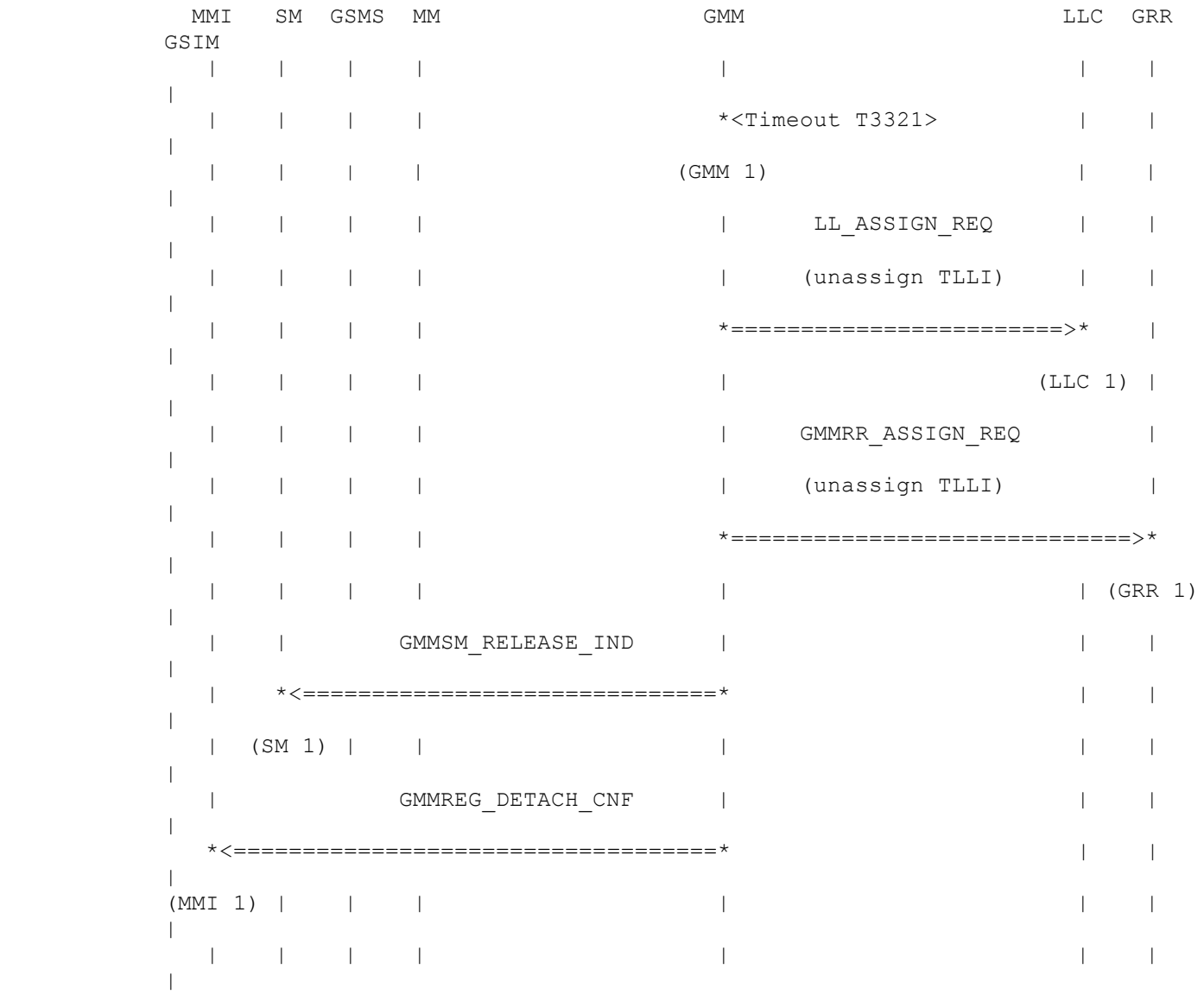
<R.GMM.DMABNORM.M.001>

(LLC 1)
The MS retransmit the DETACH REQUEST message.

<R.GMM.DMABNORM.M.002>

4.10.4.1.2 Maximum retransmissions reached

4.10.4.1.2.1 GPRS detach



(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted. If GPRS detach was requested, GMM enters state GMM-DEREGISTERED.

<R.GMM.DMABNORM.M.003>, <R.GMM.DMABNORM.M.005>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMABNORM.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.DMABNORM.M.005>

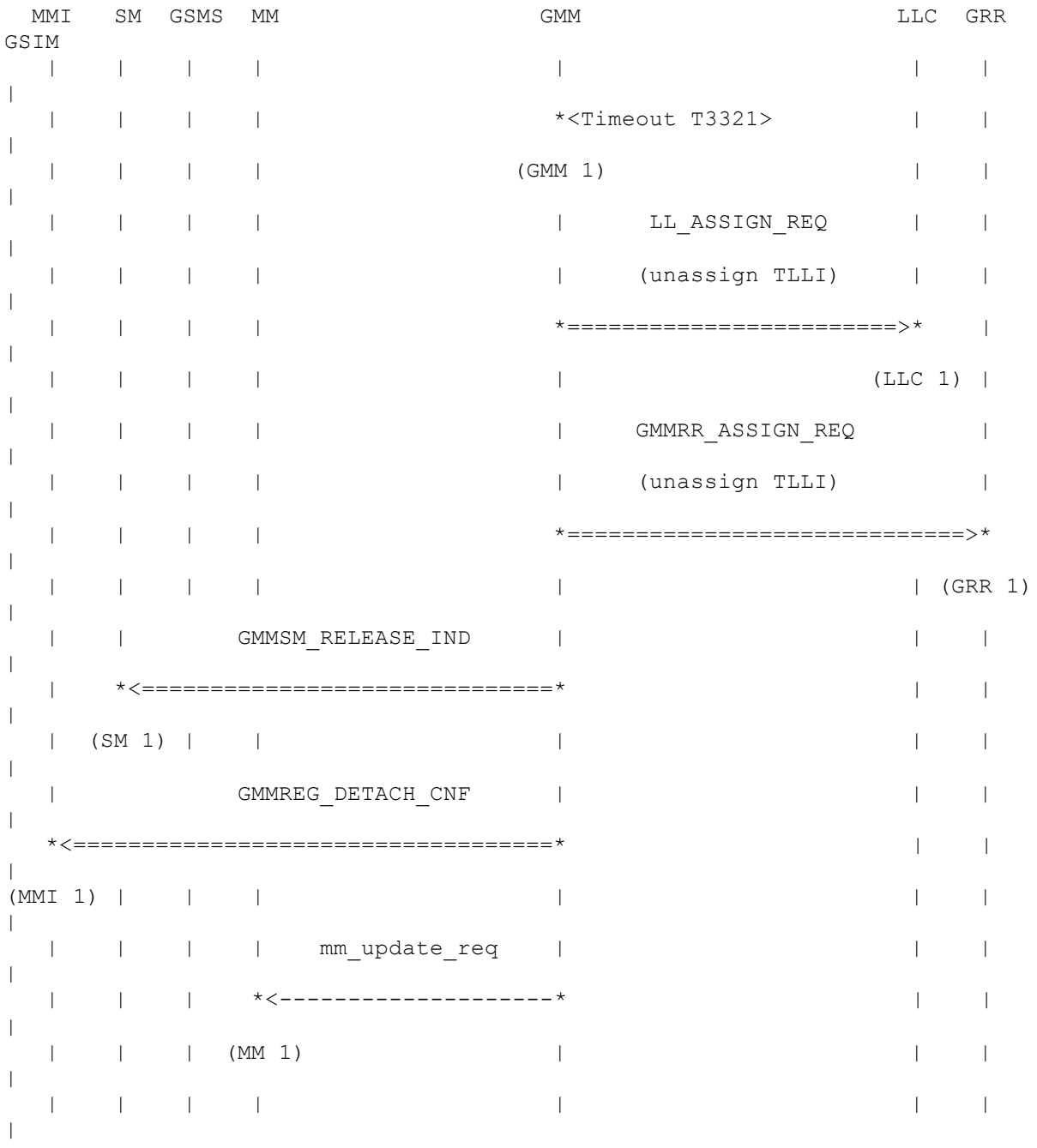
(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DMABNORM.M.005>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMABNORM.M.005>

4.10.4.1.2.2 GPRS/IMSI detach



(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted. GMM enters state GMM-DEREGISTERED.

<R.GMM.DMABNORM.M.003>, <R.GMM.DMABNORM.M.006>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMABNORM.M.006>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.DMABNORM.M.006>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DMABNORM.M.006>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMABNORM.M.006>

(MM 1)
MM has to enter state MM NULL.

<R.GMM.DMABNORM.M.006>

4.10.4.1.2.3 IMSI detach

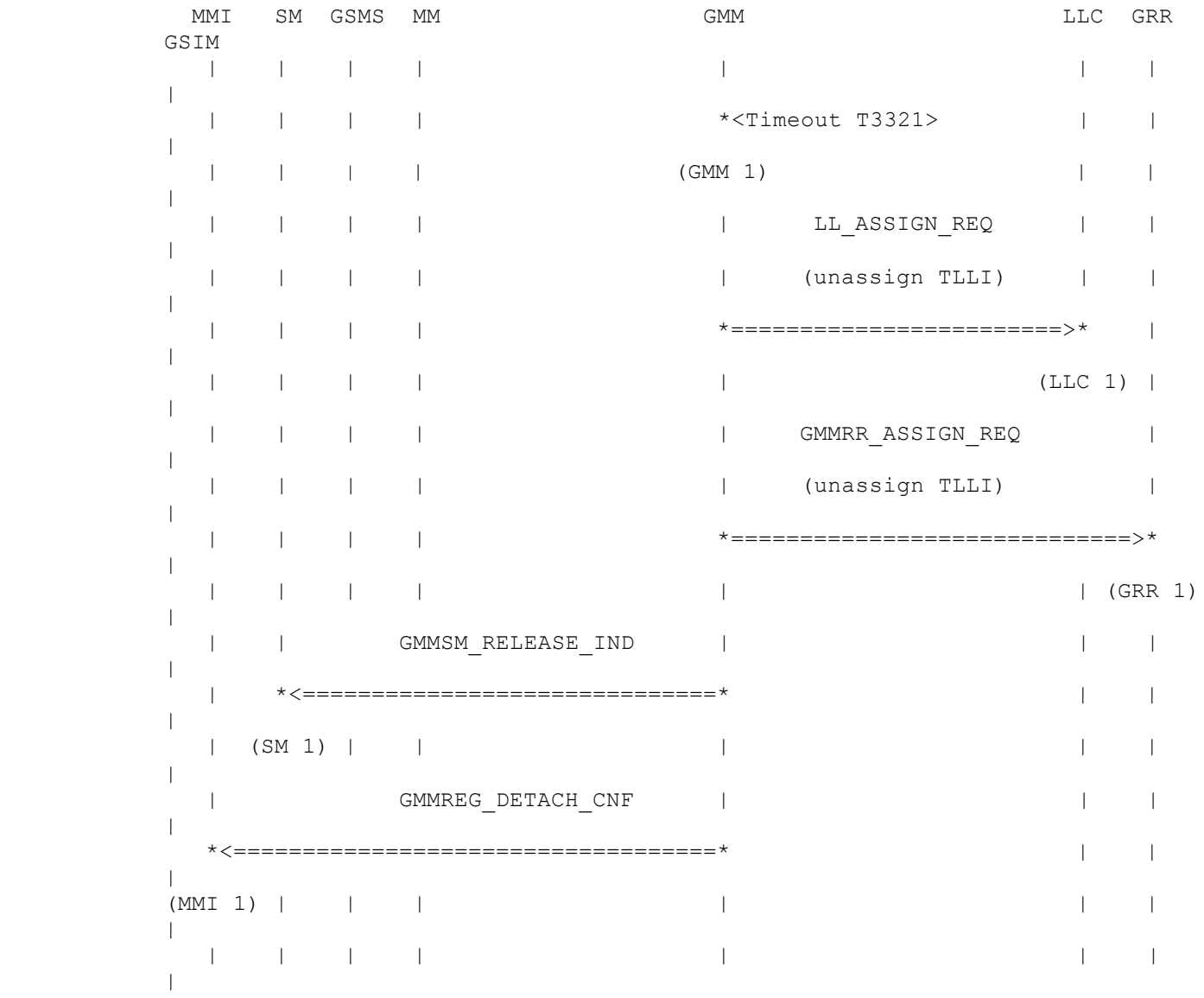
(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted.

<R.GMM.DMABNORM.M.003>

(MM 1)
MM has to enter state MM NULL.
<R.GMM.DMABNORM.M.004>

4.10.4.2 b) Lower layer failure

4.10.4.2.1 GPRS detach



(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted. If GPRS detach was requested, GMM enters state GMM-DEREGISTERED.

<R.GMM.DMABNORM.M.007>, <R.GMM.DMABNORM.M.009>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMABNORM.M.009>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.DMABNORM.M.009>

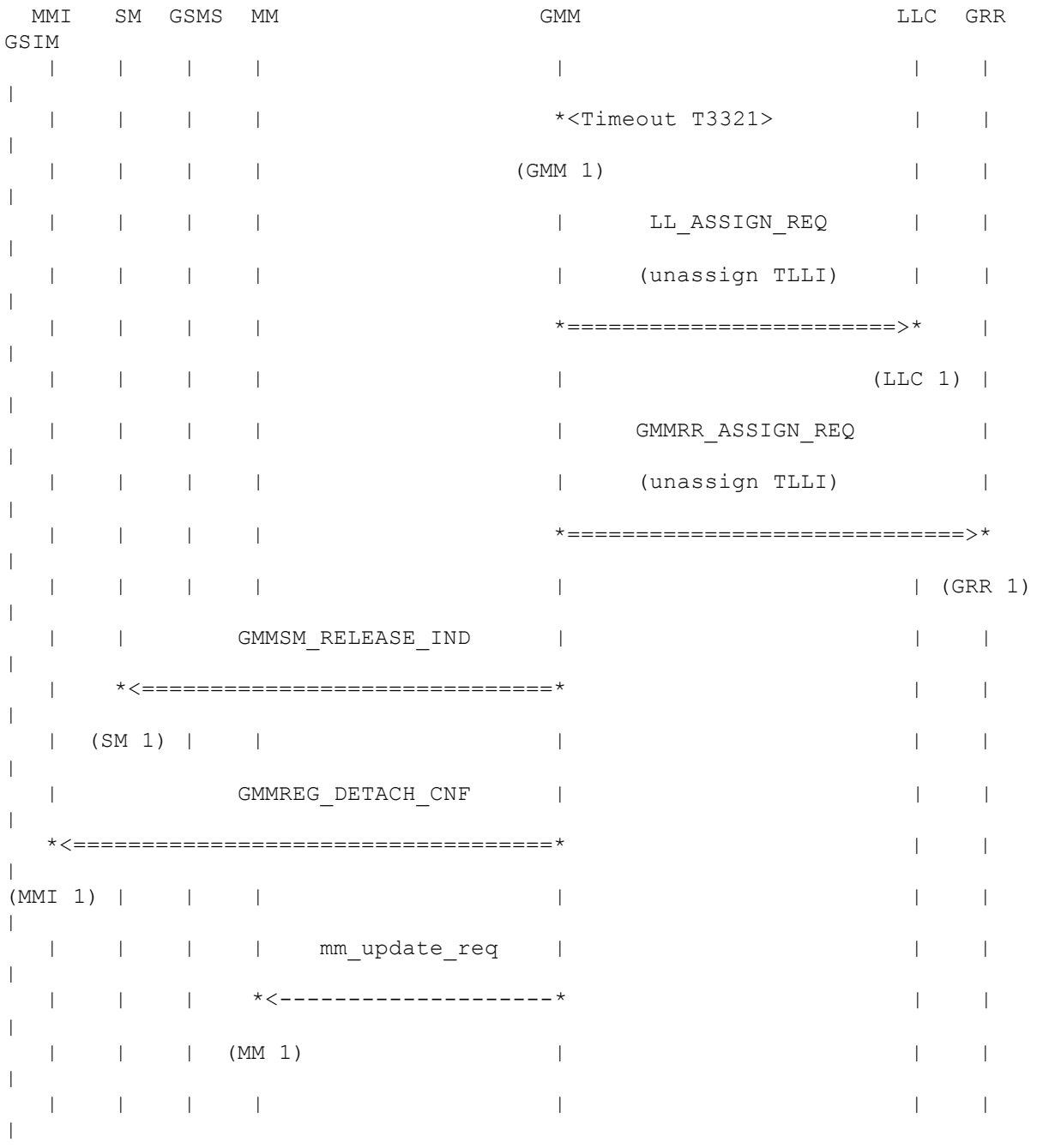
(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DMABNORM.M.009>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMABNORM.M.009>

4.10.4.2.2 GPRS/IMSI detach



(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted. GMM enters state GMM-DEREGISTERED.

<R.GMM.DMABNORM.M.007>, <R.GMM.DMABNORM.M.010>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.DMABNORM.M.010>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.DMABNORM.M.010>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DMABNORM.M.010>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMABNORM.M.010>

(MM 1)
MM has to enter state MM NULL.

<R.GMM.DMABNORM.M.010>

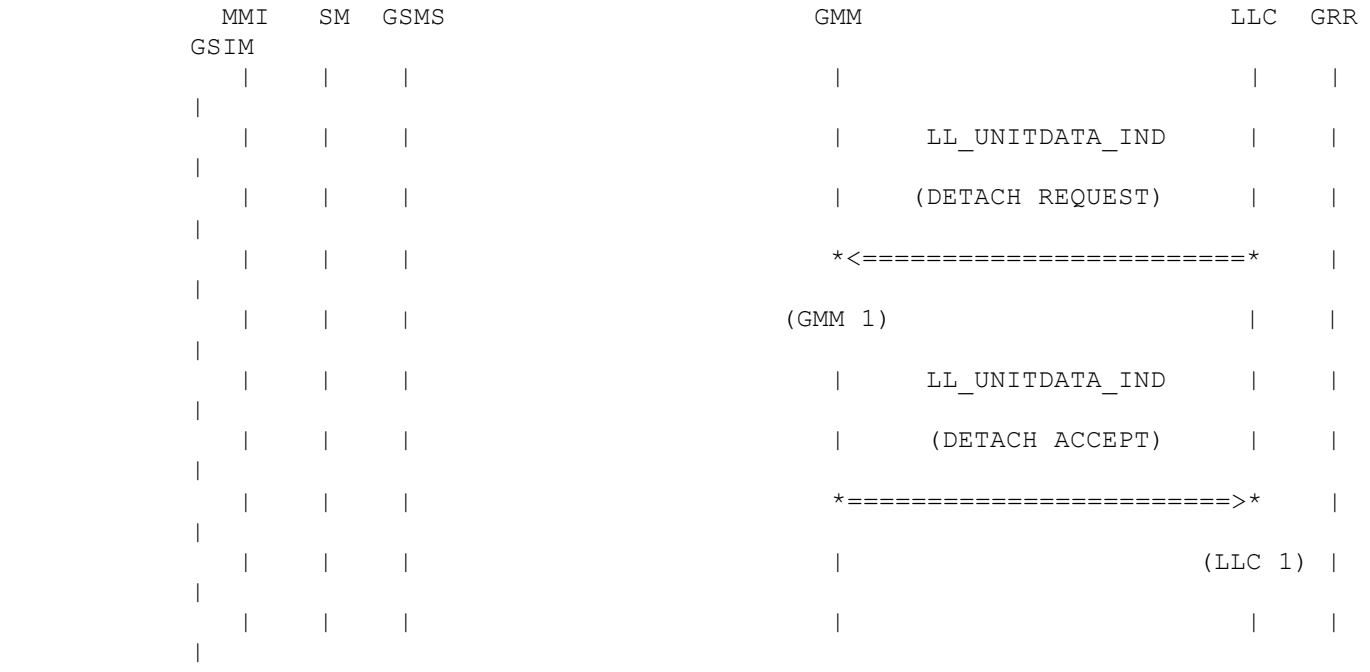
4.10.4.2.3 IMSI detach

(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted.

<R.GMM.DMABNORM.M.007>

(MM 1)
MM has to enter state MM NULL.
<R.GMM.DMABNORM.M.008>

4.10.4.3 c) Detach procedure collision

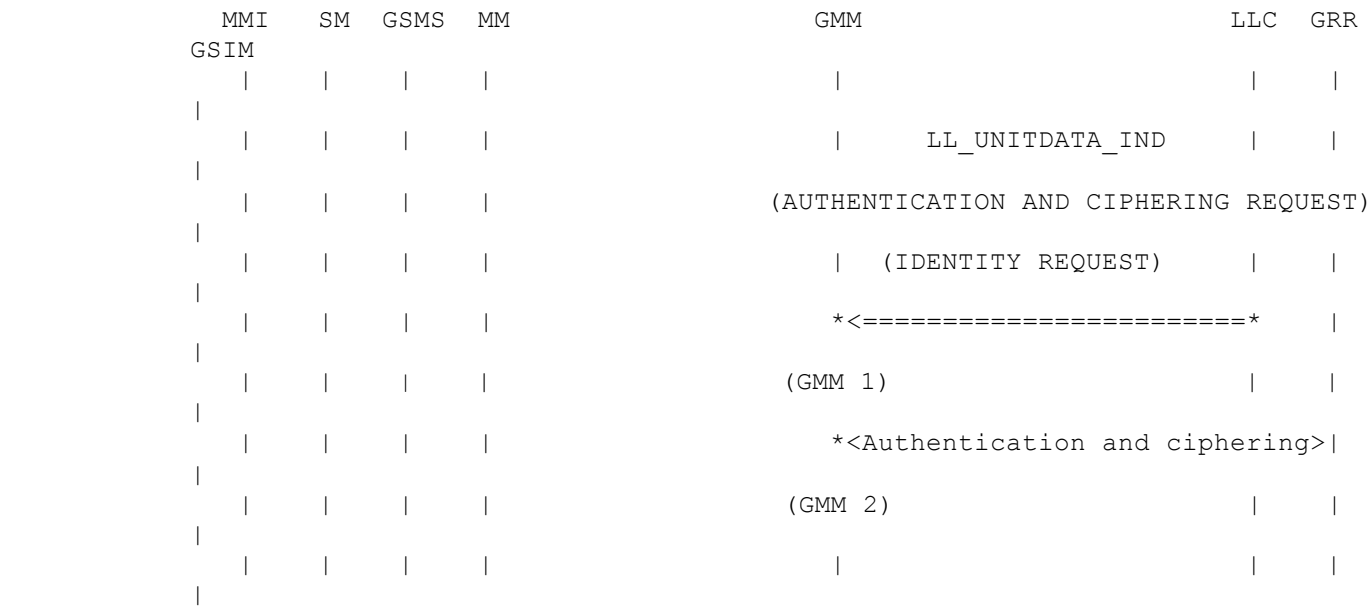


(GMM 1)
DETACH REQUEST message is received before the MS initiated GPRS detach procedure has been completed.
<R.GMM.DMABNORM.M.011>

(LLC 1)
GMM transmits a DETACH ACCEPT message to the network by sending the primitive LL_UNITDATA_REQ to the network.
<R.GMM.DMABNORM.M.011>

4.10.4.4 d) Detach and common procedure collision

4.10.4.4.1 Receipt of AUTHENTICATION AND CIPHERING REQUEST whilst in procedure Detach without switching off

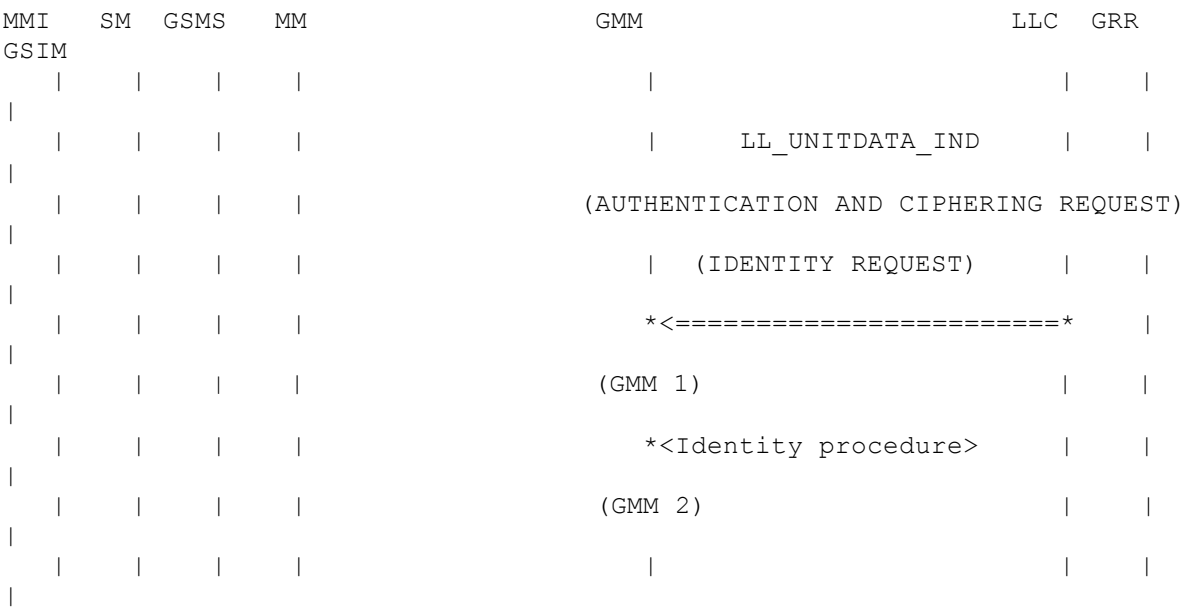


(GMM 1)
The MS receives the message AUTHENTICATION AND CIPHERING REQUEST or IDENTITY REQUEST whilst in state GMM-DEREGISTERED-INITIATED and without switching off was indicated.

(GMM 2)
The MS responds to it as described in procedure authentication and ciphering in section 4.15. The auth_whilst_detach variable is set.

<R.GMM.DMABNORM.M.016>

4.10.4.4.2 Receipt of IDENTITY REQUEST whilst in procedure Detach without switching off

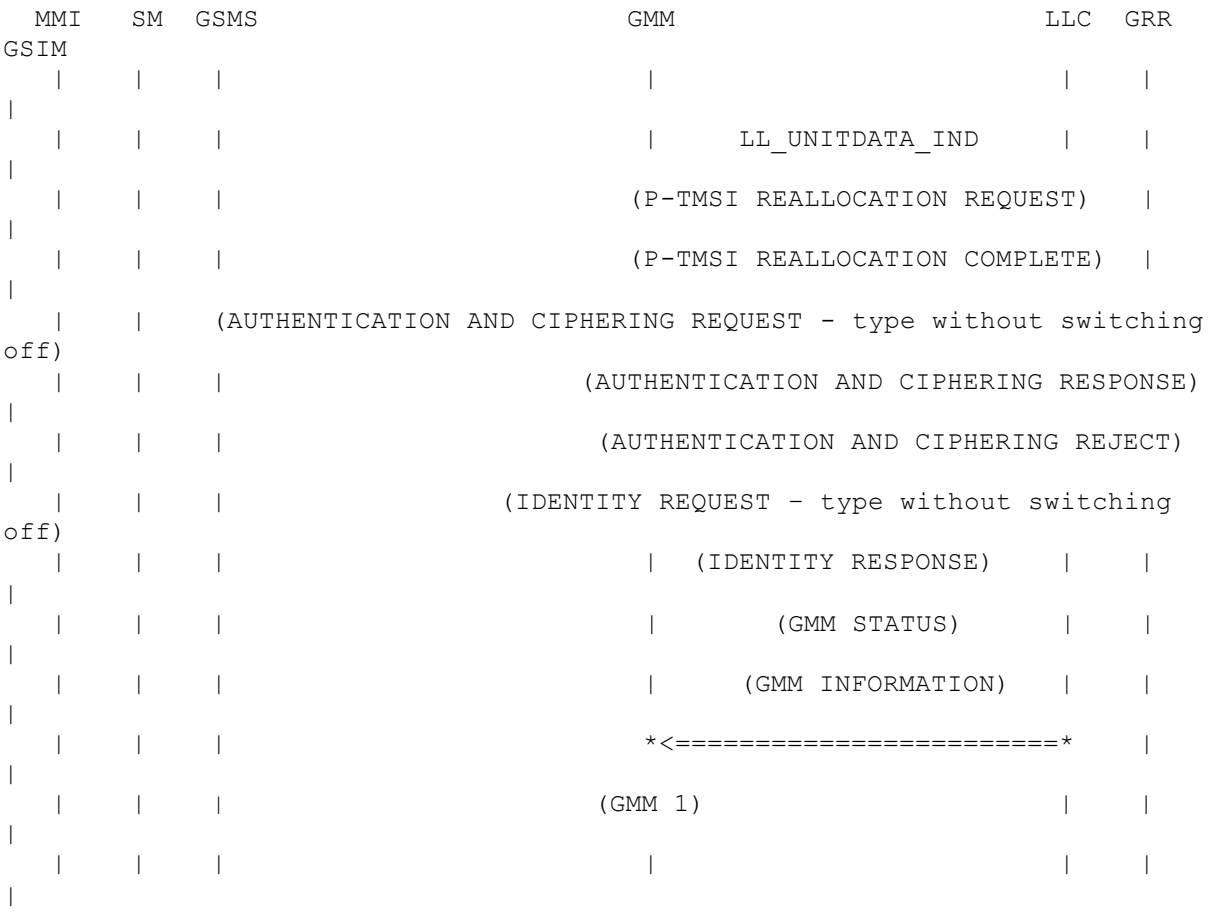


(GMM 1)
The MS receives the message AUTHENTICATION AND CIPHERING REQUEST or IDENTITY REQUEST whilst in state GMM-DEREGISTERED-INITIATED and without switching off was indicated.

(GMM 2)
The MS responds to it as described in section 4.16. The id_whilst_detach variable is set.

<R.GMM.DMABNORM.M.016>

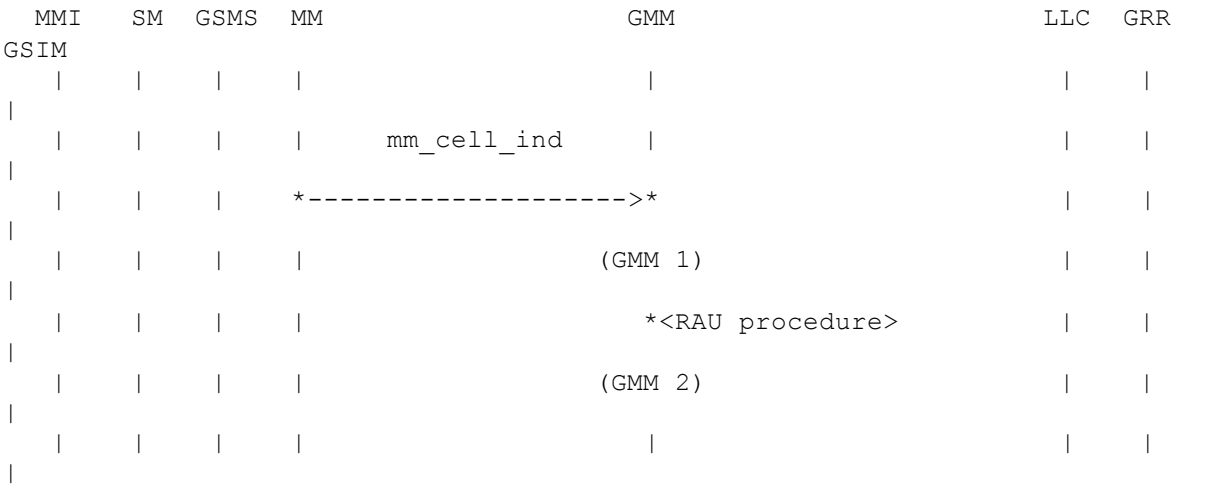
4.10.4.4.3 Receipt of remaining common procedures



(GMM 1)
The MS receives a common message whilst in state GMM-DEREGISTERED-INITIATED. The common message is discarded and the GPRS detach procedure is continued.

<R.GMM.DMABNORM.M.012>, <R.GMM.DMABNORM.M.013>, <R.GMM.DMABNORM.M.014>, <R.GMM.DMABNORM.M.015>

4.10.4.5 e) Receipt of RAU indication whilst in state GMM-DEREGISTERED-INITIATED



(GMM 1)
GMM is in state GMM-DEREGISTERED-INITIATED. GMM receives the indication that a new RA has been entered. The GPRS detach procedure is aborted .

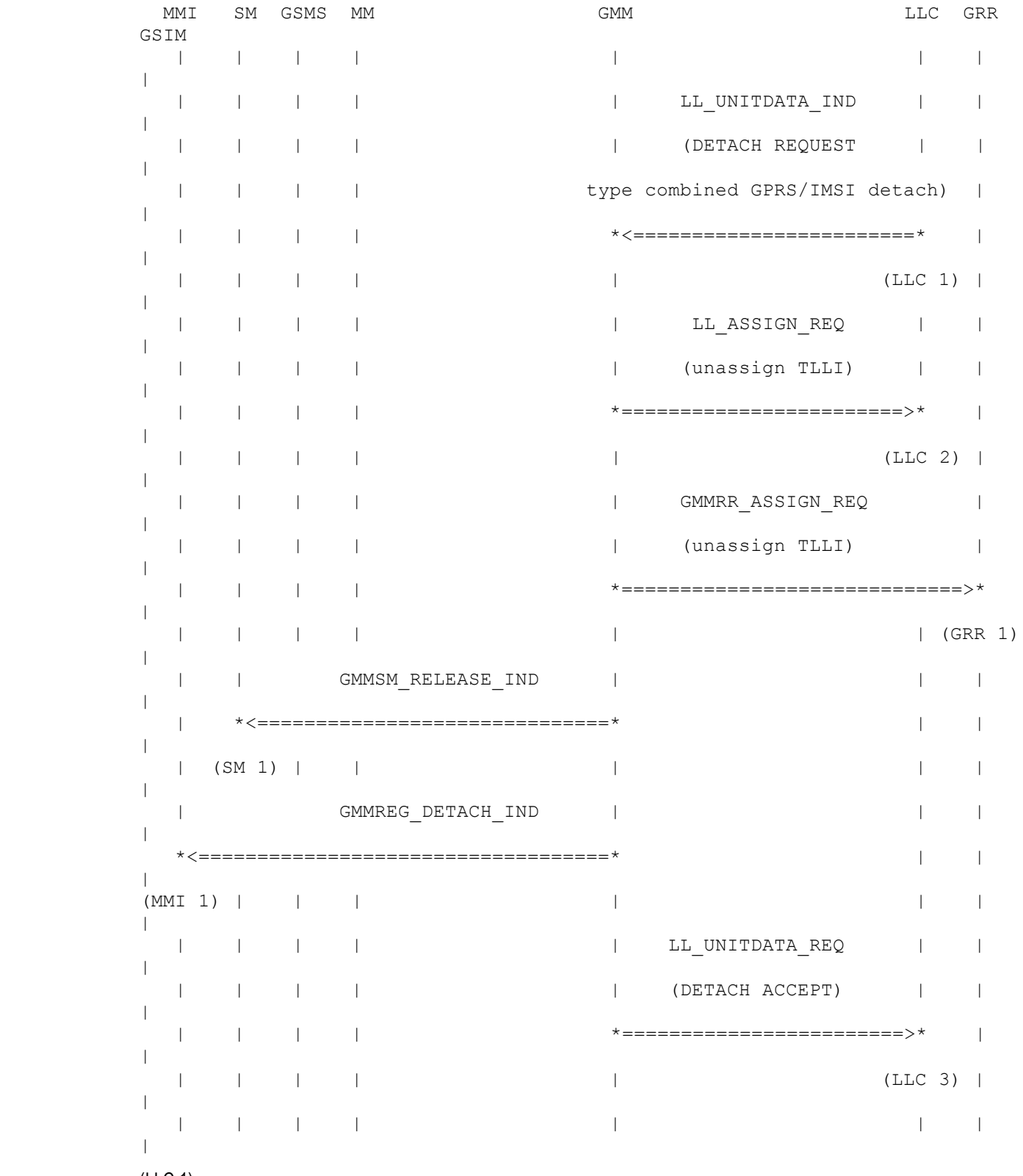
<R.GMM.DMABNORM.M.017>

(GMM 2)
The RAU procedure (see 4.11) is performed. The rau_whilst_detach variable is set.

<R.GMM.DMABNORM.M.018>, <R.GMM.DMABNORM.M.019>

4.10.5 Network initiated GPRS detach procedure (completion)

4.10.5.1 Re-attach required



(LLC 1)

GMM receives a DETACH REQUEST message with detach type 'GPRS detach' or 'combined GPRS/IMSI detach' from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM enters state GMM-DEREGISTERED.

<R.GMM.DINITN.I.001>, <R.GMM.DNACM.M.003>

(LLC 2)
GMM informs LLC, that the GMM context is released.

<R.GMM.DNACM.M.003>, <R.GMM.DETACH.A.004>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.DNACM.M.003>, <R.GMM.DETACH.A.004>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DNACM.M.001>, <R.GMM.DNACM.M.003>, <R.GMM.DETACH.A.004>

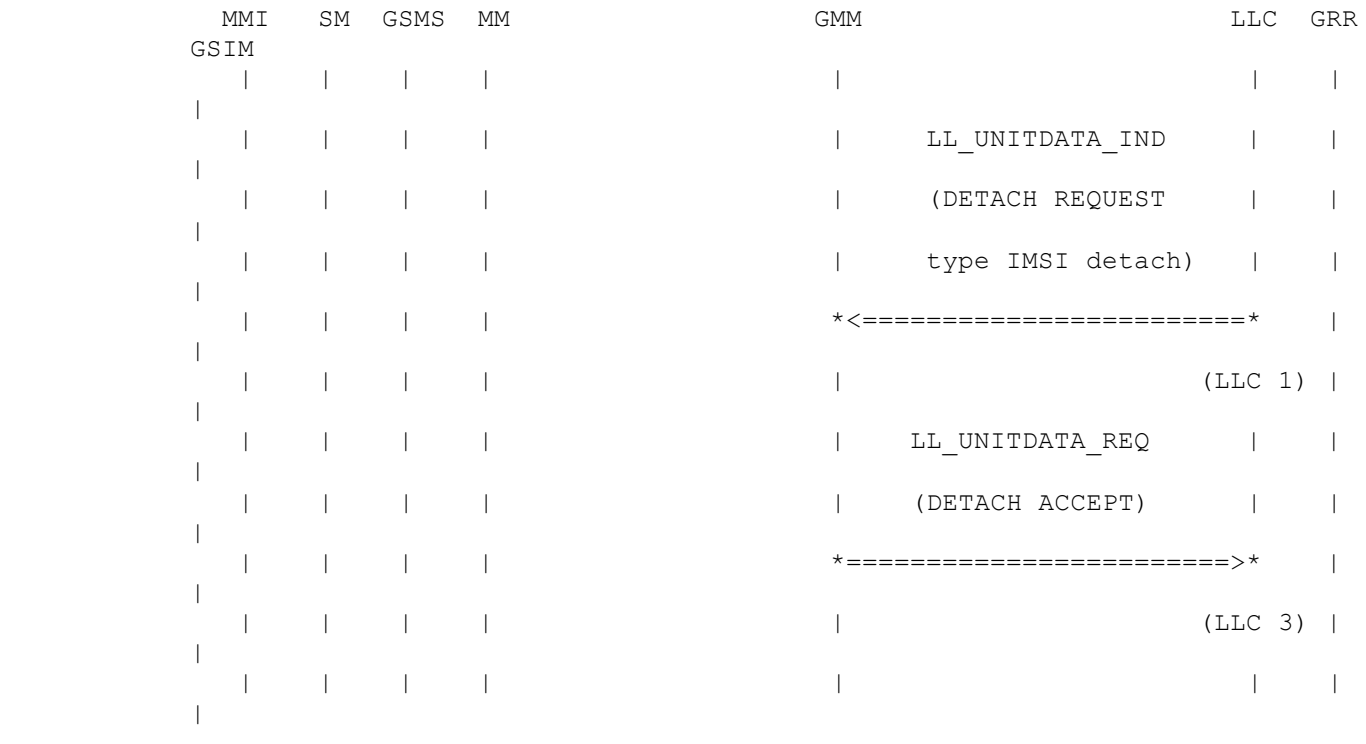
(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DNACM.M.003>, <R.GMM.DETACH.A.004>

(LLC 3)
If GMM cause indicates no error, GMM transmits the DETACH ACCEPT message to the network by sending the LL_UNITDATA_REQ primitive to LLC. If GPRS attach procedure is followed, if indicated by the network in the detach type IE.

<R.GMM.DNACM.M.002>, <R.GMM.DNACM.M.004>

4.10.5.2 IMSI detach



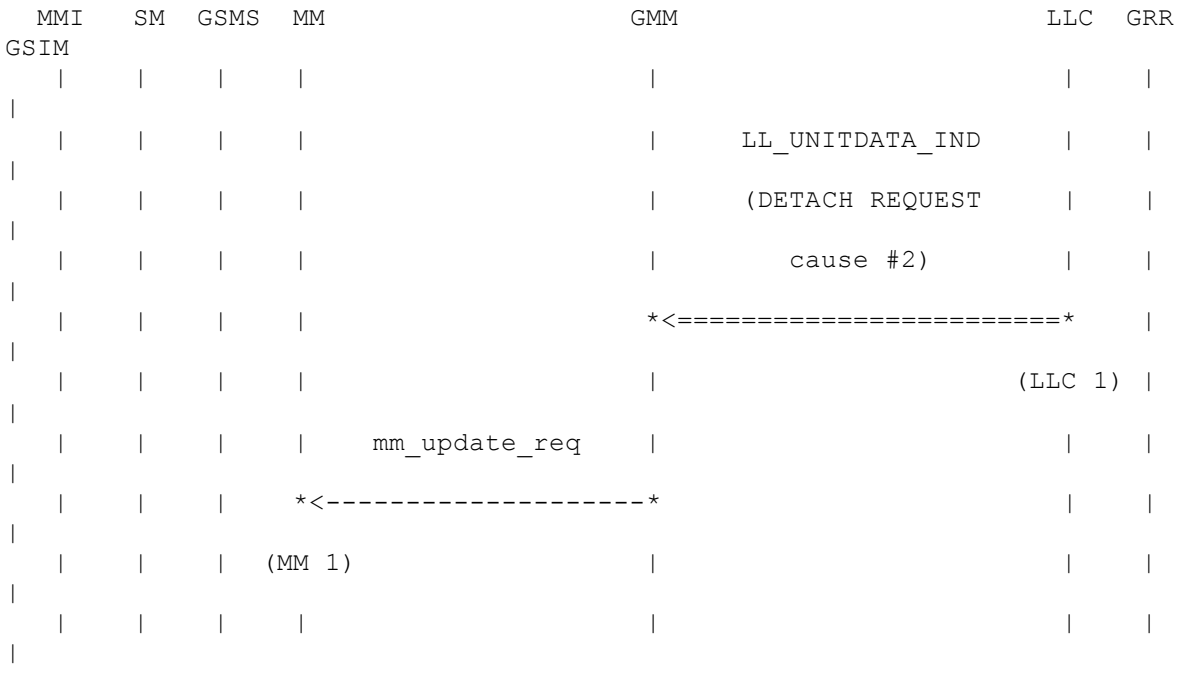
(LLC 1)
GMM receives a DETACH REQUEST message with detach type 'IMSI detach' from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM informs MM, that IMSI detach is requested.

<R.GMM.DINITN.I.001>, <R.GMM.DETACH.A.004>

(LLC 3)
If GMM cause indicates no error, GMM transmits the DETACH ACCEPT message to the network by sending the LL_UNITDATA_REQ primitive to LLC.

<R.GMM.DNACM.M.005>

4.10.5.3 GMM cause #2 (IMSI unknown in HLR)



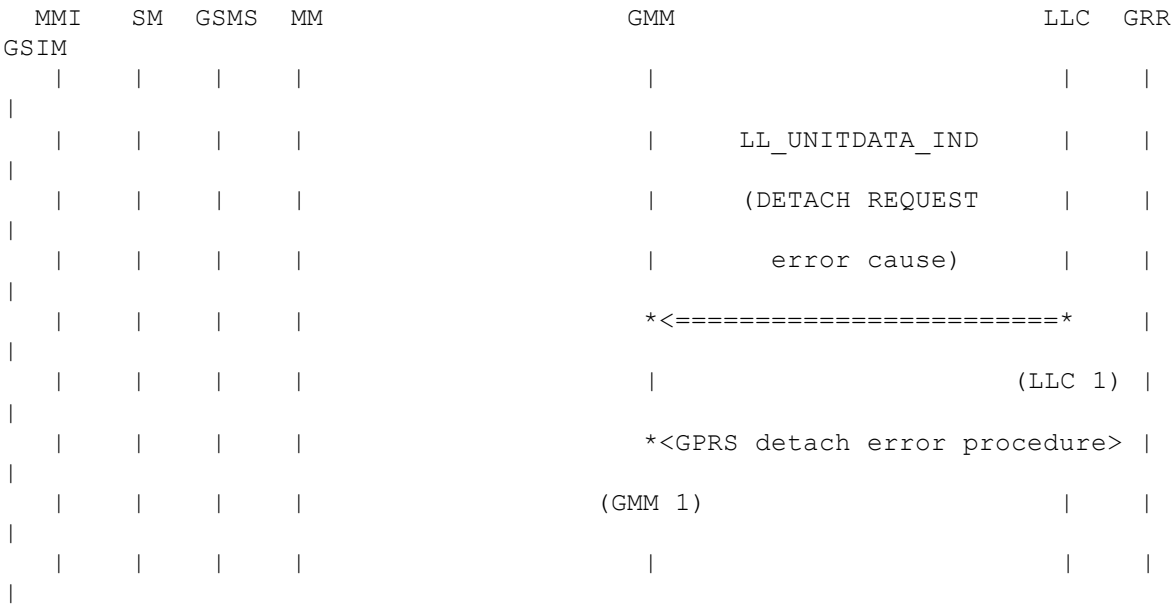
(LLC 1)
GMM receives a DETACH REQUEST message indicating the error GMM cause #2 from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM informs MM, that error cause #2 was occurred.

<R.GMM.DNACM.M.006>, <R.GMM.DNACM.M.007>, <R.GMM.DNACM.M.008>, <R.GMM.DNACM.M.009>, <R.GMM.DETACH.A.004>

(MM 1)
MM has to delete TMSI, LAI and ciphering key sequence number.

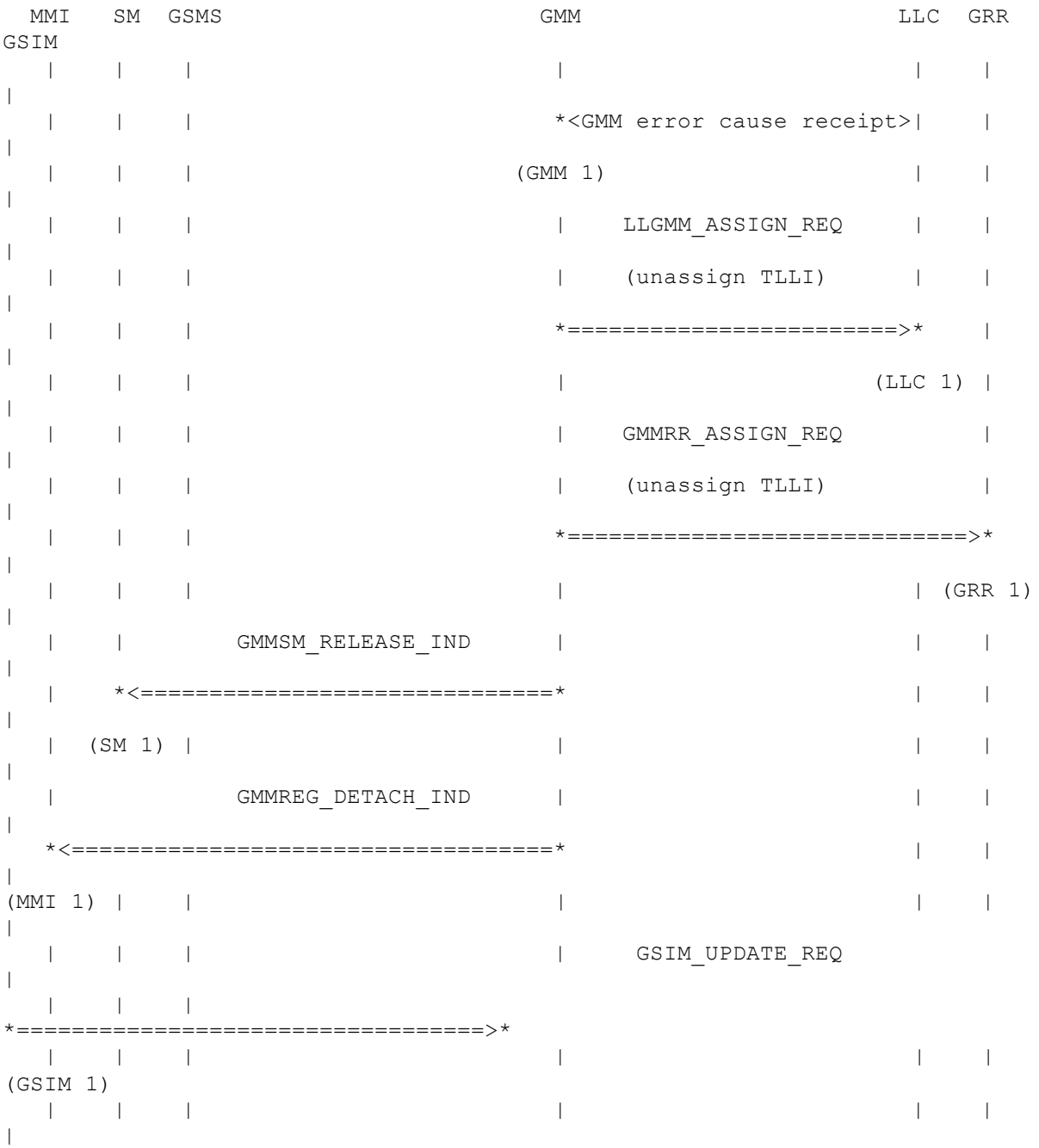
<R.GMM.DNACM.A.007>, <R.GMM.DNACM.A.009>

4.10.5.4 GMM cause #3, #6, #7, #8, #10, #11, #12 or #13



(LLC 1)
GMM receives a DETACH REQUEST message indicating an error from the network by getting a LL_UNITDATA_IND primitive from LLC. On error cause #3, #6, #8, #11 to #13 and if the MS is (also) IMSI attached, than GMM informs MM that error cause was occurred. The procedure “GPRS detach or combined GPRS/IMSI detach after REJECT messages” is followed.

4.10.6 GPRS detach or combined GPRS/IMSI detach due to receipt of GMM error



(GMM 1)
The network has informed the MS, than an error has occurred. This procedure is started only, if in other procedure this procedure is called.

(LLC 1)
GMM informs LLC, that the GMM context is released.

(GRR 1)
GMM informs GRR, that the GMM context is released.

(SM 1)
GMM informs SM, that the GMM context is released. GMM enters state GMM-DEREGISTERED.

<R.GMM.DNACM.M.001>, <R.GMM.DNACM.M.003>

(GSIM 1)
GMM enters GPRS update state GU3 ROAMING NOT ALLOWED. GMM enters state GMM-DEREGISTERED. On error cause #11, #12 or #13 the primitive GSIM_UPDATE_REQ is not sent.

<R.GMM.GUPDATE.M.001>, <R.GMM.GUPDATE.M.002>, <R.GMM.GUPDATE.M.003>, <R.GMM.GUPDATE.M.004>, <R.GMM.GUPDATE.M.005>, <R.GMM.DNACM.M.011>, <R.GMM.DNACM.M.012>, <R.GMM.DNACM.M.013>, <R.GMM.DNACM.M.014>, <R.GMM.DNACM.M.015>, <R.GMM.DNACM.M.016>, <R.GMM.DNACM.M.018>, <R.GMM.DNACM.M.019>, <R.GMM.DNACM.M.020>, <R.GMM.DNACM.M.021>, <R.GMM.DNACM.M.022>, <R.GMM.DNACM.M.022>, <R.GMM.DNACM.M.023>, <R.GMM.DNACM.M.024>, <R.GMM.DNACM.M.025>, <R.GMM.DNACM.M.026>, <R.GMM.DNACM.M.027>, <R.GMM.DNACM.M.028>, <R.GMM.DNACM.M.029>, <R.GMM.DNACM.M.030>, <R.GMM.DNACM.M.031>, <R.GMM.DNACM.M.032>, <R.GMM.DNACM.M.033>, <R.GMM.DNACM.M.034>, <R.GMM.DNACM.M.035>, <R.GMM.DNACM.M.036>, <R.GMM.DNACM.M.037>

4.11 Normal/periodic/combined RAU procedure initiation

(GMM 1)
The periodic RAU procedure is started due to one of the following reasons:
- If GMM is in state GMM-REGISTERED, MM is in state IDLE, and timer T3312 expires.
- If GMM is in state GMM-REGISTERED and timer T3312 expires.

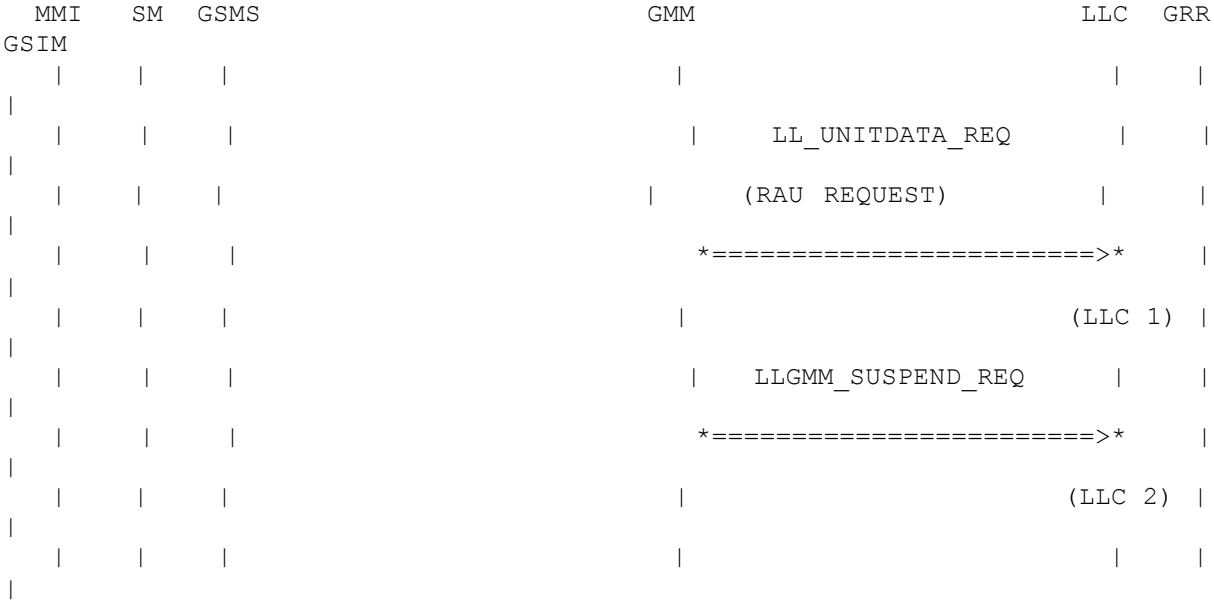
The normal RAU procedure is started due to one of the following reasons:
- If the network operates in mode II or III, GMM is in state GMM-REGISTERED, MM is in state IDLE, and the RA has changed.
- If the network operates in mode II or III, GMM is in state GMM-REGISTERED, MM is in state IDLE, and GRR indicated a resumption failure after dedicated mode was left.
- If GMM is in state GMM-REGISTERED and the RA has changed.

The combined RAU procedure is started due to one of the following reasons:
- If the network operates in mode I, GMM is in state GMM-REGISTERED, MM is in state IDLE, and the RA and LA has changed.
- If the network operates in mode I, GMM is in state GMM-REGISTERED, MM is not in state IDLE, and the RA and LA has changed.
- If the network operates in mode I, GMM is in state GMM-REGISTERED, MM is in state IDLE, and GRR indicated a re-sumption failure after dedicated mode was left.
- If the network operates in mode I, GMM is in state GMM-REGISTERED, MM is not in state IDLE, and GRR indicated a resumption failure after dedicated mode was left.
- If the network operates in mode I, GMM is in state GMM-REGISTERED, and an IMSI attach is requested.
- If the network operates in mode I, GMM is in state GMM-REGISTERED, the LA has changed during a non-GPRS service transaction, and the non-GPRS service transaction has ended.
- If the LA has changed during a non-GPRS service transaction, and the non-GPRS service transaction has ended.

<R.GMM.RAU.M.001>, <R.GMM.RAU.M.002>, <R.GMM.RAU.M.003>, <R.GMM.RAU.M.004>, <R.GMM.RAU.M.005>, <R.GMM.RAU.M.006>, <R.GMM.RAU.M.007>, <R.GMM.RAU.M.014>, <R.GMM.RAUNORM.M.001>, <R.GMM.RAUNORM.M.004>, <R.GMM.RAUNORM.M.005>, <R.GMM.RAUNORM.M.006>, <R.GMM.RAUNORM.M.007>, <R.GMM.RCINIT.M.001>, <R.GMM.RCINIT.M.002>, <R.GMM.RCINIT.M.003>, <R.GMM.RCINIT.M.006>

4.12 Normal and periodic RAU procedure

4.12.1 Normal/periodic RAU procedure initiation



(LLC 1)
GMM is in state GMM_REGISTERD. GMM transmits the RAU REQUEST message to the network by sending the primitive LL_UNITDATA_REQ to LLC. The timer T3330 is started. GMM enters state GMM-ROUTING-AREA-UPDATE-INITIAED. The normal RAU procedure aborts any ongoing GMM procedure. The variable(s) rau_whilst_<procedure> is set.

<R.GMM.RNINIT.M.001>, <R.GMM.RNINIT.M.002>, <R.GMM.RNINIT.M.003>, <R.GMM.RNINIT.A.004>, <R.GMM.RAU.M.006>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>, <R.GMM.RAUNORM.M.009>, <R.GMM.DMABNORM.M.017>, <R.GMM.RAUNORM.M.002>, <R.GMM.RAUNORM.M.004>, <R.GMM.RAUNORM.A.006>,<R.GMM.RAUNORM.M.007>, <R.GMM.RAUNORM.A.011>

(LLC 2)
User data transmission in LLC is suspended during RAU procedure.

<R.GMM.RAU.M.015>, <R.GMM.RAU.M.016>

4.12.2 Normal/periodic RAU accepted by the network, not including P-TMSI and/or LLC V(R)

(GMM 1)
GMM receives a RAU ACCEPT message not containing a P-TMSI or LLV V(R) value from the network by getting a LL_UNITDATA_IND primitive from LLC. The timer T3330 is stopped and the RAU attempt counter is reset.

<R.GMM.RNACCEPT.M.008>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RNACCEPT.M.008>, <R.GMM.RNACCEPT.M.009>, <R.GMM.RAU.M.009>

(GSIM 1)
GMM enters GPRS update status GU2. GMM stores the P-TMSI and the RAI on the SIM. The used P-TMSI signature is deleted. GMM enters state GU1 UPDATED.

<R.GMM.RNACCEPT.M.007>, <R.GMM.RNACCEPT.M.010>, <R.GMM.RNACCEPT.M.011>, <R.GMM.RNACCEPT.M.012>, <R.GMM.RNACCEPT.M.013>, <R.GMM.RNACCEPT.M.004>, <R.GMM.RNACCEPT.M.015>, <R.GMM.RNACCEPT.M.016>, <R.GMM.GUPDATE.M.005>

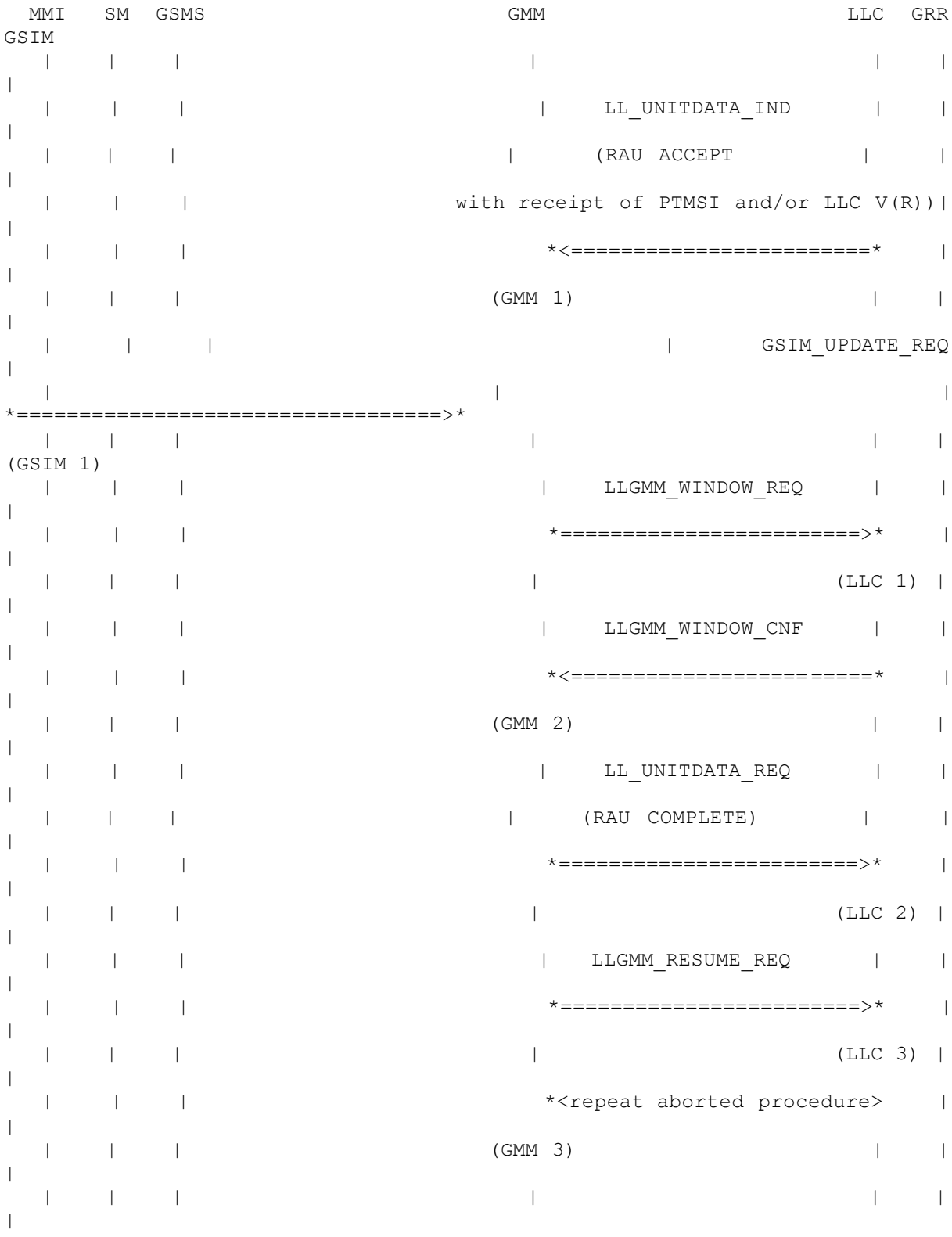
(LLC 1)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

(GMM 2)
Aborted GMM procedures are repeated and the variable (s) rau_whilst_<procedure> is set to false.

<R.GMM.RAUNORM.M.010>, <R.GMM.DMABNORM.M.019>

4.12.3 Normal/periodic RAU accepted by the network, including P-TMSI and/or LLC V(R)



(GMM 1)

GMM receives a RAU ACCEPT message containing a P-TMSI and/or LLV V(R) values from the network by getting a LL_UNITDATA_IND primitive from LLC. The timer T3330 is stopped and the RAU attempt counter is reset. GMM enters state GU1 UPDATED.

<R.GMM.RNACCEPT.M.008>, <R.GMM.PTMSISIG.A.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>, <R.GMM.RAU.M.009>

(GSIM 1)
GMM stores the P-TMSI and the RAI on the SIM.

<R.GMM.RNACCEPT.M.007>, <R.GMM.RNACCEPT.M.0010>, <R.GMM.RNACCEPT.M.011>, <R.GMM.RNACCEPT.M.012>, <R.GMM.RNACCEPT.M.013>, <R.GMM.RNACCEPT.M.004>, <R.GMM.RNACCEPT.M.015>, <R.GMM.RNACCEPT.M.016>, <R.GMM.PTMSISIG.M.005>

(LLC 1)
GMM requests the current values of the receive state variables V(R) for all SAPIs that are currently in ABM mode of operation. Additionally, the primitive LLGMM_WINDOW_REQ (V(R)s) is used to deliver V(R) values from the SGSN via GMM to LLC. LLC treats the received values as acknowledgements for all transmitted I frames with N(S) < V(R).

<R.LLC.M_WINDOW.A.001>, <R.LLC.M_WINDOW.M.002>

(GMM 2)
LLC delivers the current values of the receive state variables V(R) for all SAPIs that are currently in ABM mode of operation to GMM with the primitive LLGMM_WINDOW_CNF (V(R)s).

<R.GMM.RNACCEPT.M.017>

(LLC 2)
GMM transmits a RAU COMPLETE message to the network by sending the primitive LL_UNITDATA_REQ to LLC.

<R.GMM.RNACCEPT.M.006>, <R.GMM.RNACCEPT.M.007>

(LLC 3)
User data transmission is resumed in LLC.

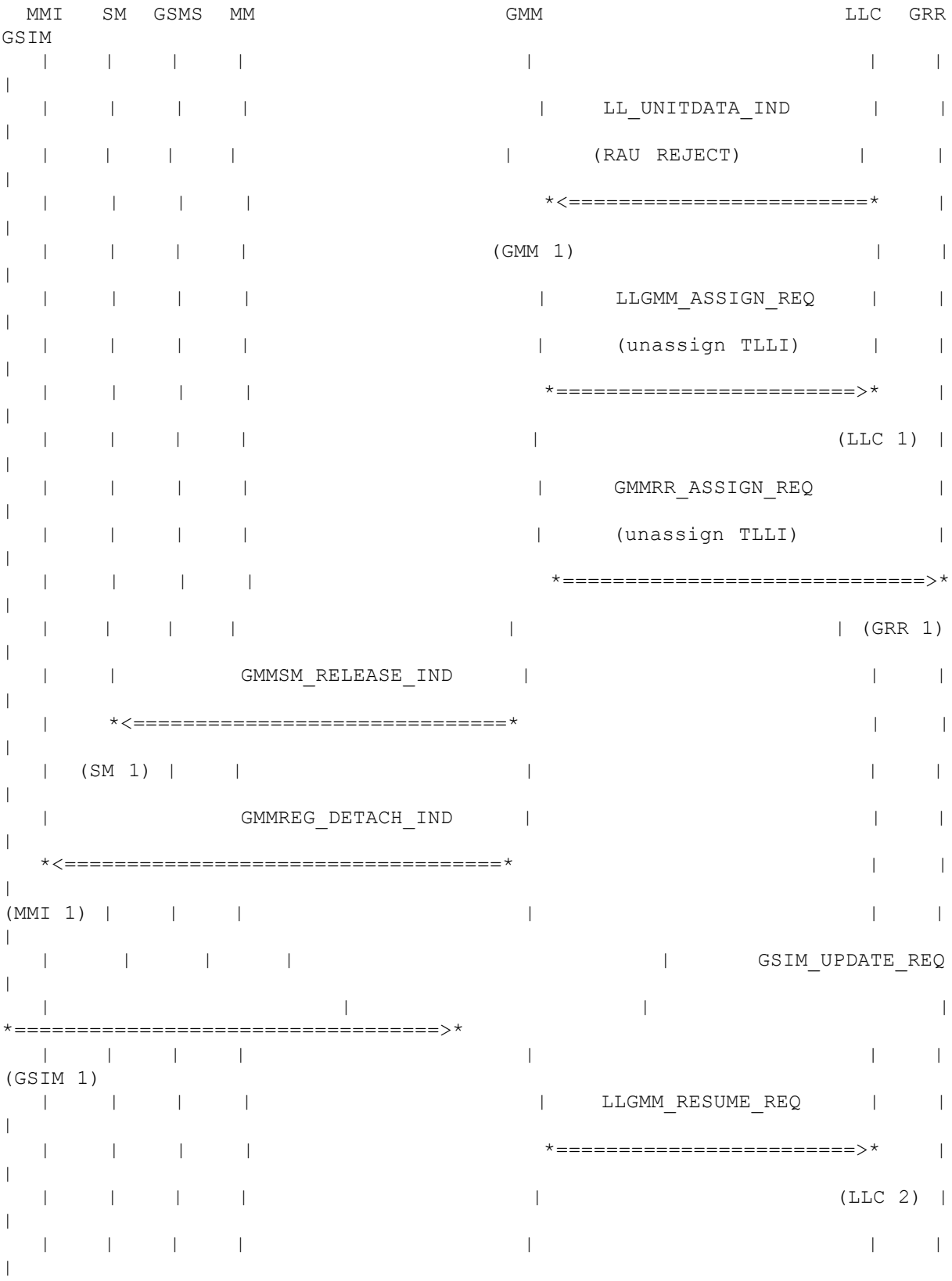
<R.GMM.RAU.M.015>

(GMM 3)
Aborted GMM procedures are repeated and the variable (s) rau_whilst_<procedure> is set to false.

<R.GMM.RAUNORM.M.010>, <R.GMM.DMABNORM.M.019>

4.12.4 Normal/periodic RAU not accepted by the network

4.12.4.1 Reject cause #3 or #6, MS is not IMSI attached via MM procedures



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     |        |        |        |                                  |                                        |        |
|
     |        |        |        |                                  |                                        |        |
|
```

(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #3 or #6) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.RNREJECT.M.002>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

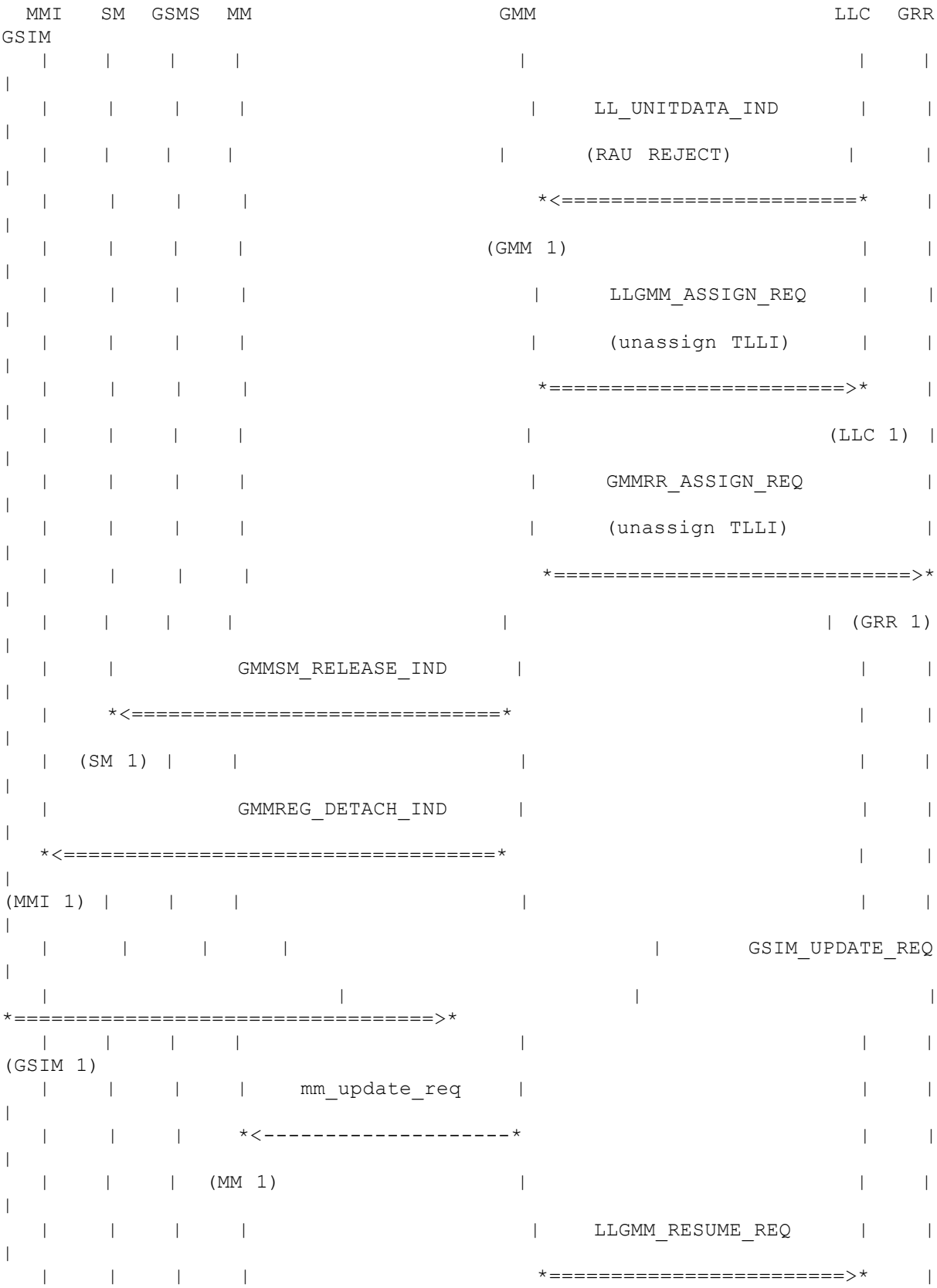
(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.

<R.GMM.RNREJECT.M.003>, <R.GMM.RNREJECT.M.005>, <R.GMM.RNREJECT.M.006>

(LLC 2)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.12.4.2 Reject cause #3 or #6, MS is IMSI attached via MM procedures



```
    |       |       |       |                              |                                (LLC 2)  |
|
    |       |       |       |                              |                                    |       |
|
```

(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #3 or #6) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.IMSI.

<R.GMM.RNREJECT.M.002>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>

(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.

<R.GMM.RNREJECT.M.003>, <R.GMM.RNREJECT.M.005>, <R.GMM.RNREJECT.M.006>

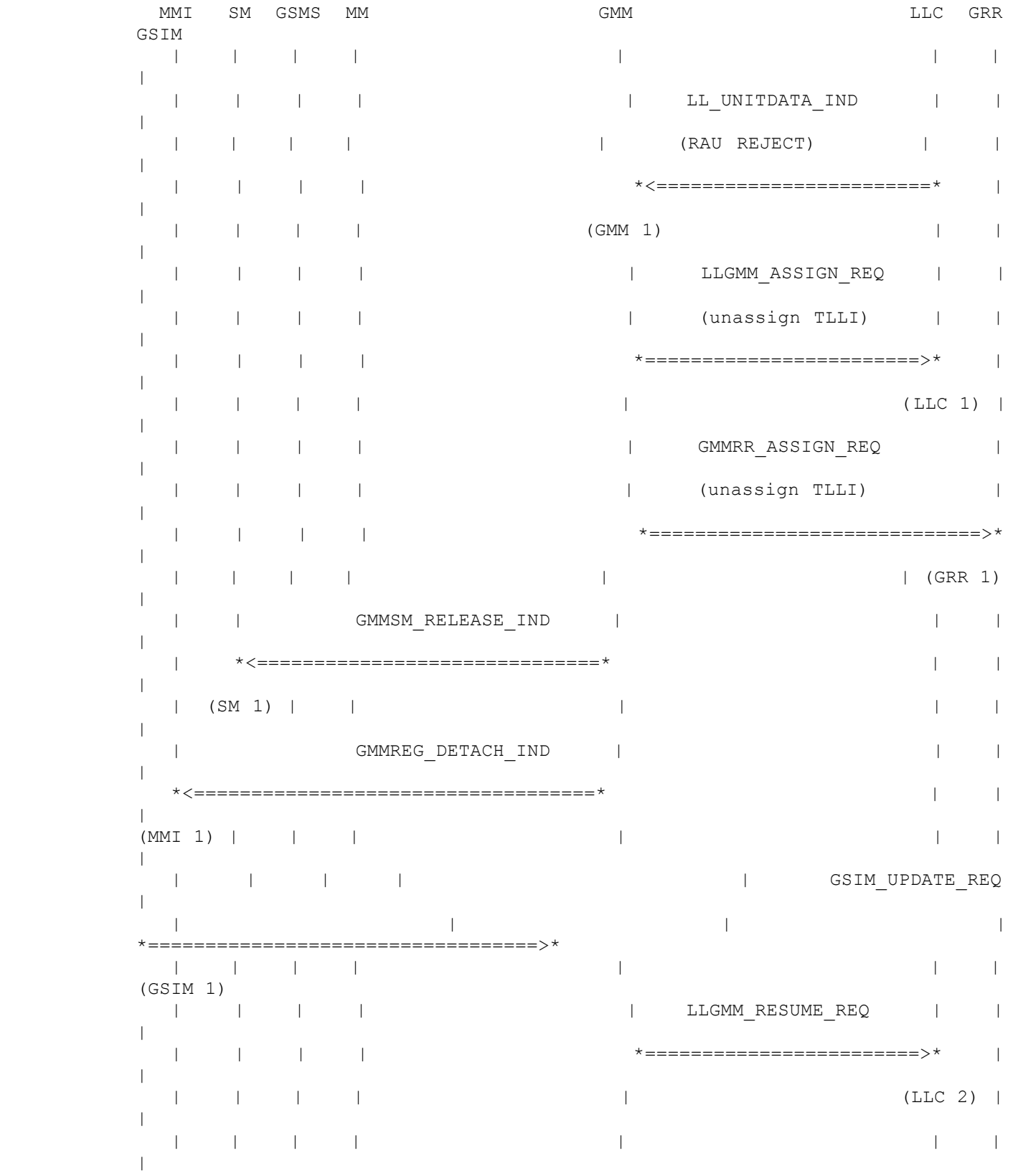
(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. The SIM is considered as invalid. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.RNREJECT.M.007>, <R.GMM.RNREJECT.M.008>, <R.GMM.RNREJECT.M.009>, <R.GMM.RNREJECT.M.010>

(LLC 2)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.12.4.3 Reject cause #9



(LLC 1)

GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #9) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

<R.GMM.RNREJECT.M.011>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RNREJECT.M.011>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RNREJECT.M.011>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RNREJECT.M.011>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RNREJECT.M.011>

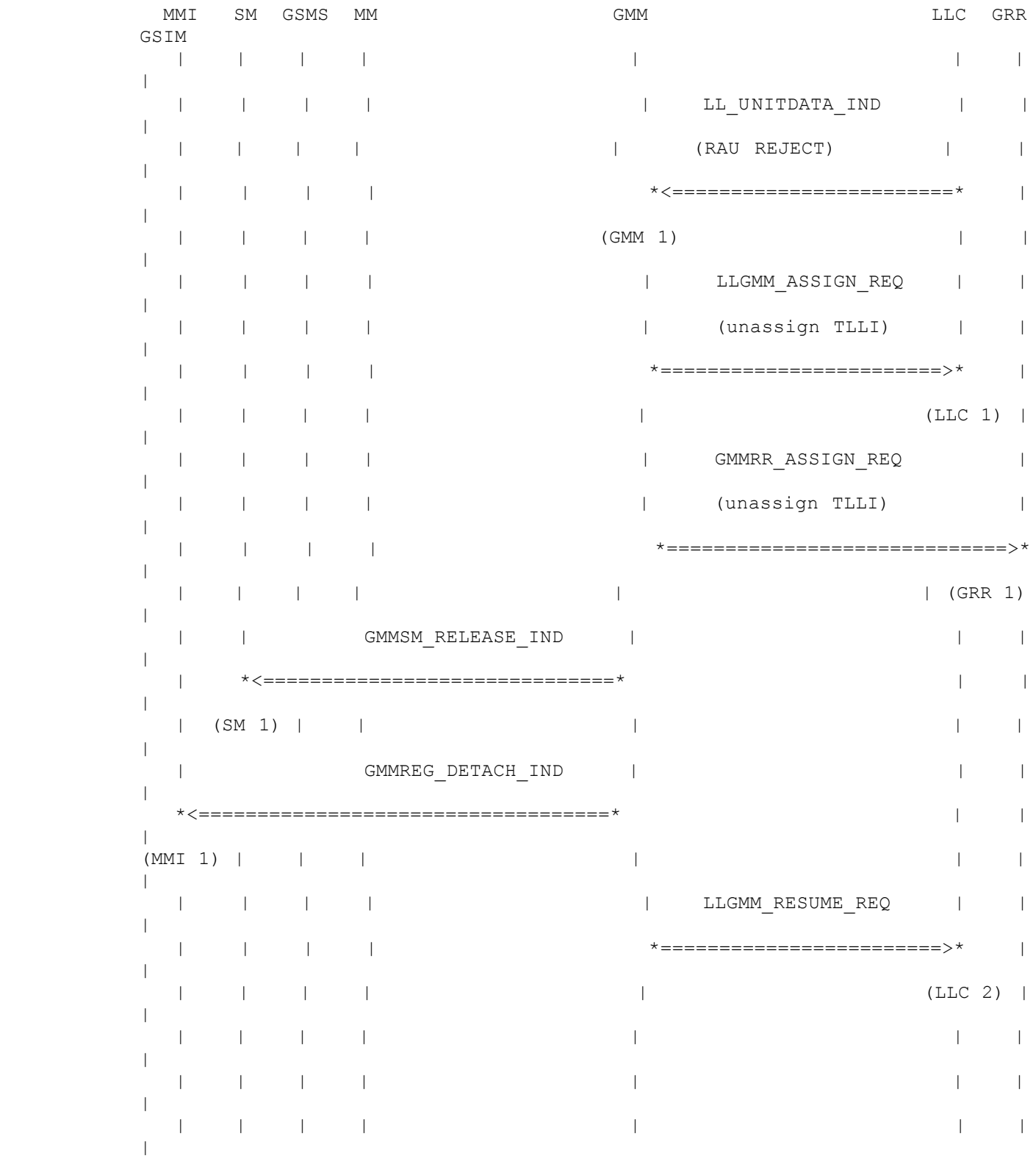
(GSIM 1)
GMM sets the GPRS update status to GU2 NOT UPDATED.

<R.GMM.RNREJECT.M.012>, <R.GMM.RNREJECT.M.013>, <R.GMM.RNREJECT.M.014>

(LLC 2)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.12.4.4 Reject cause #10



(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #10) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.NORMAL-SERVICE.

<R.GMM.RNREJECT.M.002>, <R.GMM.RNREJECT.M.015>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RNREJECT.M.015>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RNREJECT.M.015>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RNREJECT.M.015>

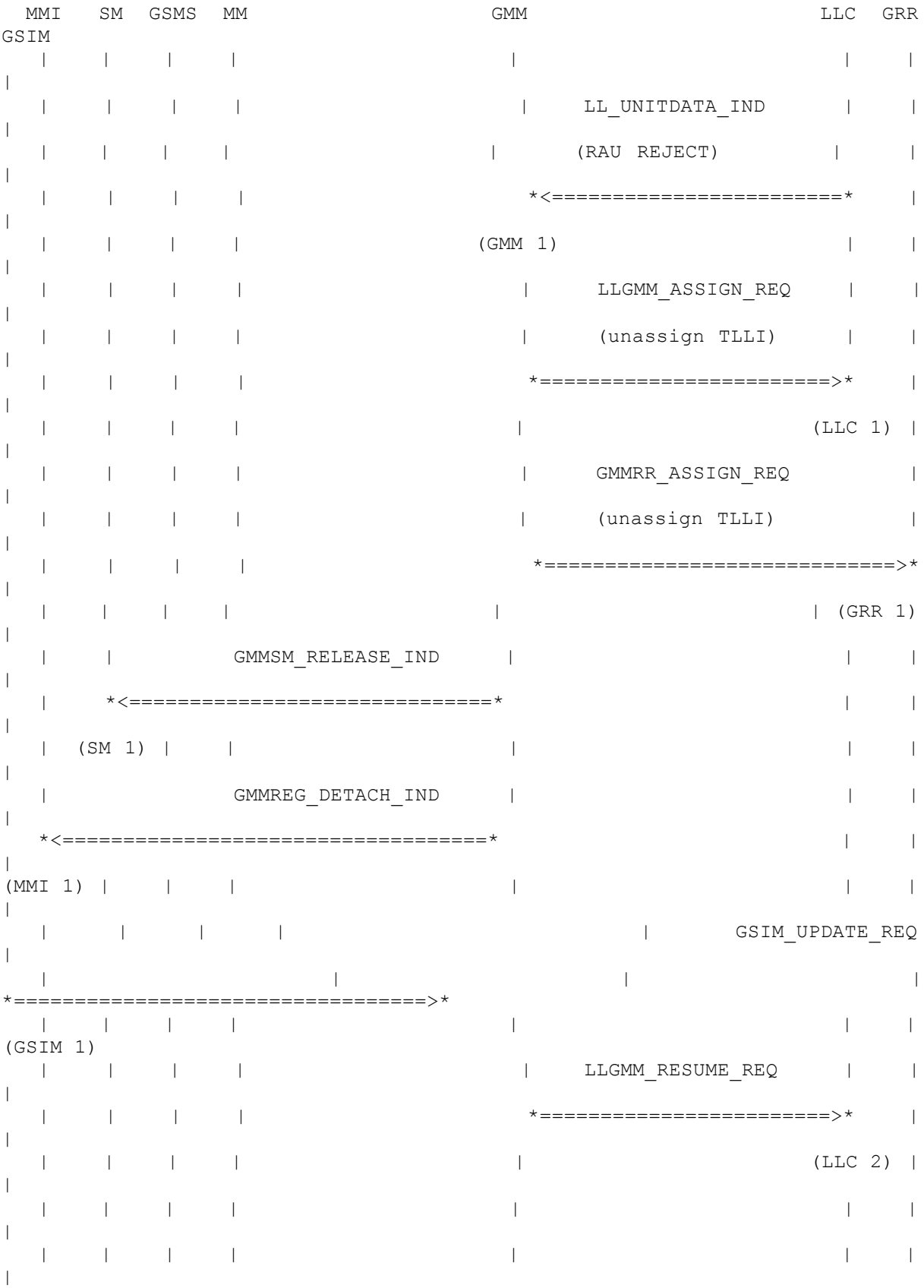
(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RNREJECT.M.015>

(LLC 2)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.12.4.5 Reject cause #11, #12 or #13, MS is IMSI not attached via MM procedures



| | | | | | | |
|

(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

The RAU attempt counter is reset.

<R.GMM.RNREJECT.M.002>, <R.GMM.RNREJECT.M.019>, <R.GMM.RAU.M.010>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RNREJECT.M.019>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RNREJECT.M.019>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RNREJECT.M.019>

(MMI 1)
GMM informs MMI, that GMM context is released.

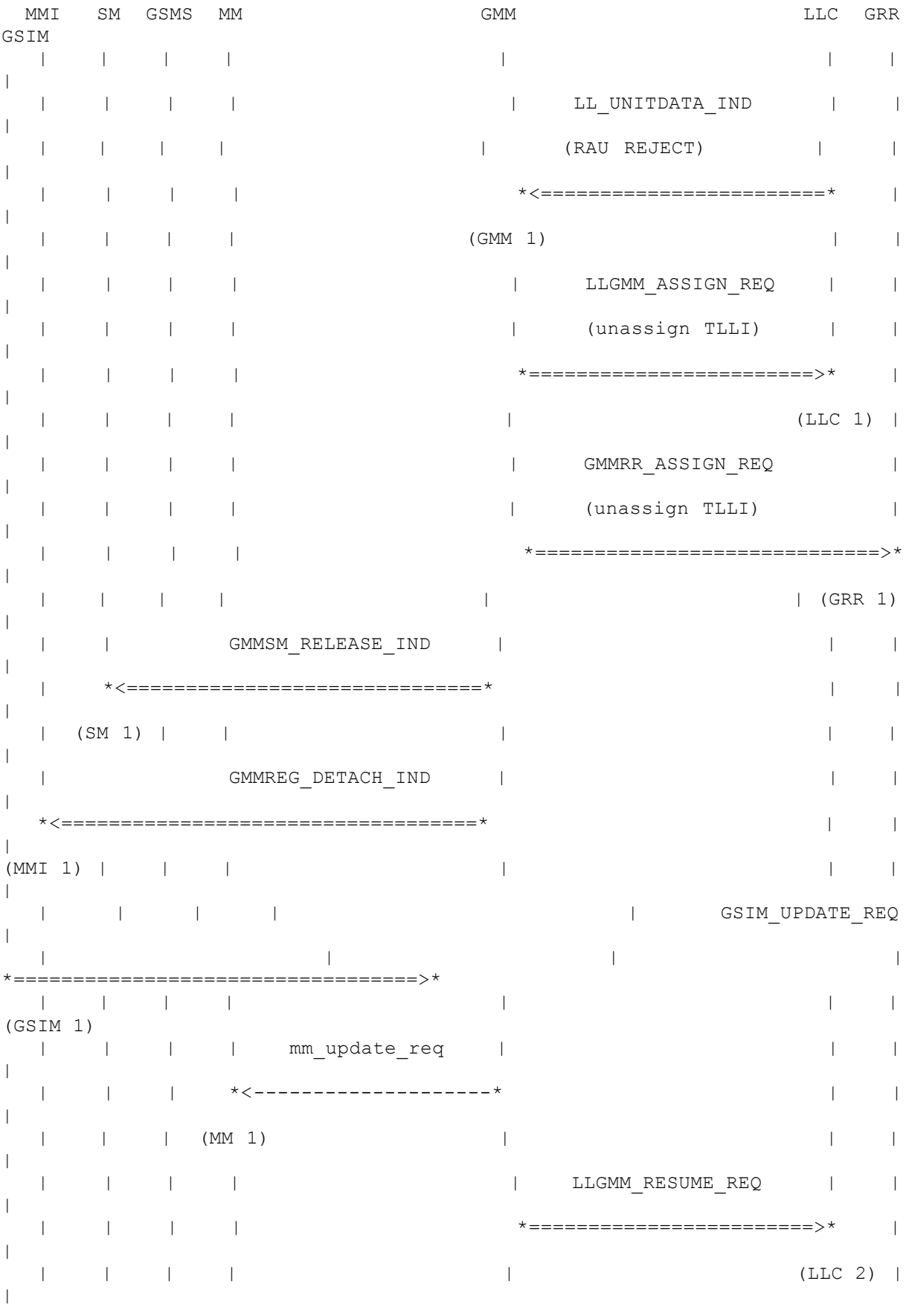
<R.GMM.RNREJECT.M.019>

(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED.

<R.GMM.RNREJECT.M.017>, <R.GMM.RNREJECT.M.018>

(LLC 2)
User data transmission is resumed in LLC.
<R.GMM.RAU.M.015>

4.12.4.6 Reject cause #11, #12 or #13, MS is IMSI attached via MM procedures



(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

The RAU attempt counter is reset.

<R.GMM.RNREJECT.M.002>, <R.GMM.RNREJECT.M.019>, <R.GMM.RAU.M.010>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RNREJECT.M.019>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RNREJECT.M.019>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RNREJECT.M.019>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RNREJECT.M.019>

(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED.

<R.GMM.RNREJECT.M.017>, <R.GMM.RNREJECT.M.018>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE and update state U3 ROAMING NOT ALLOWED.

<R.GMM.RNREJECT.M.020>, <R.GMM.RNREJECT.M.021>, <R.GMM.RNREJECT.M.022>, <R.GMM.RNREJECT.M.023>, <R.GMM.RNREJECT.M.024>, <R.GMM.RNREJECT.M.025>, <R.GMM.RNREJECT.M.026>, <R.GMM.RNREJECT.M.027>

(LLC 2)
User data transmission is resumed in LLC.
<R.GMM.RAU.M.015>

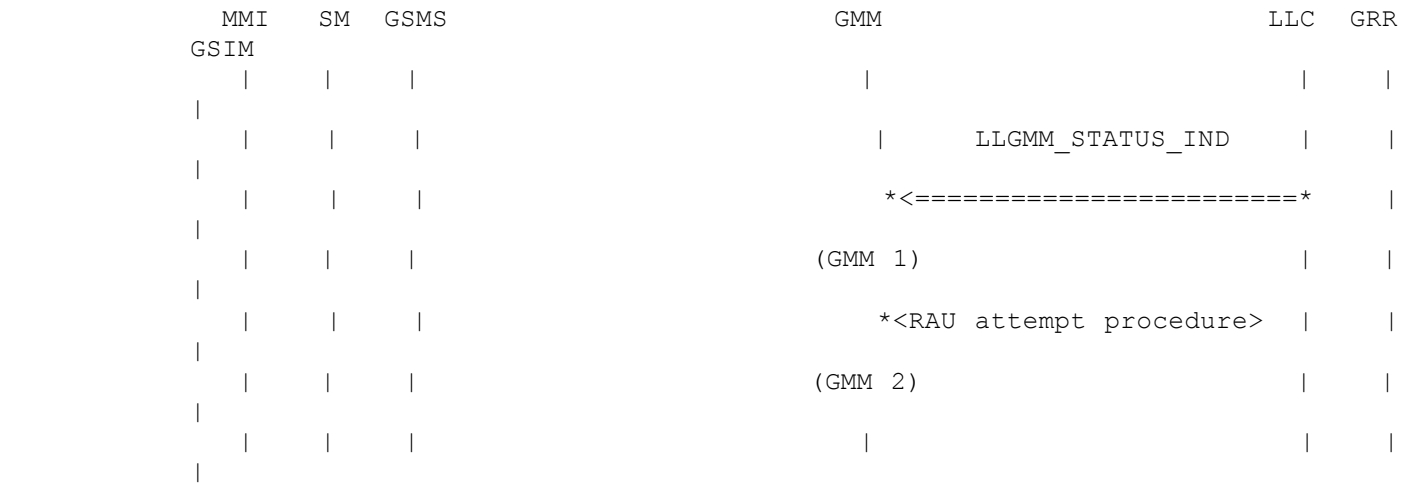
4.12.5 Abnormal cases

4.12.5.1 a) Access barred because of access class control

<R.GMM.RNABNORM.M.001>, <R.GMM.RNABNORM.M.002>, <R.GMM.RNABNORM.M.003>

4.12.5.2 b) Lower layer failure before the RAU ACCEPT or RAU REJECT message is received

4.12.5.2.1 Lower layer failure from GRR



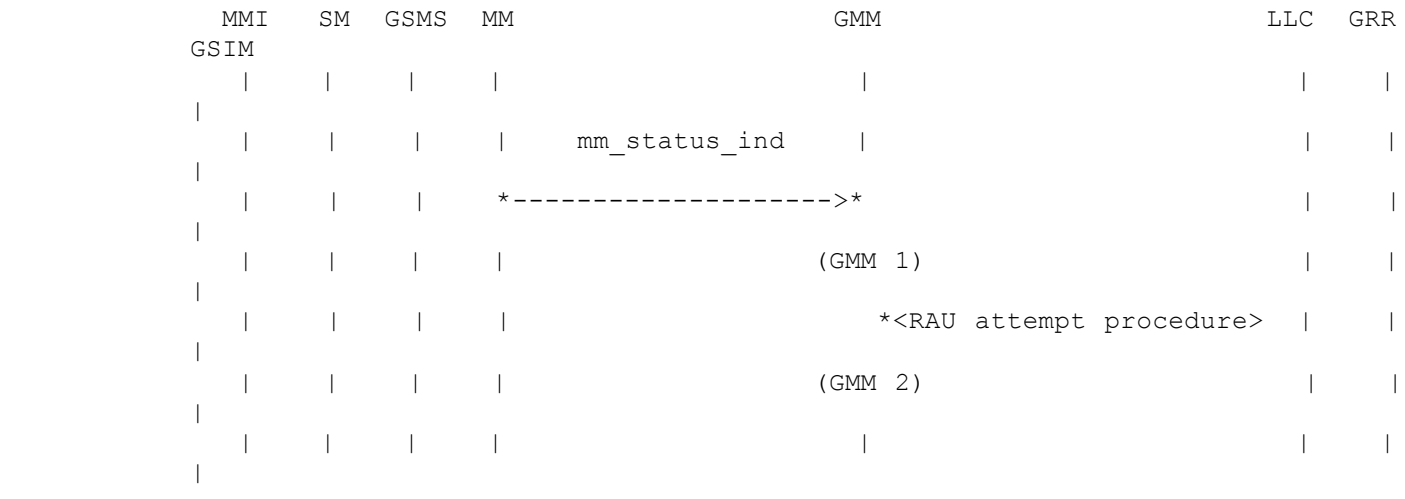
(GMM 1)
The RAU procedure is aborted.

<R.GMM.RNABNORM.M.004>

(GMM 2)
The RAU attempt procedure is started (see 4.12.6).

<R.GMM.RNABNORM.M.005>

4.12.5.2.2 Lower layer failure from RR over MM



(GMM 1)
The RAU procedure is aborted.

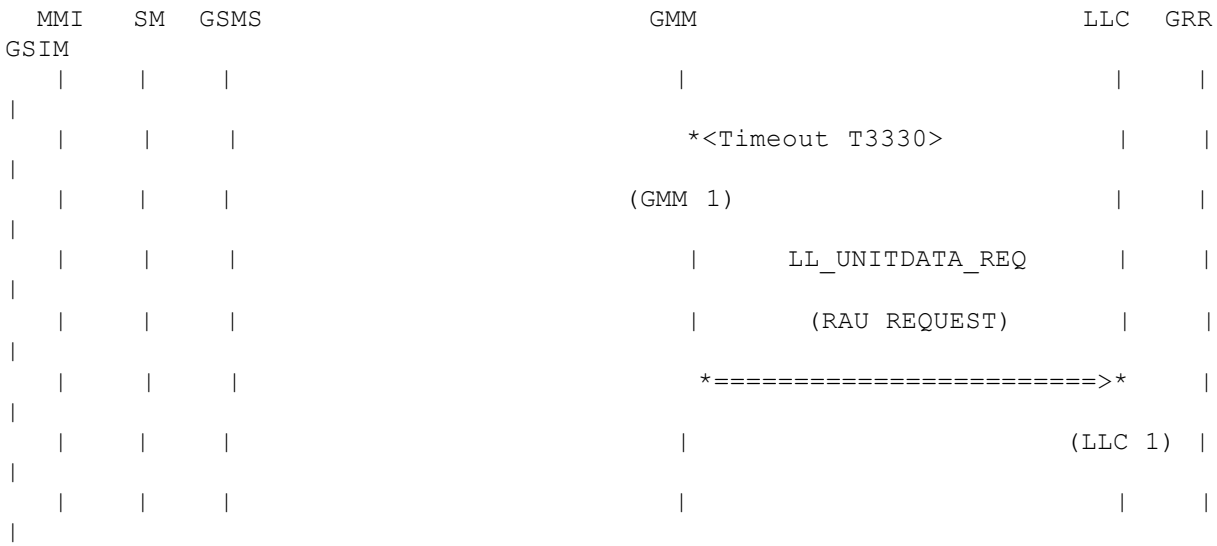
<R.GMM.RNABNORM.M.004>

(GMM 2)
The RAU attempt procedure is started (see 4.12.6).

<R.GMM.RNABNORM.M.005>

4.12.5.3 c) T3330 time-out

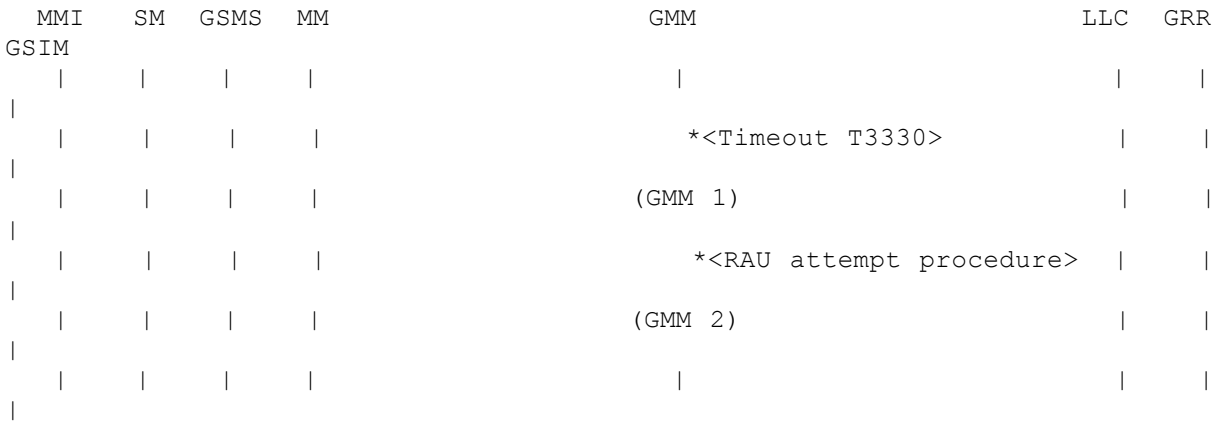
4.12.5.3.1 Maximum retransmissions not reached



(GMM 1)
Timeout of timer T3330 for the first, second, third or fourth time. GMM restarts timer T3330.
<R.GMM.RNBNORM.M.006>, <R.GMM.RNINIT.M.002>

(LLC 1)
GMM retransmits the RAU REQUEST message to the network by sending the primitive LL_UNITDATA_REQ to LLC.
<R.GMM.RNABNORM.M.007>, <R.GMM.RNINIT.M.001>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RNINIT.M.002>, <R.GMM.RNINIT.M.003>, <R.GMM.RNINIT.A.004>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>

4.12.5.3.2 Maximum retransmissions reached

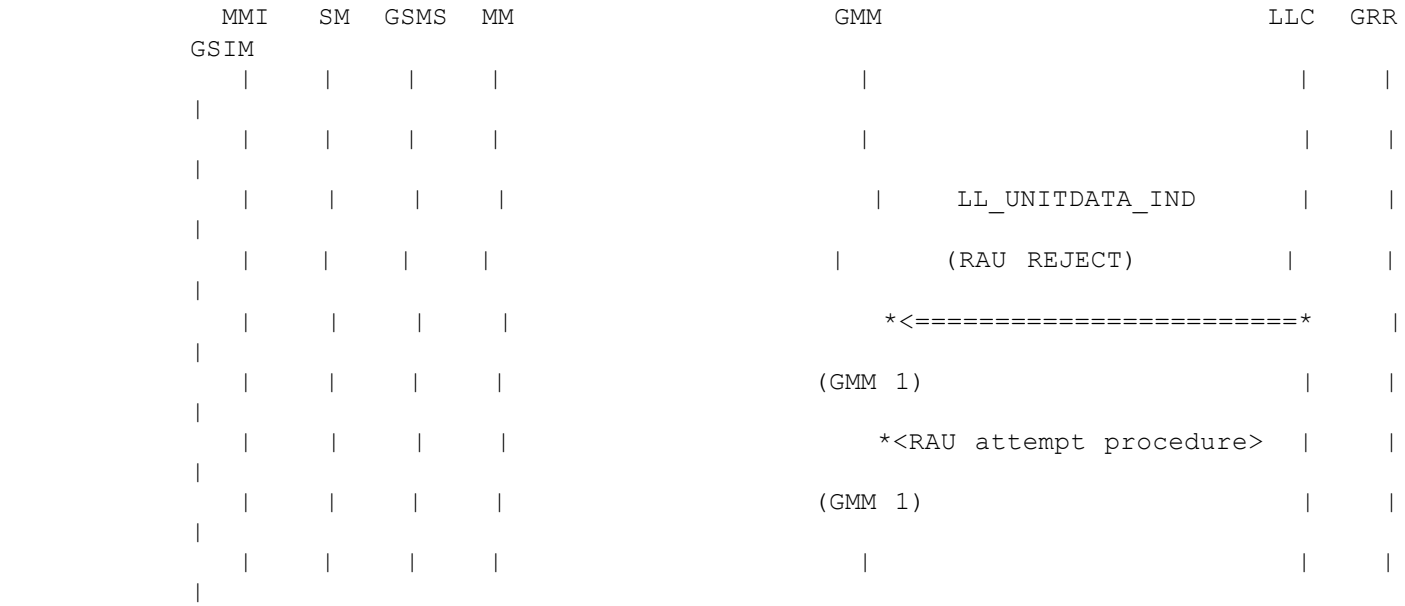


(GMM 1)
Timeout of timer T3330 for the fifth time.
<R.GMM.RNABNORM.M.008>

(GMM 2)
The RAU attempt procedure is started (see 4.12.6).

<R.GMM.RNABNORM.M.009>

4.12.5.4 d) ROUTING AREA UPDATE REJECT, other causes than #3, #6, #9, #10, #11, #12, or #13

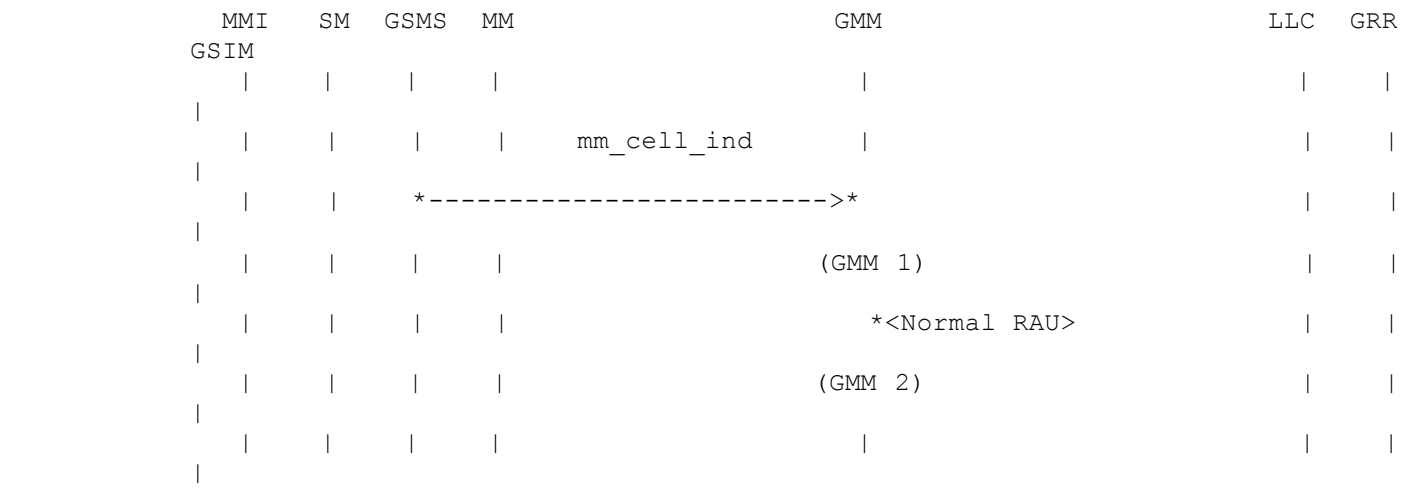


(GMM 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause ≠ #3 / #6 / #9 / #10/ #11 / #12 / #13) message from the network.

(GMM 2)
The RAU attempt procedure is started (see 4.12.6).

<R.GMM.RNABNORM.M.010>

4.12.5.5 e) Change of cell in a new RA in state 'GMM–ROUTING-AREA-UPDATE-INITIATED'



(GMM 1)
GMM is in state GMM-ROUTING-AREA-UPDATE-INITIATED. GMM receives the indication that a new cell has been selected which is in a new RA.

<R.GMM.RNABNORM.M.010>

(GMM 2)
The RAU procedure is aborted and re-initialised immediately.

<R.GMM.RNABNORM.M.011>

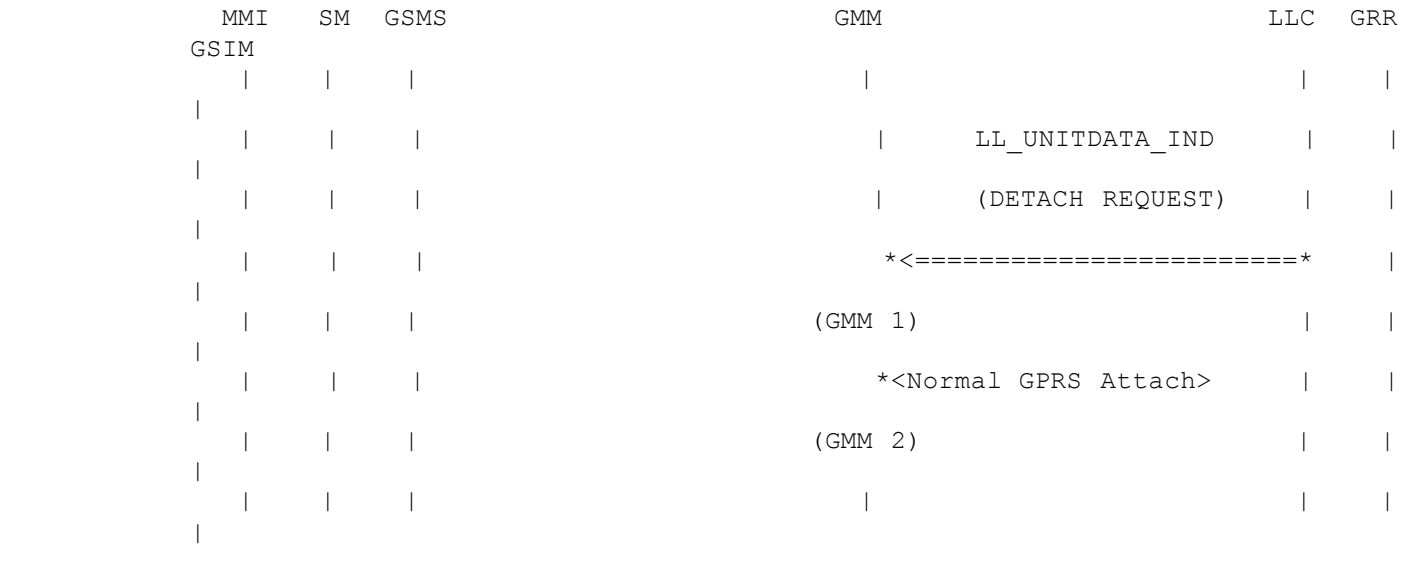
4.12.5.6 f) Change of cell within the same RA in state 'GMM–ROUTING-AREA-UPDATE-INITIATED'

The cell selection procedure is implicitly performed before completion of the RAU procedure.

<R.GMM.RNABNORM.M.012>

4.12.5.7 g) RAU and detach procedure collision

4.12.5.7.1 GPRS detach or combined GPRS/IMSI detach



(GMM 1)
GMM is in state GMM-ROUTING-AREA-UPDATE-INITIATED. GMM receives the message DETACH REQUEST (Detach type = 'GPRS detach' or 'combined GPRS/IMSI detach') from the network.

(GMM 2)
The RAU procedure is aborted and the GPRS detach procedure is followed.

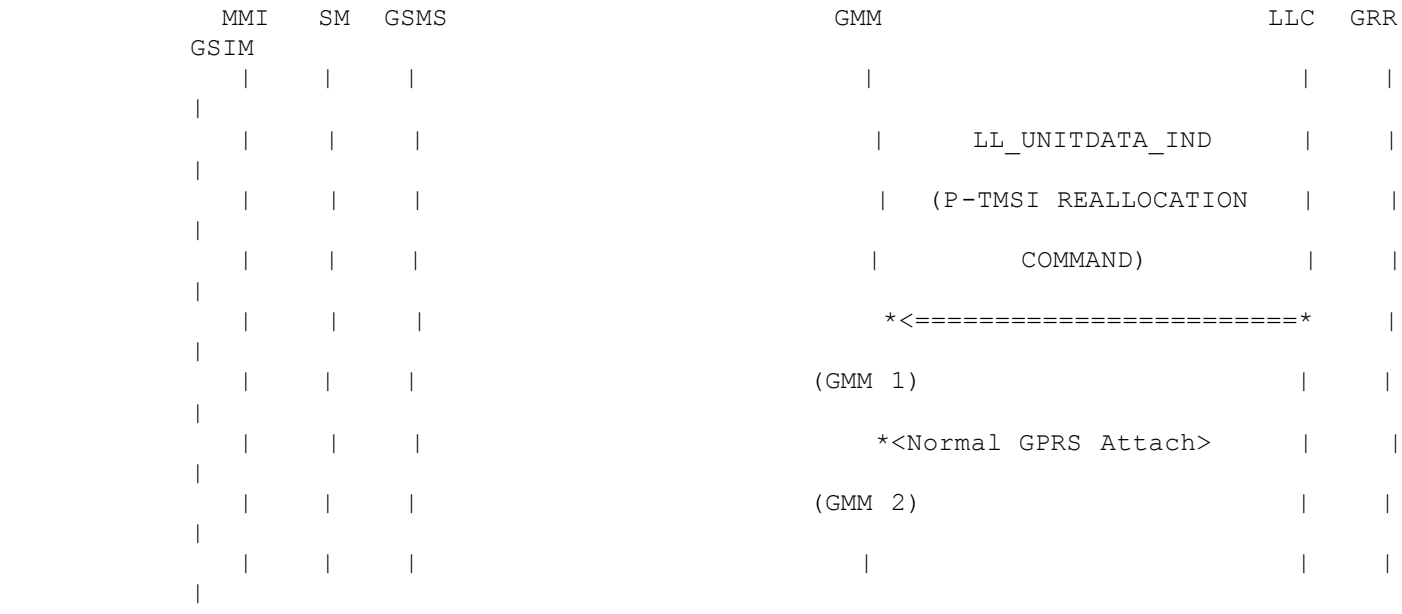
<R.GMM.RNABNORM.M.013>, <R.GMM.RNABNORM.M.014>

4.12.5.7.2 IMSI detach

(GMM 1)
GMM is in state GMM-ROUTING-AREA-UPDATE-INITIATED. GMM receives the message DETACH REQUEST (Detach type = 'IMSI detach') from the network. The DETACH REQUEST message procedure is ignored and the RAU procedure is continued.

<R.GMM.RNABNORM.M.015>, <R.GMM.RNABNORM.M.016>

4.12.5.8 h) RAU and P-TMSI procedure collision

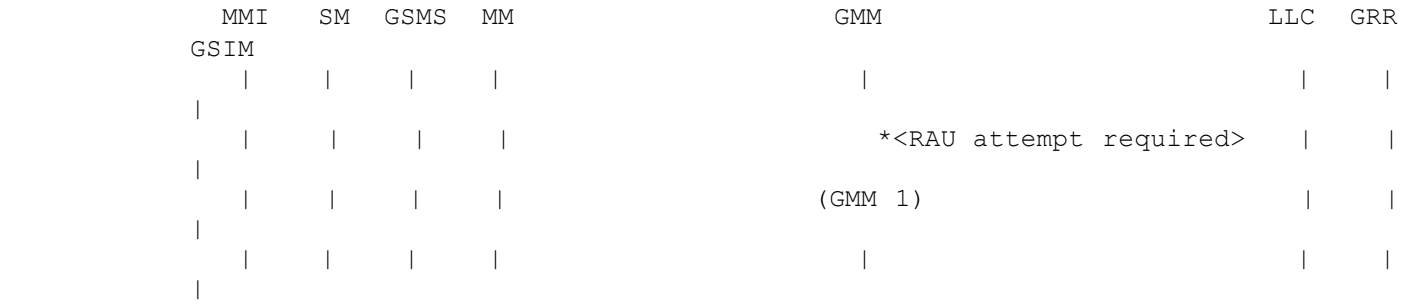


(GMM 1)
GMM is in state GMM-ROUTING-AREA-UPDATE-INITIATED. GMM receives the message P-TMSI REALLOCATION COMMAND with the LL_UNITDATA_IND primitive. The P-TMSI REALLICATION COMMAND message is ignored and the RAU procedure is continued.

<R.GMM.RNABNORM.M.017>, <R.GMM.RNABNORM.M.018>

4.12.6 RAU attempt procedure

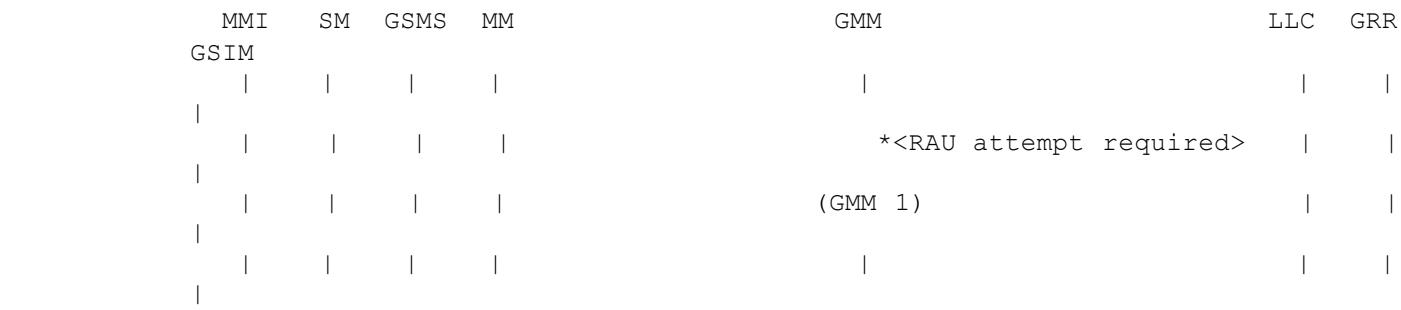
4.12.6.1 RAU attempt counter less than 5, and RA is not changed



(GMM 1)
The stored RAI is equal to the RAI in the current serving cell, and the GMM update state is equal to GU1 UPDATED. The RAU attempt counter is incremented and does not reach 5. GMM stops timer T3330, if still running, and starts timer T3311. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.RNABNORM.M.019>, <R.GMM.RNABNORM.M.020>, <R.GMM.RNABNORM.M.021>, <R.GMM.RNABNORM.M.022>, <R.GMM.RNABNORM.M.023>

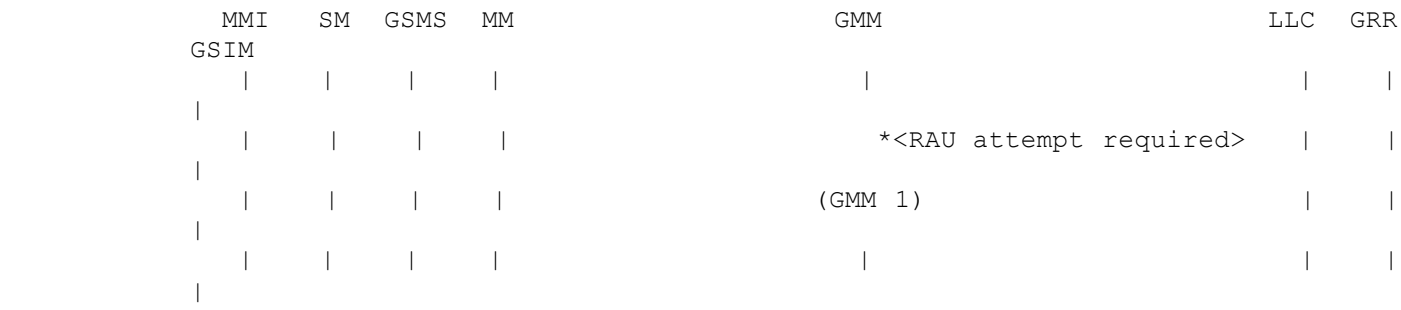
4.12.6.2 RAU attempt counter less than 5, and RA is changed



(GMM 1)
The stored RAI is different to the RAI in the current serving cell, and the GMM update state is different to GU1 UPDATED. The RAU attempt counter is incremented and does not reach 5. GMM starts timer T3311. GMM enters state GMM-REGISTERED.ATTEMPING-TO-UPDATE.

<R.GMM.RNABNORM.M.019>, <R.GMM.RNABNORM.M.020>, <R.GMM.RNABNORM.M.025>, <R.GMM.RNABNORM.M.026>

4.12.6.3 GPRS attach attempt counter greater than or equal to 5



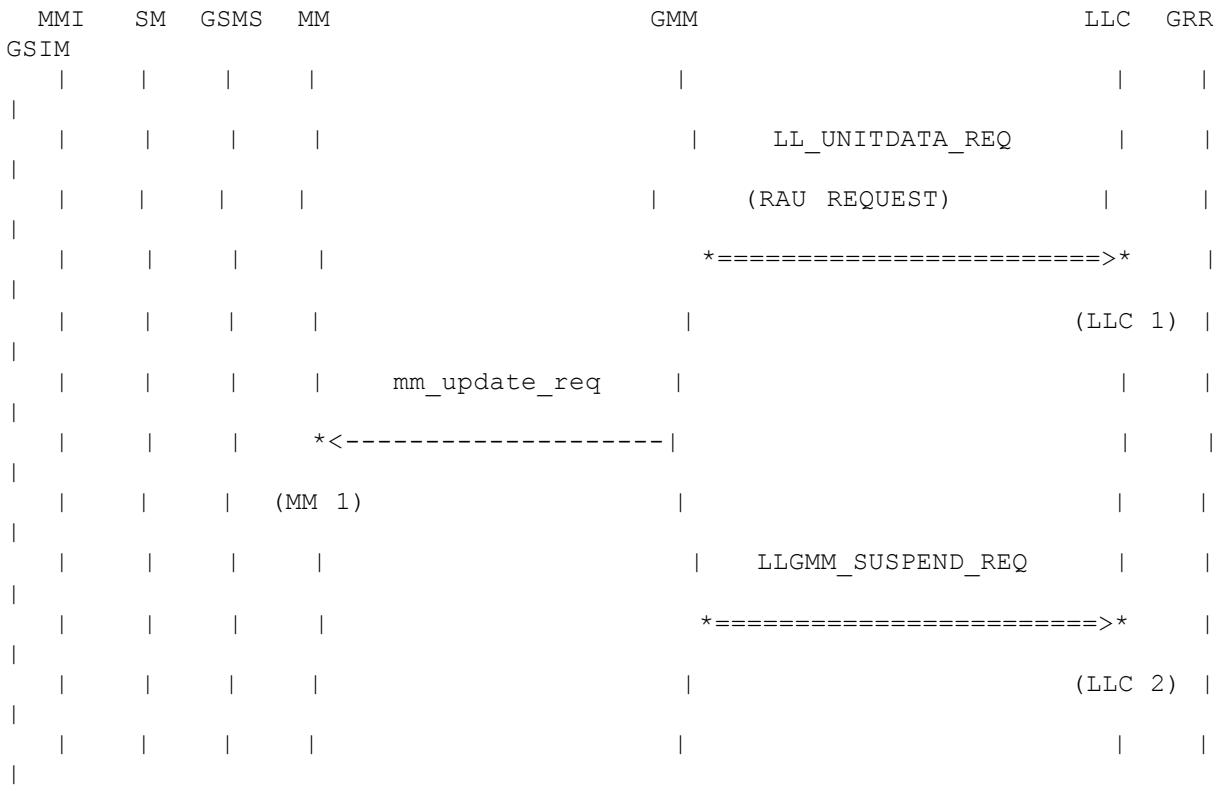
(GMM 1)
Timeout of timer T3330 for the fifth time. The RAU attempt counter is incremented and is greater than or equal to 5. GMM starts timer T3302. GMM enters state GMM-REGISTERED.ATTEMPTING-TO-UPDATE.

<R.GMM.RNABNORM.M.027>, <R.GMM.RNABNORM.M.028>

4.13 Combined RAU procedure

4.13.1 Combined RAU procedure initiation

The combined RAU procedure is initiated only by, if the MS is in state GMM-REGISTERED.



(LLC 1)
The MS is in operation modes A or B. GMM is in state GMM-REGISTERED and the network operates in network operation mode I. GMM transmits the RAU REQUEST message to the network by sending the primitive LL_UNITDATA_REQ to LLC. The timer T3330 is started. GMM enters state GMM-ROUTING-AREA-UPDATE-INITIAED. The normal RAU procedure aborts any ongoing GMM procedure. The variable (s) rau_whilst_<procedure> is set.

<R.GMM.RAU.M.006>, <R.GMM.RCINIT.A.014>, <R.GMM.RCINIT.M.011>, <R.GMM.RCINIT.M.012>, <R.GMM.RCINIT.M.013>, <R.GMM.RCCOMBN.A.001>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>, <R.GMM.RCINIT.M.008>, <R.GMM.DMABNORM.M.017>

(MM 1)
The MS change to state MM LOCATION UPDATING PENDING.

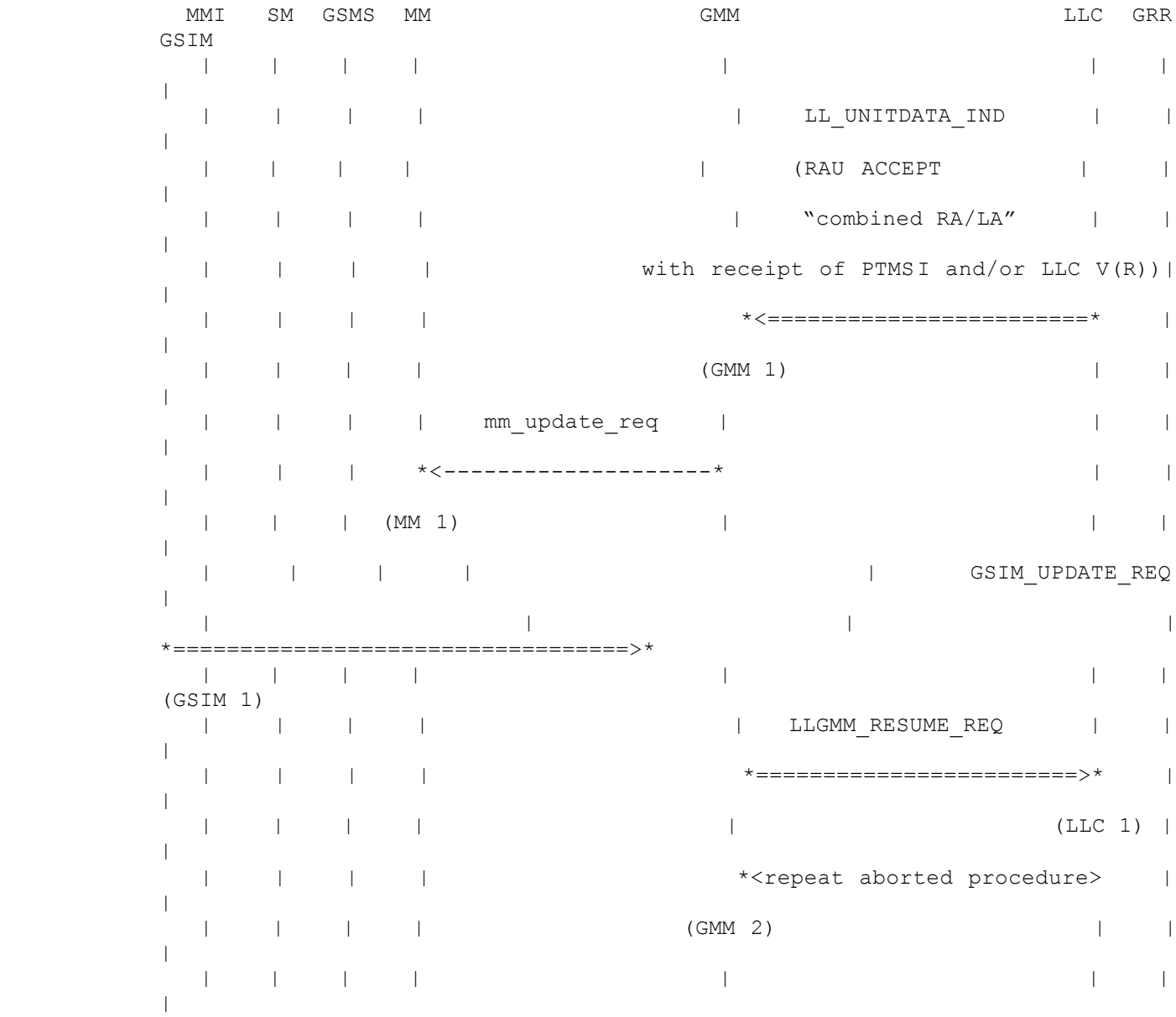
<R.GMM.RCINIT.A.014>

(LLC 2)
User data transmission in LLC is suspended during RAU procedure.

<R.GMM.RAU.M.015>, <R.GMM.RAU.M.016>

4.13.2 Combined RAU accepted by the network, not including P-TMSI and/or LLC V(R)

4.13.2.1 Combined RAU successful



(GMM 1)
GMM receives a RAU ACCEPT message containing a P-TMSI and/or LLV V(R) values from the network by getting a LL_UNITDATA_IND primitive from LLC. The update result IE value indicates "combined RA/LA". The timer T3330 is stopped and the RAU attempt counter is reset. GMM enters state GU1 UPDATED.

<R.GMM.RNACCEPT.M.008>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RAU.M.009>, <R.GMM.RCACCEPT.M.001>, <R.GMM.RCSUBOTH.A.001>, <R.GMM.RCSUBOTH.M.002>, <R.GMM.RCSUBOTH.M.007>

(MM 1)
The MS stores the received LAI. GMM indicates to MM, that MM has to enter state MM IDLE and update state U1 UPDATED. MM has to reset the LAU attempt counter.

<R.GMM.RCSUBOTH.M.006>, <R.GMM.RCSUBOTH.M.008>, <R.GMM.RCSUBOTH.M.009>, <R.GMM.RCSUBOTH.M.011>, <R.GMM.RCSUBOTH.M.012>, <R.GMM.RCSUBOTH.M.013>, <R.GMM.RCSUBOTH.M.014>, <R.GMM.RCSUBOTH.A.003>

(GSIM 1)
GMM stores the P-TMSI and the RAI on the SIM. The used P_TMSI signature is deleted.

<R.GMM.RNACCEPT.M.007>, <R.GMM.RNACCEPT.M.0010>, <R.GMM.RNACCEPT.M.011>, <R.GMM.RNACCEPT.M.012>, <R.GMM.RNACCEPT.M.013>, <R.GMM.RNACCEPT.M.004>, <R.GMM.RNACCEPT.M.015>, <R.GMM.RNACCEPT.M.016>

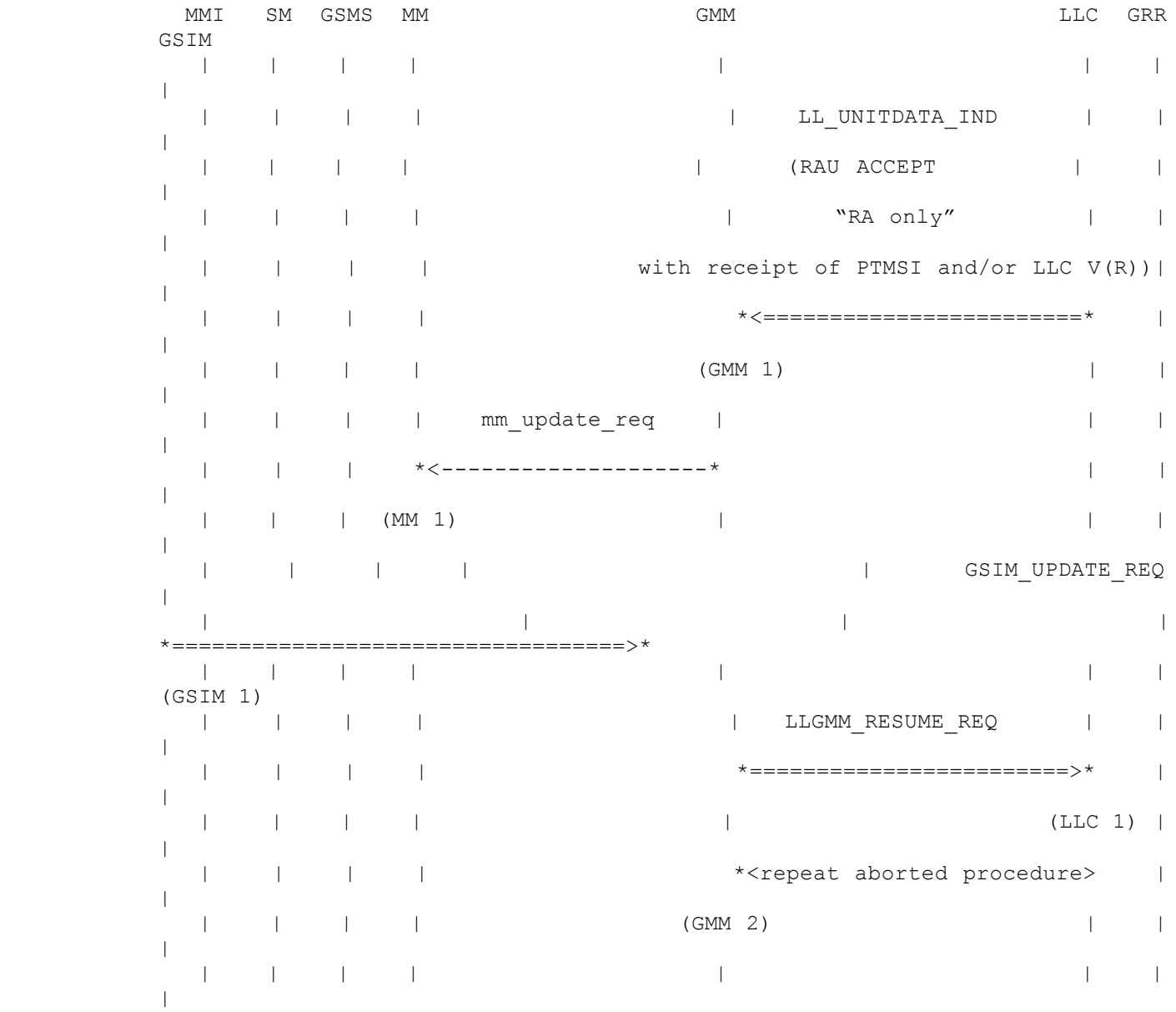
(LLC 1)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

(GMM 2)
Aborted GMM procedures are repeated and the variable (s) rau_whilst_<procedure> is set to false.

<R.GMM.RAUNORM.M.010>

4.13.2.2 Combined RAU successful for GPRS-services only, reject causes #2, #16, #17, #22



(GMM 1)
GMM receives a RAU ACCEPT message containing a P-TMSI and/or LLV V(R) values from the network by getting a LL_UNITDATA_IND primitive from LLC. The update result IE value indicates "RA only". If the reject cause is not #2, #16, #17, or #22 the procedure 'Abnormal cases' is performed. The timer T3330 is stopped and the RAU attempt counter is reset. GMM enters state GU1 UPDATED.

<R.GMM.RNACCEPT.M.008>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RAU.M.009>, <R.GMM.RCSUBOTH.A.001>, <R.GMM.RCACCEPT.M.002>, <R.GMM.RCSUGPRS.M.001>, <R.GMM.RCSUGPRS.M.008>, <R.GMM.RCSUGPRS.M.009>

(MM 1)
If reject cause is #2, GMM indicates to MM, that MM has to delete any TMSI, LAI and ciphering key sequence number and has to enter update state U1 ROAMING NOT ALLOWED. The new MM state is MM IDLE. If reject cause is #16, #17, or #22, the MS performs an IMSI attach by use of the MM IMSI attach procedure. MM has to reset the LAU attempt counter.

<R.GMM.RCSUGPRS.M.002>, <R.GMM.RCSUGPRS.M.003>, <R.GMM.RCSUGPRS.M.004>,
<R.GMM.RCSUGPRS.M.006>, <R.GMM.RCSUGPRS.M.007>, <R.GMM.RCSUBOTH.M.009>

(GSIM 1)
The used P-TMSI signature is deleted. If the reject cause is #2, the SIM shall be considered as invalid for non-GPRS services until switching off or the SIM is removed.

<R.GMM.RNACCEPT.M.007>, <R.GMM.RNACCEPT.M.0010>, <R.GMM.RNACCEPT.M.011>,
<R.GMM.RNACCEPT.M.012>, <R.GMM.RNACCEPT.M.013>, <R.GMM.RNACCEPT.M.004>,
<R.GMM.RNACCEPT.M.015>, <R.GMM.RNACCEPT.M.016>, <R.GMM.RCSUGPRS.M.005>

(LLC 1)
User data transmission is resumed in LLC.

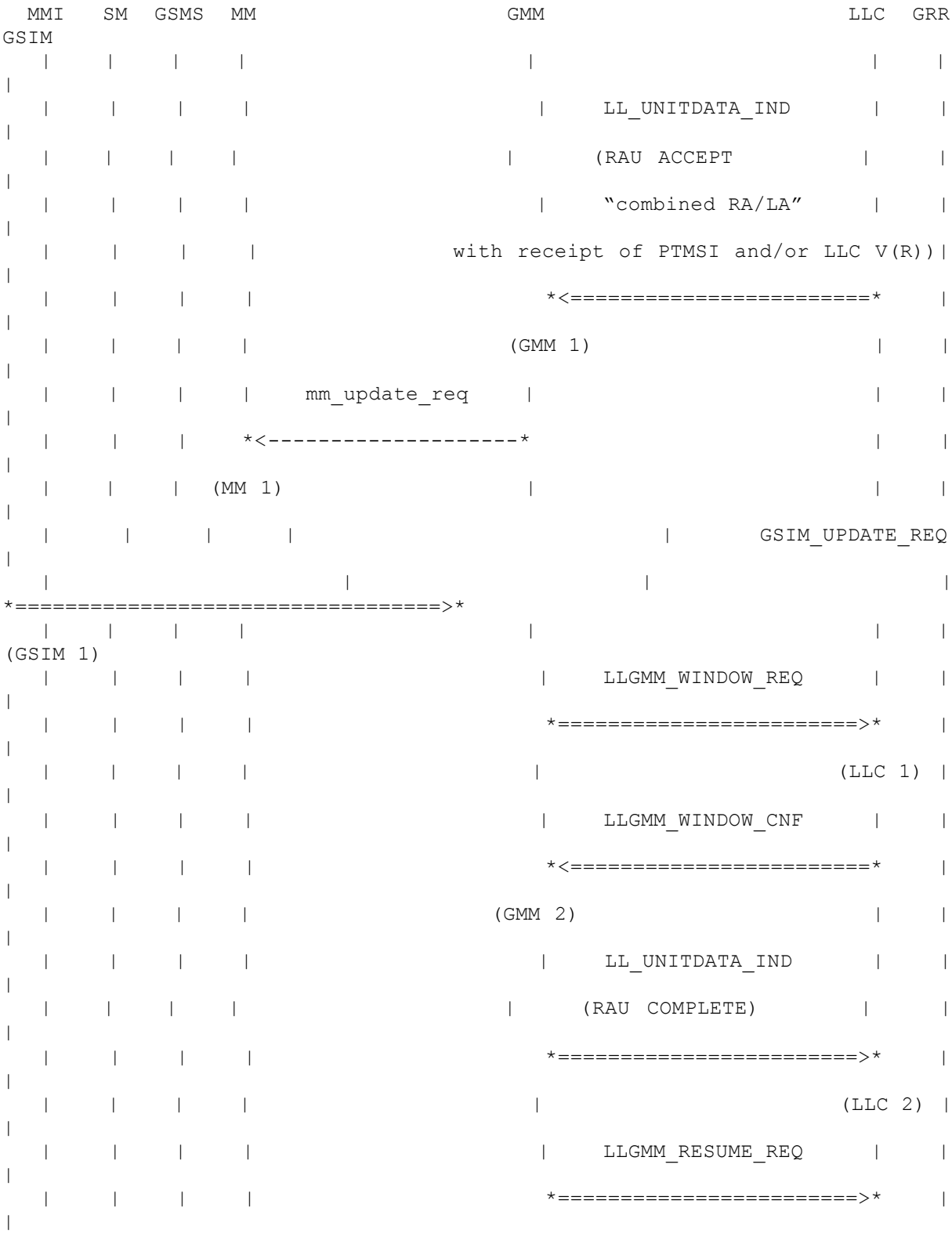
<R.GMM.RAU.M.015>

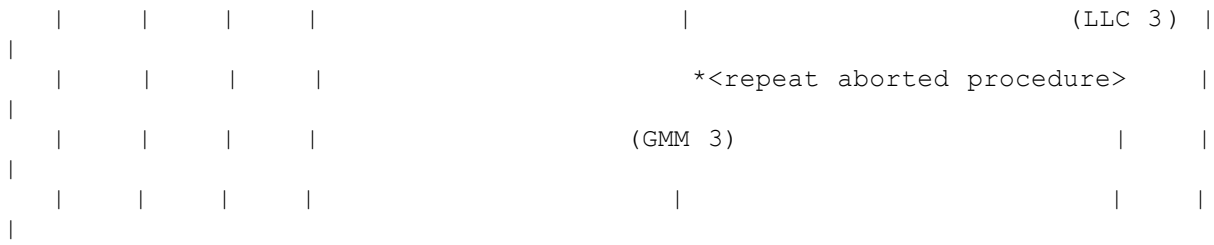
(GMM 2)
Aborted GMM procedures are repeated and the variable (s) rau_whilst_<procedure> is set to false.

<R.GMM.RAUNORM.M.010>

4.13.3 Combined RAU accepted by the network, including P-TMSI and/or LLC V(R)

4.13.3.1 Combined RAU successful, default





(GMM 1)
GMM receives a RAU ACCEPT message containing a P-TMSI and/or LLV V(R) values from the network by getting a LL_UNITDATA_IND primitive from LLC. The update result IE value indicates “combined RA/LA”. The timer T3330 is stopped and the RAU attempt counter is reset.

<R.GMM.RNACCEPT.M.008>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RCACCEPT.M.001>, <R.GMM.RCSUBOTH.A.001>, <R.GMM.RCSUBOTH.M.002>, <R.GMM.RCSUBOTH.M.007>, <R.GMM.RCSUBOTH.M.009>

(MM 1)
The MS stores the received LAI. GMM indicates MM, that MM has to enter state MM IDLE and in update state U1 UPDATED. MM has to reset the LAU attempt counter.

<R.GMM.RCSUBOTH.M.006>, <R.GMM.RCSUBOTH.M.011>, <R.GMM.RCSUBOTH.M.012>, <R.GMM.RCSUBOTH.M.013>, <R.GMM.RCSUBOTH.M.014>, <R.GMM.RCSUBOTH.A.003>, <R.GMM.RCSUBOTH.M.008>, <R.GMM.RCSUBOTH.M.009>

(GSIM 1)
GMM enters state GU1 UPDATED.

<R.GMM.RCSUBOTH.A.001>, <R.GMM.RNACCEPT.M.007>, <R.GMM.RNACCEPT.M.0010>, <R.GMM.RNACCEPT.M.011>, <R.GMM.RNACCEPT.M.012>, <R.GMM.RNACCEPT.M.013>, <R.GMM.RNACCEPT.M.014>, <R.GMM.RNACCEPT.M.015>, <R.GMM.RNACCEPT.M.016>

(LLC 1)
GMM requests the current values of the receive state variables V(R) for all SAPIs that are currently in ABM mode of operation.

<R.GMM.RNACCEPT.M.004>, <R.LLC.M_WINDOW.A.001>, <R.LLC.M_WINDOW.M.002>

(GMM 2)
LLC delivers the current values of the receive state variables V(R) for all SAPIs that are currently in ABM mode of operation to GMM with the primitive LLGMM_WINDOW_CNF (V(R)s).

<R.GMM.RNACCEPT.M.017>

(LLC 2)
GMM transmits a RAU COMPLETE message to the network by sending the primitive LL_UNITDATA_REQ to LLC.

<R.GMM.RCACCEPT.M.004>, <R.GMM.RCACCEPT.M.005>

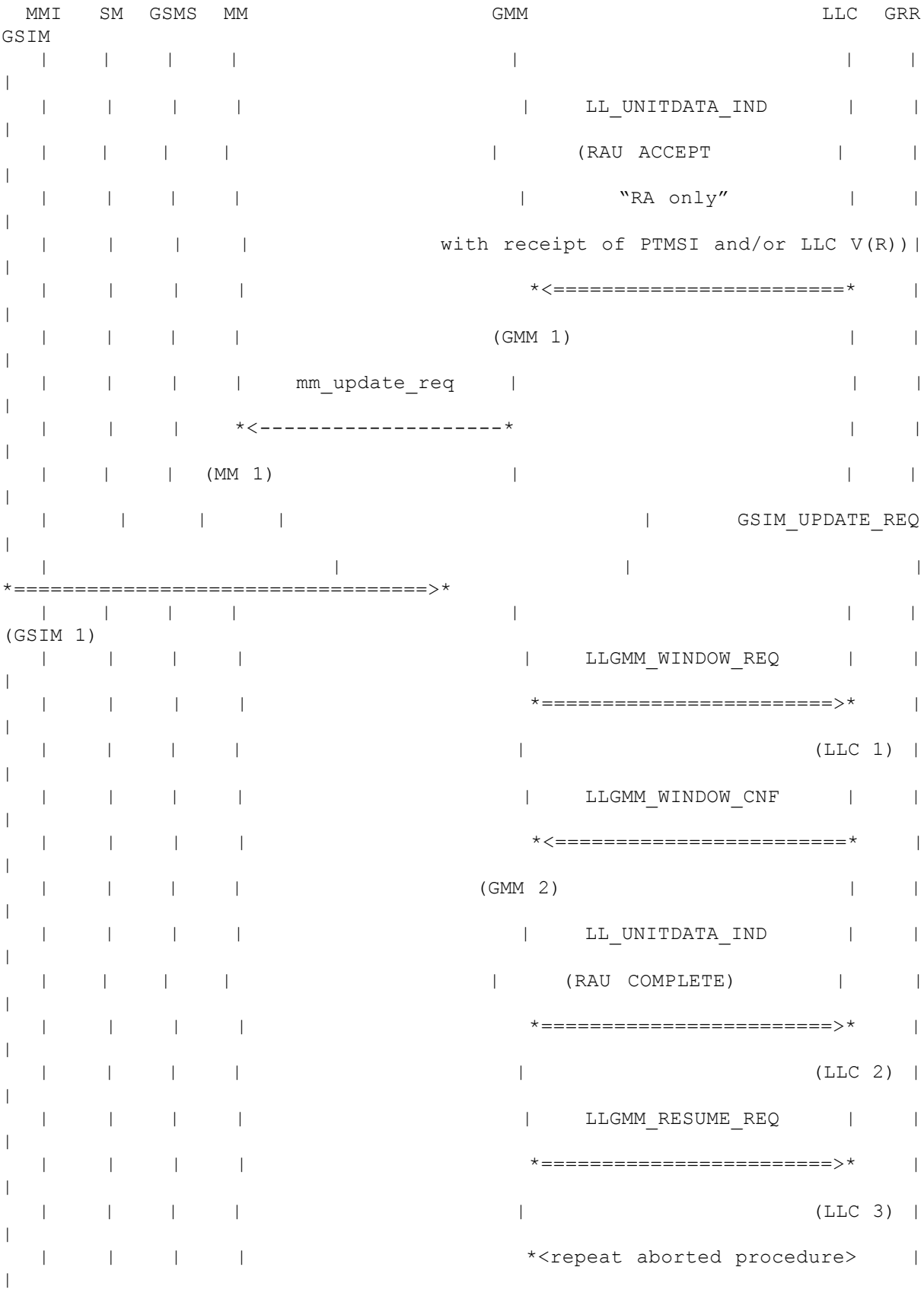
(LLC 3)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

(GMM 3)
Aborted GMM procedures are repeated and the variable (s) rau_whilst_<procedure> is set to false.

<R.GMM.RAUNORM.M.010>

4.13.3.2 Combined RAU successful for GPRS-services only, reject causes #2, #16, #17, #22



```
    |       |       |       |                          (GMM 3)                          |       |
|
    |       |       |       |                            |                              |       |
|
```

(GMM 1)
GMM receives a RAU ACCEPT message containing a P-TMSI and/or LLV V(R) values from the network by getting a LL_UNITDATA_IND primitive from LLC. The update result IE value indicates “RA only”. If the reject cause is not #2, #16, #17, or #22 the procedure ‘Abnormal cases’ is performed. The timer T3330 is stopped and the RAU and LAU attempt counter are reset. GMM enters state GU1 UPDATED.

<R.GMM.RNACCEPT.M.008>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RAU.M.009>, <R.GMM.RCSUBOTH.A.001>, <R.GMM.RCACCEPT.M.002>, <R.GMM.RCSUGPRS.M.001>, <R.GMM.RCSUGPRS.M.008>, <R.GMM.RCSUGPRS.M.009>

(MM 1)
If reject cause is #2, the ms delete any TMSI, LAI and ciphering key sequence number.

<R.GMM.RCSUGPRS.M.003>

(MM 2)
The new MM state is MM IDLE. If reject cause is #2, GMM indicates MM, that MM has to enter update state U1 ROAMING NOT ALLOWED. If reject cause is #16, #17, or #22, the MS performs an IMSI attach by use of the MM IMSI attach procedure.

<R.GMM.RCSUGPRS.M.002>, <R.GMM.RCSUGPRS.M.004>, <R.GMM.RCSUGPRS.M.006>, <R.GMM.RCSUGPRS.M.007>

(MM 3)
MM has to reset the LAU attempt counter.

<R.GMM.RCSUBOTH.M.009>

(GSIM 1)
The used P_TMSI signature is deleted. If the reject cause is #2, the SIM shall be considered as invalid for non-GPRS services until switching off or the SIM is removed.

<R.GMM.RNACCEPT.M.007>, <R.GMM.RNACCEPT.M.0010>, <R.GMM.RNACCEPT.M.011>, <R.GMM.RNACCEPT.M.012>, <R.GMM.RNACCEPT.M.013>, <R.GMM.RNACCEPT.M.004>, <R.GMM.RNACCEPT.M.015>, <R.GMM.RNACCEPT.M.016>, <R.GMM.RCSUGPRS.M.005>

(LLC 1)
GMM requests the current values of the receive state variables V(R) for all SAPIs that are currently in ABM mode of operation. Additionally, the primitive LLGMM_WINDOW_REQ (V(R)s) is used to deliver V(R) values from the SGSN via GMM to LLC. LLC treats the received values as acknowledgements for all transmitted I frames with N(S) < V(R).

<R.LLC.M_WINDOW.A.001>, <R.LLC.M_WINDOW.M.002>

(GMM 2)
LLC delivers the current values of the receive state variables V(R) for all SAPIs that are currently in ABM mode of operation to GMM with the primitive LLGMM_WINDOW_CNF (V(R)s).

<R.GMM.RNACCEPT.M.017>

(LLC 2)
GMM transmits a RAU COMPLETE message to the network by sending the primitive LL_UNITDATA_REQ to LLC.

<R.GMM.RCACCEPT.M.004>, <R.GMM.RCACCEPT.M.005>

(LLC 3)
User data transmission is resumed in LLC.

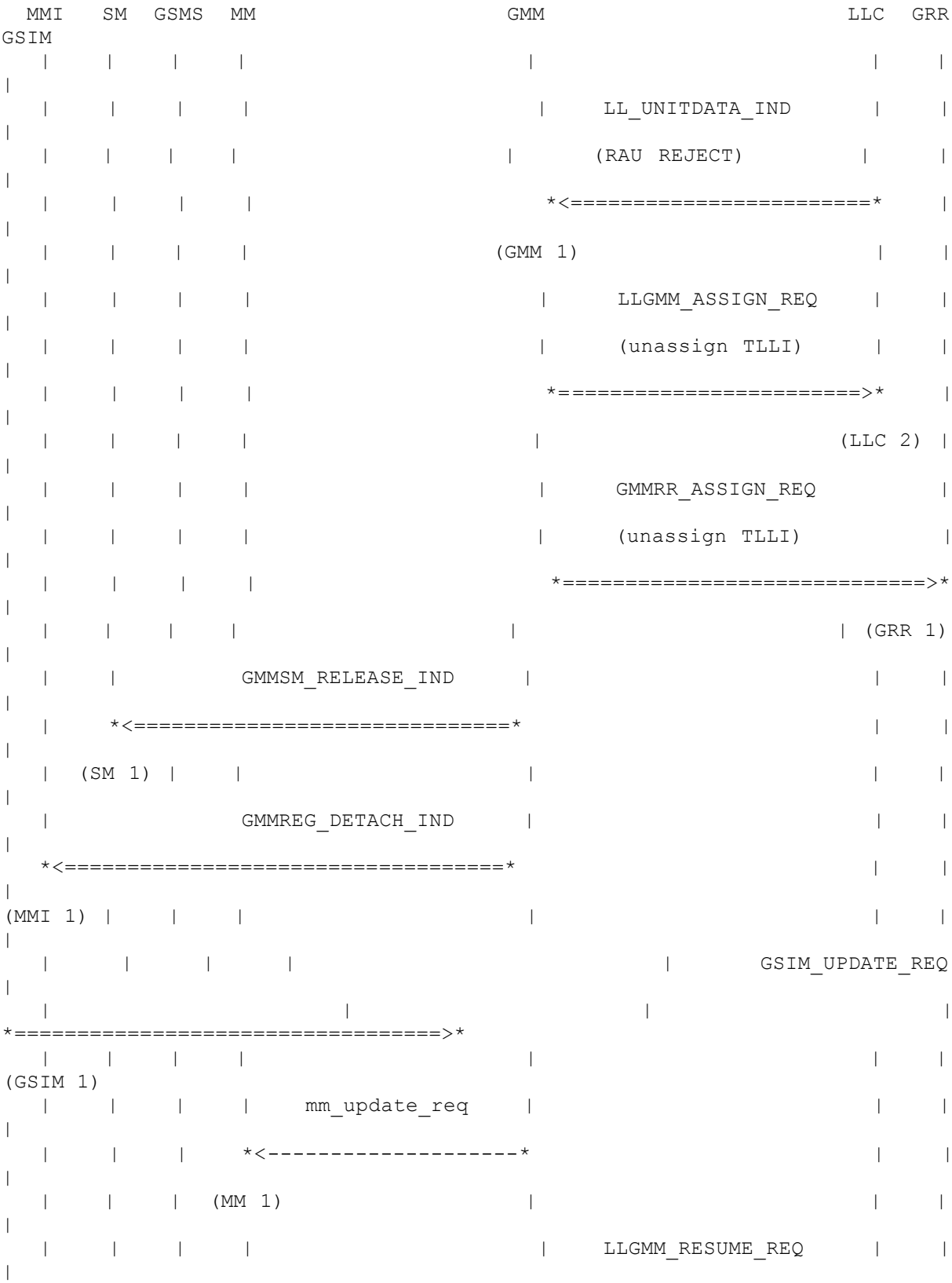
<R.GMM.RAU.M.015>

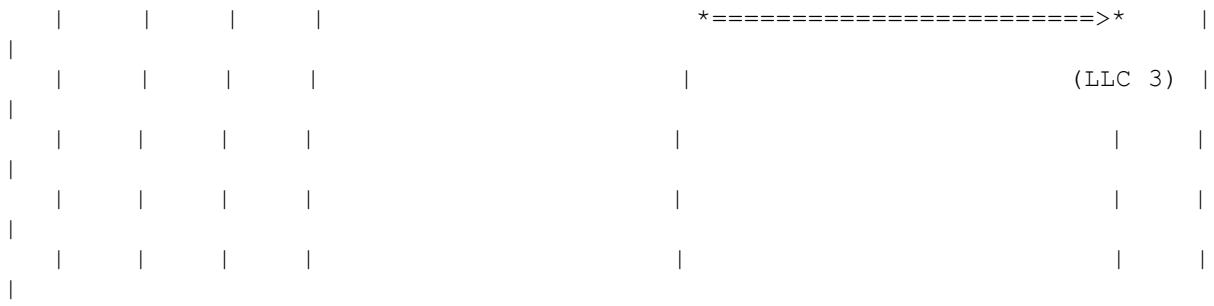
(GMM 3)
Aborted GMM procedures are repeated and the variable (s) rau_whilst_<procedure> is set to false.

<R.GMM.RAUNORM.M.010>

4.13.4 Combined RAU not accepted by the network

4.13.4.1 Reject cause #3, #6, or #8





(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #3, #6, or #8) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

If the reject cause is #8, the RAU attempt counter is reset.

<R.GMM.RCREJECT.M.002>, <R.GMM.RCREJECT.M.006>, <R.GMM.RAU.M.010>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RCREJECT.M.006>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RCREJECT.M.006>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RCREJECT.M.006>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RCREJECT.M.006>

(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS and non-GPRS services until switching off or the SIM is removed.

<R.GMM.RCREJECT.M.004>, <R.GMM.RCREJECT.M.007>, <R.GMM.RCREJECT.M.008>

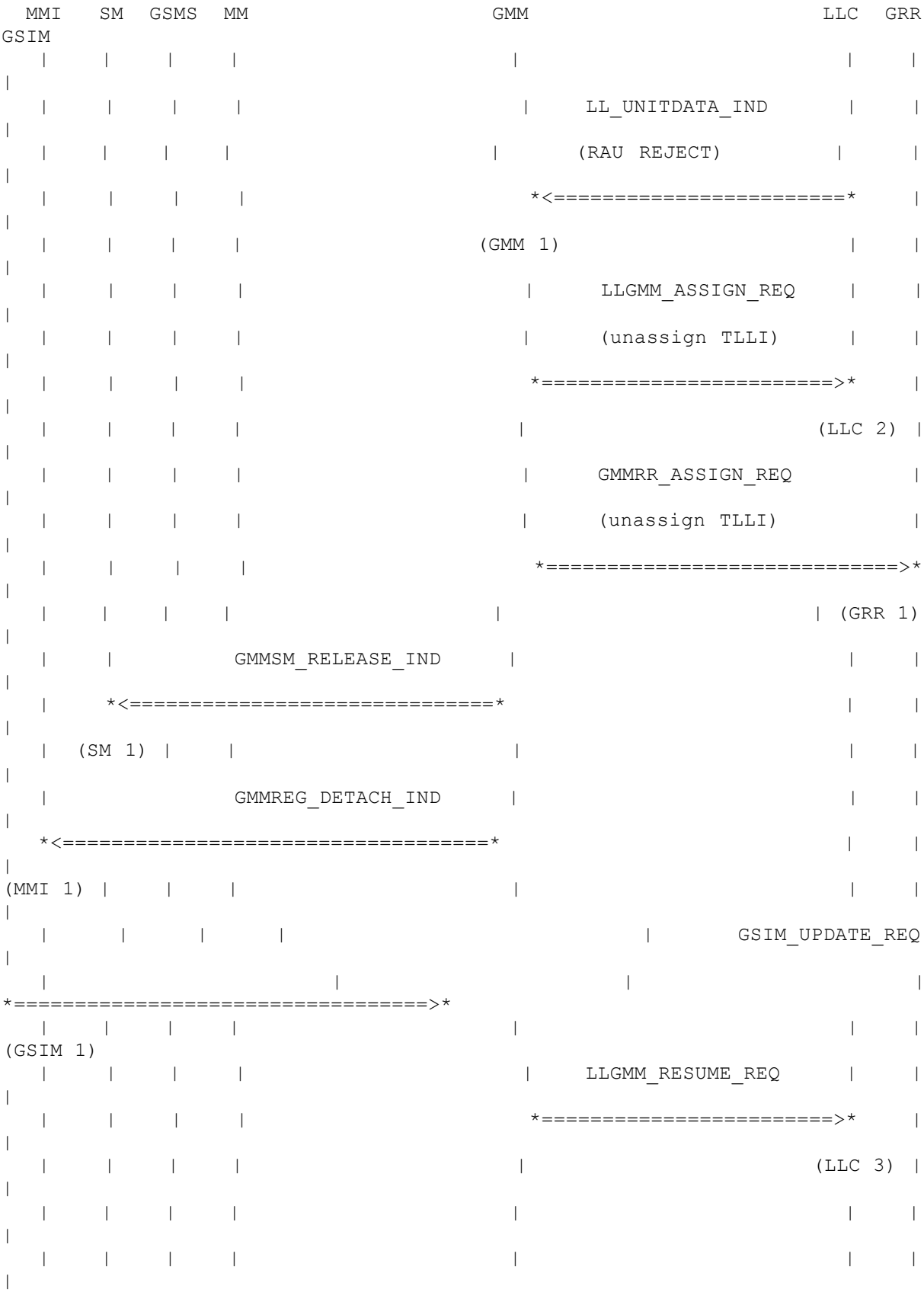
(MM 1)
MM enters state MM IDLE and update state U3 ROAMING NOT ALLOWED. The SIM is considered as invalid for non-GPRS services until switching off or the SIM is removed.

<R.GMM.RCREJECT.M.003>, <R.GMM.RCREJECT.M.005>, <R.GMM.RCREJECT.M.007>, <R.GMM.RCREJECT.M.008>

(LLC 3)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.13.4.2 Reject cause #7



| | | | | | | |
|

(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #7) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

<R.GMM.RCREJECT.M.002>, <R.GMM.RCREJECT.M.012>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RCREJECT.M.012>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RCREJECT.M.012>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RCREJECT.M.012>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RCREJECT.M.012>

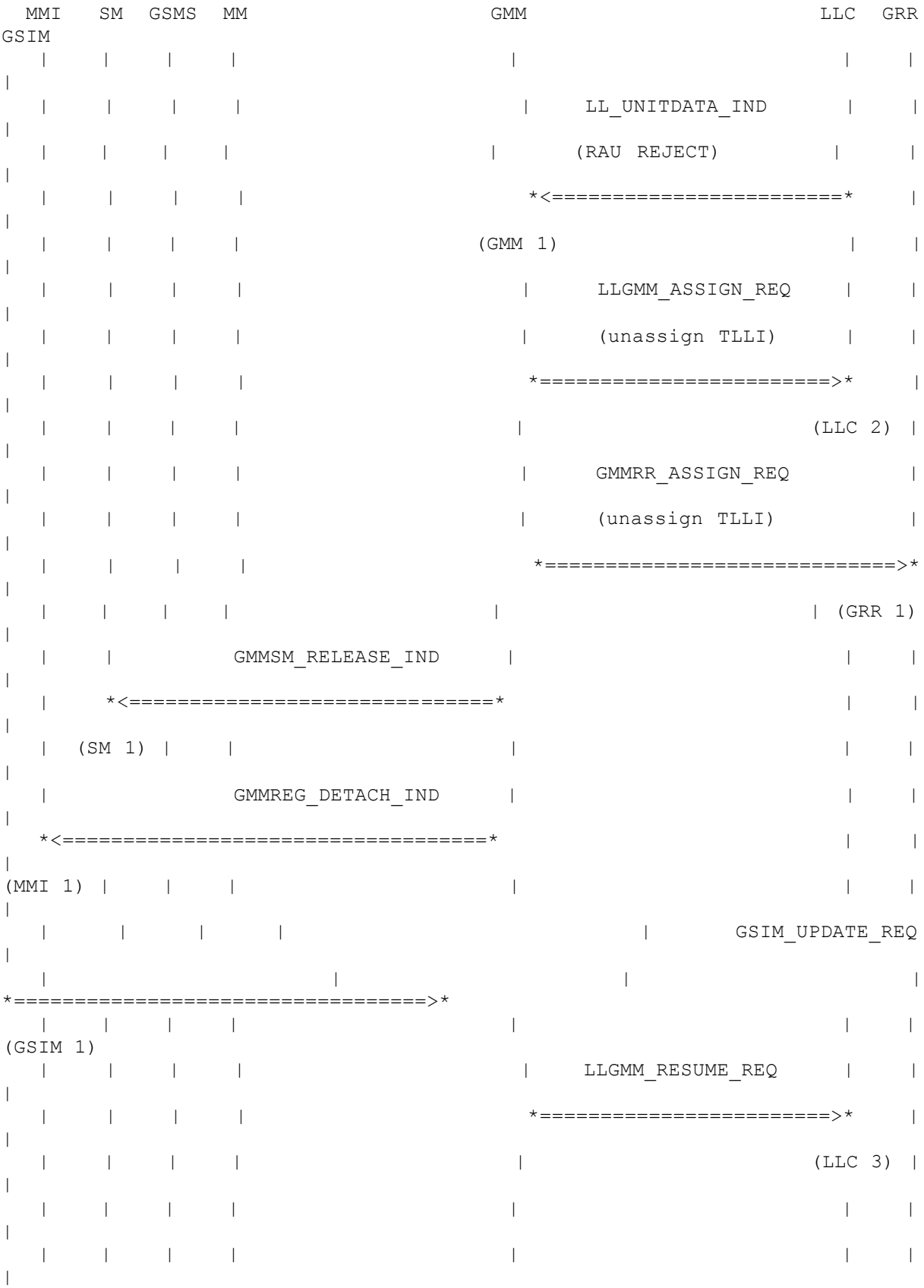
(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS until switching off or the SIM is removed.

<R.GMM.RCREJECT.M.009>, <R.GMM.RCREJECT.M.010>, <R.GMM.RCREJECT.M.011>

(LLC 3)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.13.4.3 Reject cause #9



| | | | | | | |
|

(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #7) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

<R.GMM.RCREJECT.M.002>, <R.GMM.RCREJECT.M.014>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RCREJECT.M.014>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RCREJECT.M.014>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RCREJECT.M.014>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RCREJECT.M.014>

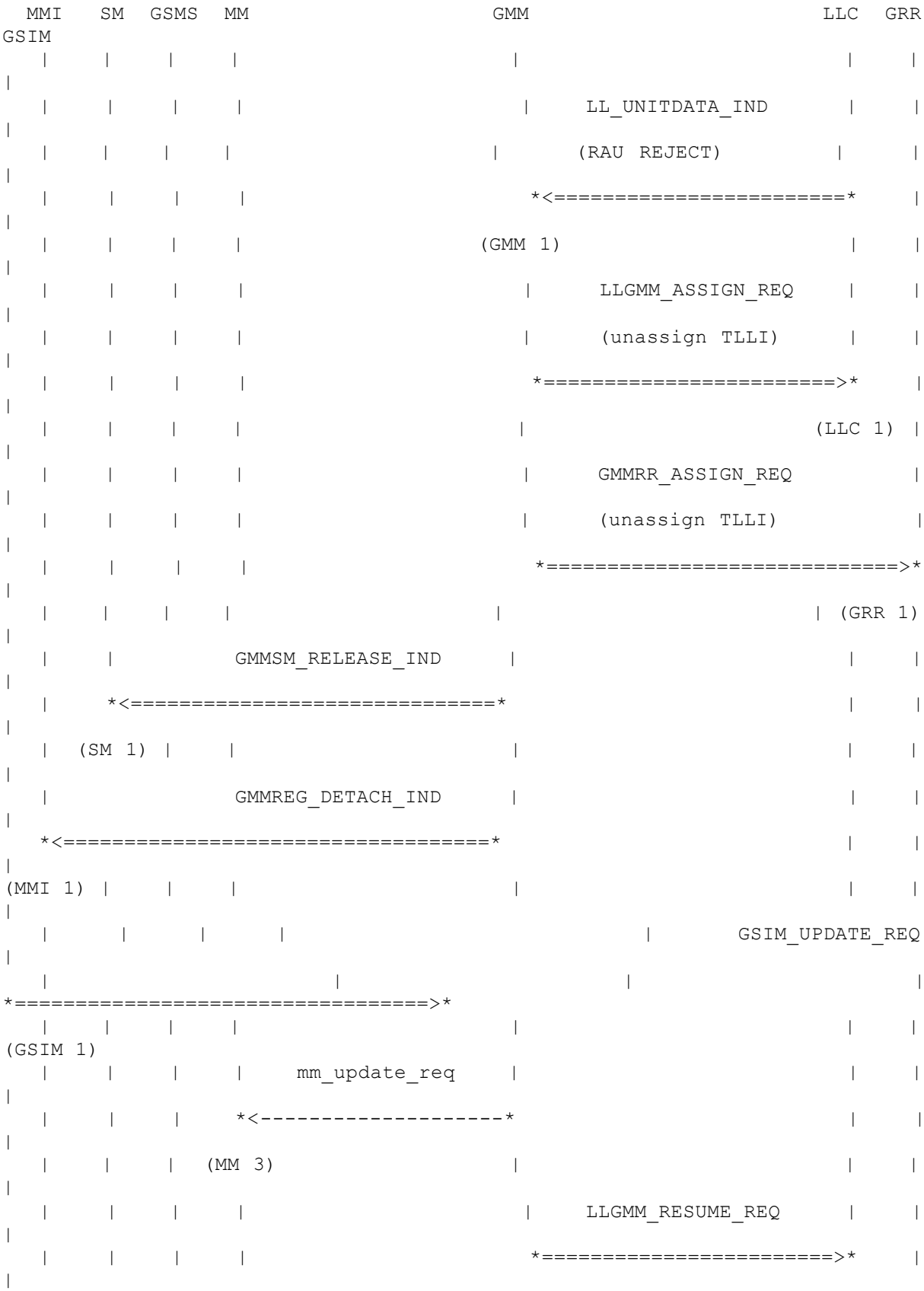
(GSIM 1)
GMM sets the GPRS update status to GU2 NOT UPDATED.

<R.GMM.RCREJECT.M.013>, <R.GMM.RCREJECT.M.015>, <R.GMM.RCREJECT.M.016>

(LLC 3)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.13.4.4 Reject cause #11, #12 or #13, MS is IMSI not attached via MM procedures



(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

The RAU and GPRS attach attempt counters are reset.

<R.GMM.RCREJECT.M.002>, <R.GMM.RCREJECT.M.019>, <R.GMM.RCREJECT.M.022>, <R.GMM.RCREJECT.M.023>, <R.GMM.RAU.M.010>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RCREJECT.M.019>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RCREJECT.M.019>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RCREJECT.M.019>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RCREJECT.M.019>

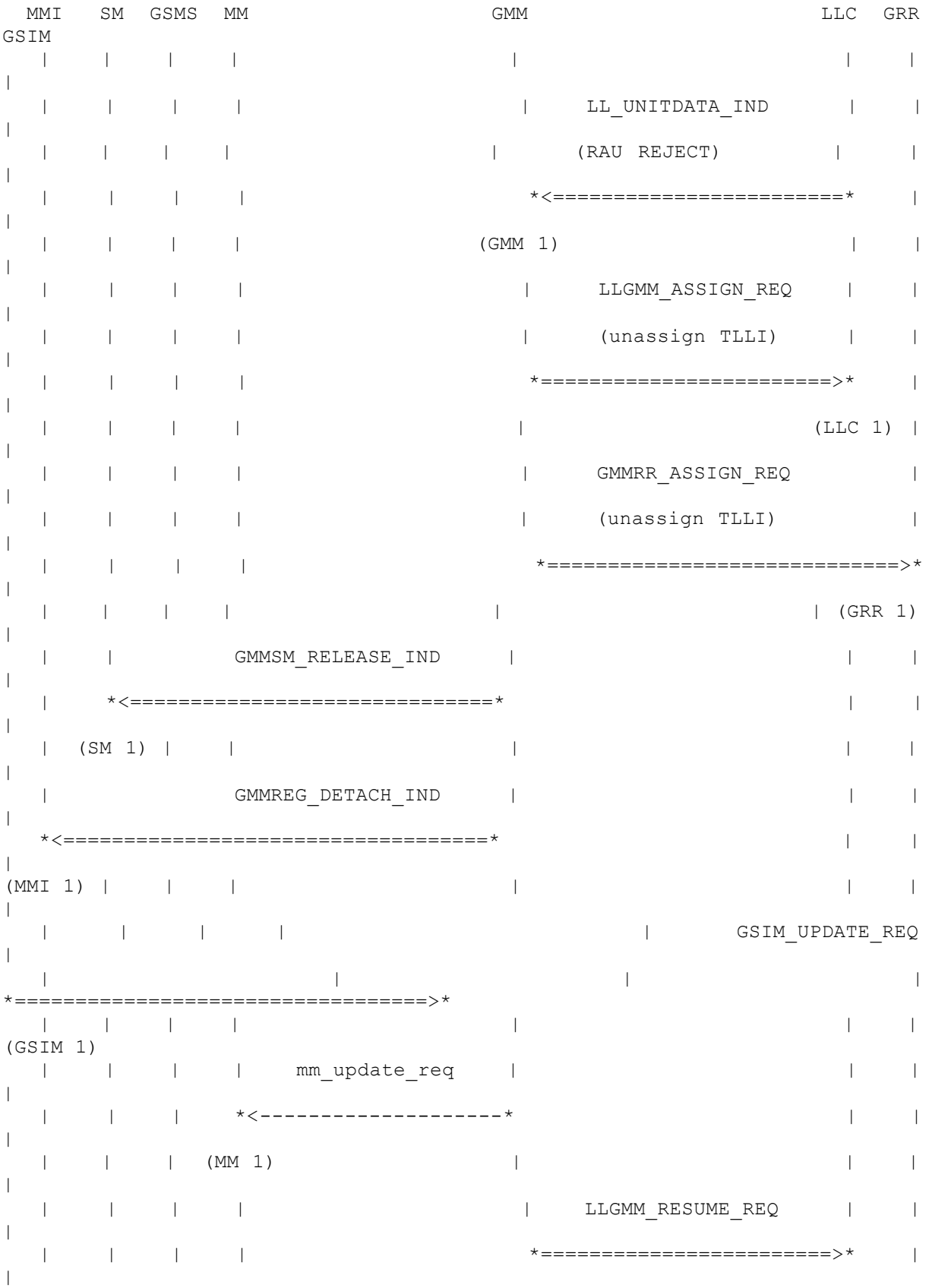
(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED. MM has to reset the LAU attempt counter.

<R.GMM.RCREJECT.M.017>, <R.GMM.RCREJECT.M.018>, <R.GMM.RCREJECT.M.020>, <R.GMM.RCREJECT.M.021>

(LLC 2)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.13.4.5 Reject cause #11, #12 or #13, MS is IMSI attached via MM procedures



```
    |       |       |       |                              |                              (LLC 2)  |
|
    |       |       |       |                              |                                  |      |
|
    |       |       |       |                              |                                  |      |
|
    |       |       |       |                              |                                  |      |
|
```

(LLC 1)
GMM receives the primitive LL_UNITDATA_IND from LLC containing the RAU REJECT (Reject cause = #11, #12, or #13) message from the network. GMM stops timer T3330. GMM enters state GMM-DEREGISTERED.

The RAU and GPRS attach attempt counters are reset.

<R.GMM.RCREJECT.M.002>, <R.GMM.RCREJECT.M.019>, <R.GMM.RCREJECT.M.022>, <R.GMM.RCREJECT.M.023>, <R.GMM.RAU.M.010>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RCREJECT.M.019>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RCREJECT.M.019>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RCREJECT.M.019>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RCREJECT.M.019>

(GSIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED.

<R.GMM.RCREJECT.M.017>, <R.GMM.RCREJECT.M.020>

(MM 1)
GMM informs MM, that MM has to go in state MM IDLE and update state U3 ROAMING NOT ALLOWED. MM has to reset the LAU attempt counter.

<R.GMM.RCREJECT.M.018>, <R.GMM.RCREJECT.M.021>, <R.GMM.RCREJECT.M.024>, <R.GMM.RCREJECT.M.025>, <R.GMM.RCREJECT.M.026>, <R.GMM.RCREJECT.M.027>, <R.GMM.RCREJECT.M.028>

(LLC 2)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.13.5 Abnormal cases

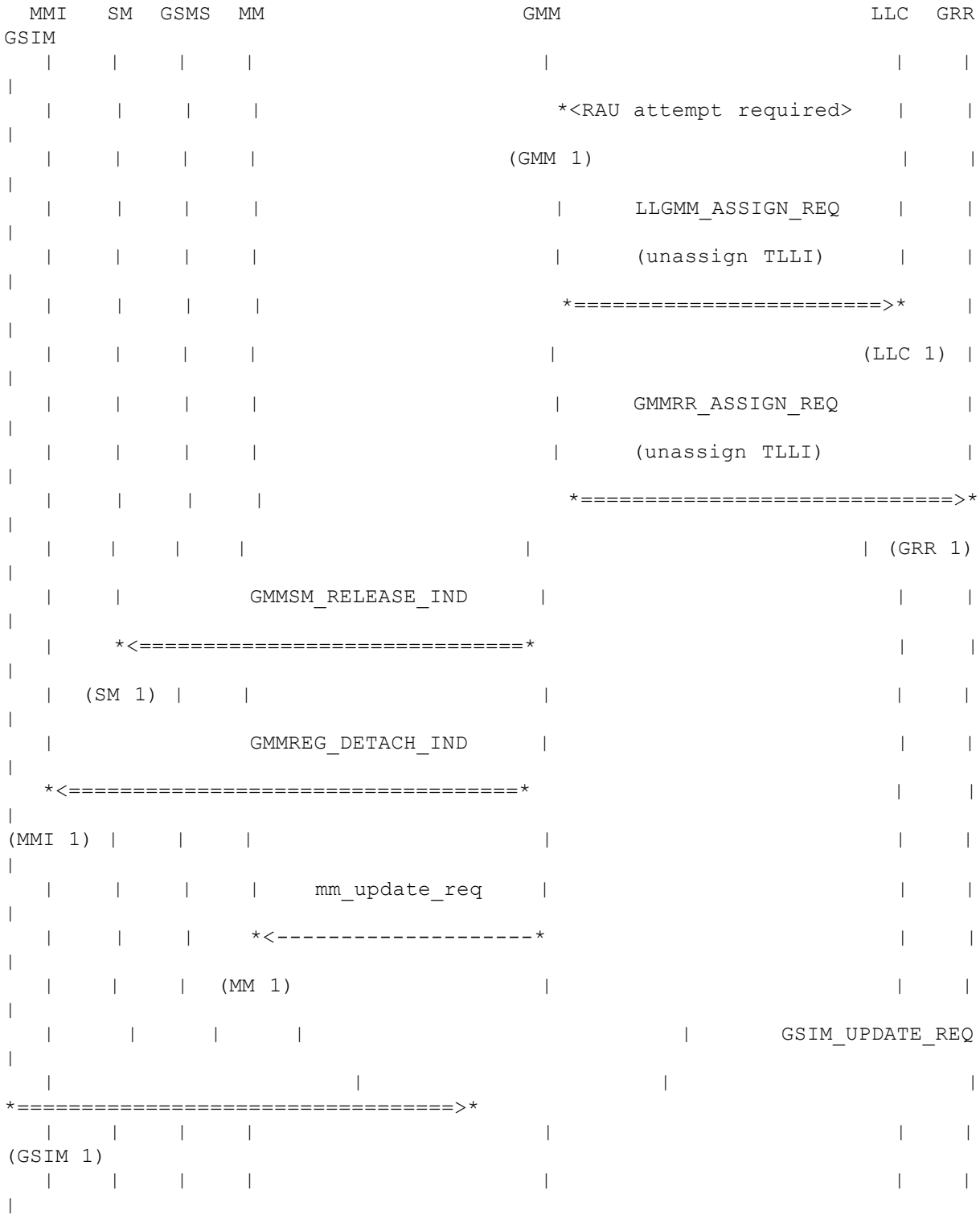
See section 4.12.5.

4.13.6 RAU attempt procedure

4.13.6.1 RAU attempt counter less than 5

See section 4.12.6.1 and 4.12.6.2.

4.13.6.2 GPRS attach attempt counter greater than or equal to 5



(GMM 1)
Timeout of timer T3330 for the fifth time. The RAU attempt counter is incremented and is greater than or equal to 5. GMM starts timer T3302. GMM enters state GMM-REGISTERED.PLMN-SEARCH.

<R.GMM.RCABNORM.M.003>, <R.GMM.RCABNORM.M.004>

(LLC 1)
GMM informs LLC, that the GMM context is released.

<R.GMM.RCABNORM.M.003>, <R.GMM.RCABNORM.M.004>

(GRR 1)
GMM informs GRR, that the GMM context is released.

<R.GMM.RCABNORM.M.004>

(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.RCABNORM.M.004>

(MMI 1)
GMM informs MMI, that GMM context is released.

<R.GMM.RCABNORM.M.004>

(MM 1)
GMM indicates MM, that MM has to enter update state U2 NOT ALLOWED.

<R.GMM.RCABNORNM.M.005>, <R.GMM.RCABNORNM.M.006>

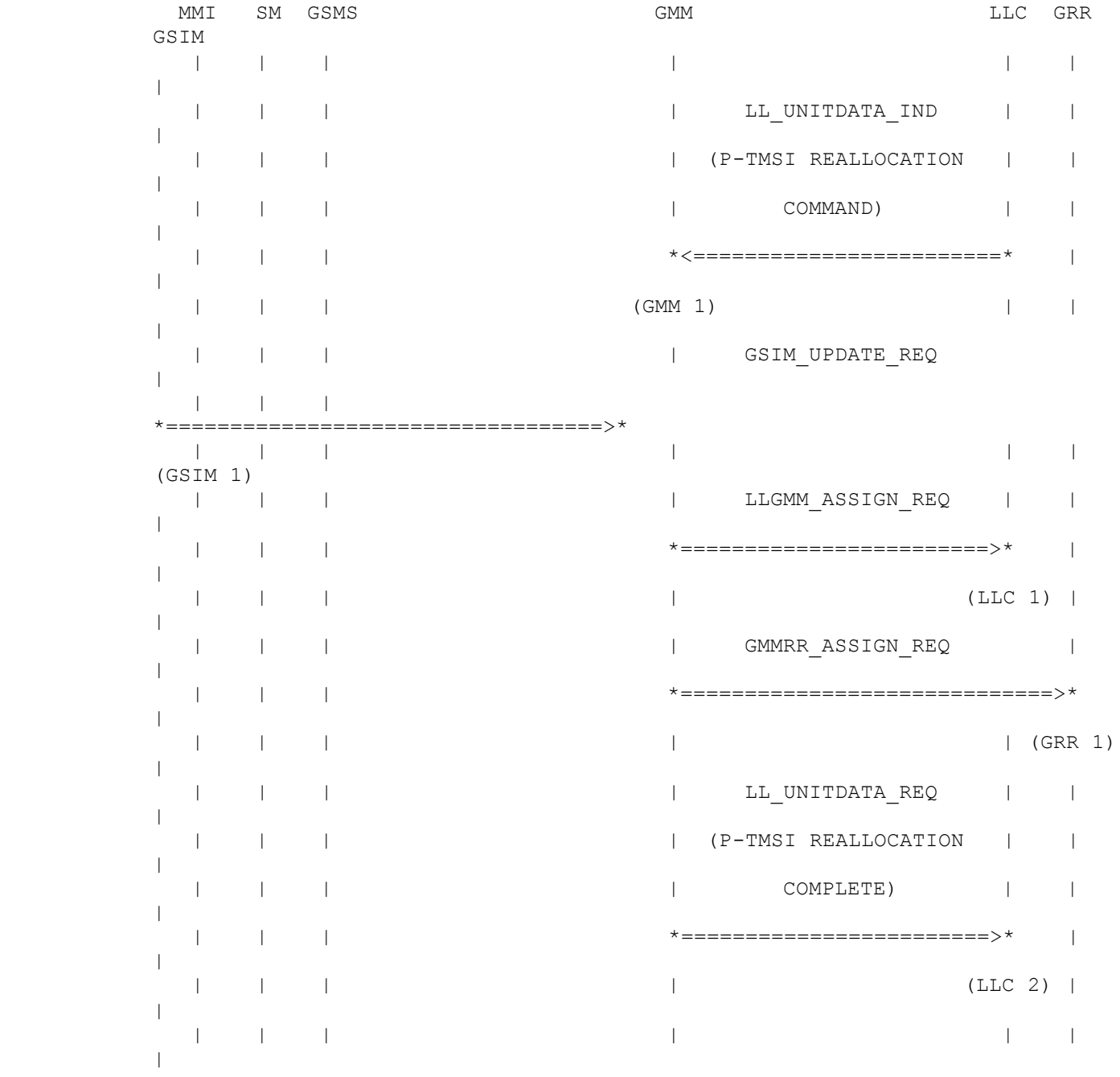
(GSIM 1)
GMM sets the GPRS update status to GU2 NOT UPDATED.

<R.GMM.RCABNORM.M.002>, <R.GMM.RCABNORM.M.001>

(LLC 2)
User data transmission is resumed in LLC.

<R.GMM.RAU.M.015>

4.14 P-TMSI reallocation procedure



(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE or GMM-REGISTERED.ATTEMPTING-TO-UPDATE. GMM receives the message P-TMSI REALLOCATION COMMAND (P-TMSI, Routing area identification, [P-TMSI signature]) with the LL_UNITDATA_IND primitive. GMM derives the local TLLI from the received P-TMSI. If the message contains a P-TMSI signature, GMM uses this P-TMSI signature as the new temporary signature for the GMM context. Otherwise the old P-TMSI signature is being kept.

<R.GMM.REACMPLM.M.003>, <R.GMM.REACMPLM.M.004>, <R.GMM.REACMPLM.M.005>

(GSIM 1)
GMM enters GPRS update status GU1 UPDATED.

<R.GMM.REACMPLM.M.001>

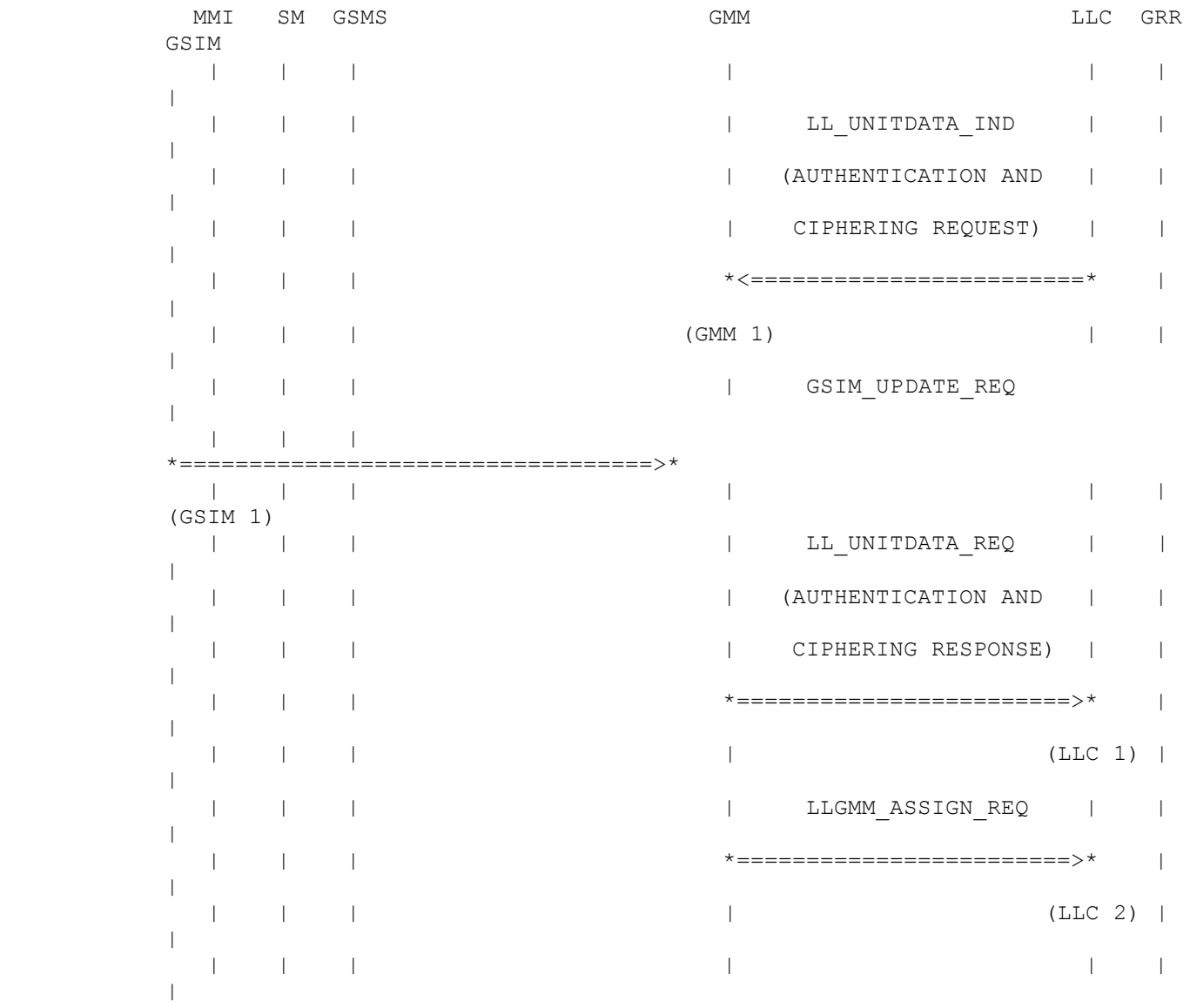
(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.
<R.GMM.REACMPLM.M.001>

(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.
<R.GMM.REACMPLM.M.001>

(LLC 2)
GMM transmits the P-TMSI REALLOCATION COMPLETE message with the LL_UNITDATA_REQ primitive.
<R.GMM.REACMPLM.M.002>

4.15 Authentication and ciphering procedure

4.15.1 Normal procedure



(GMM 1)
GMM is in state GMM-REGISTERED.any-state. GMM receives the message AUTHENTICATION AND CIPHERING REQUEST with the LL_UNITDATA_IND primitive. GMM generates the new GPRS ciphering key.

<R.GMM.AUTHRES.M.001>, <R.GMM.AUTHRES.M.002>, <R.GMM.AUTHRES.M.003>

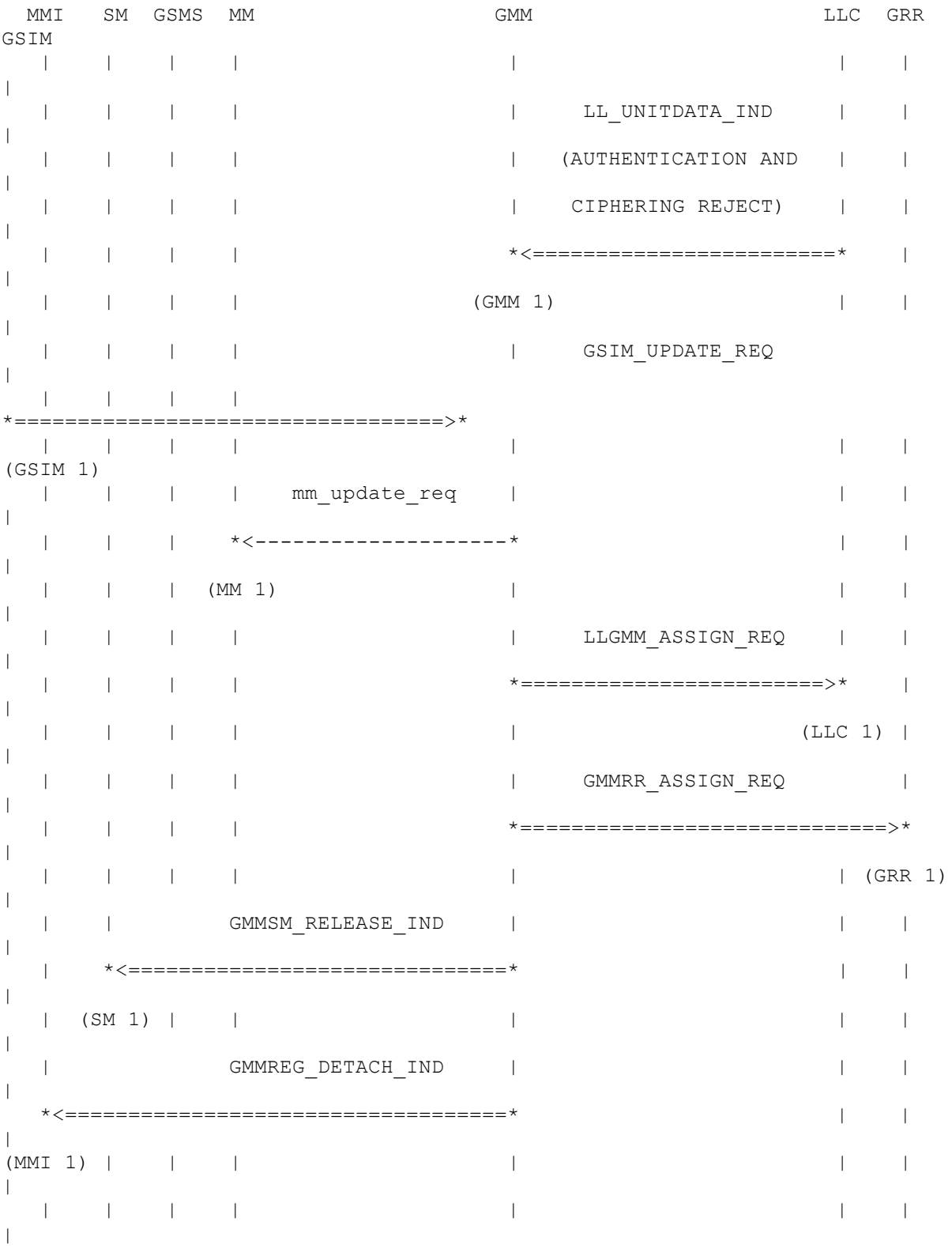
(GSIM 1)
GMM stores the new GPRS ciphering key and the GPRS ciphering key sequence number on the SIM.
<R.GMM.AUTHRES.M.003>, <R.GMM.AUTHRES.M.004>, <R.GMM.CIPSEQNR.M.004>

(LLC 1)
GMM transmits the AUTHENTICATION AND CIPHERING RESPONSE with the LL_UNITDATA_REQ primitive.
<R.GMM.AUTHRES.M.005>

(LLC 2)
GMM sends the primitive LLGMM_ASSIGN_REQ (Kc, Ciphering Algorithm) to LLC, indicating if ciphering shall be used or not, and if yes, which algorithm and GPRS ciphering key shall be used.

<R.GMM.AUTHRES.M.006>

4.15.2 Unsuccessful authentication and ciphering



(GMM 1)
GMM receives the AUTHENTICATION AND CIPHERING REJECT message with the primitive LL_UNITDATA_IND. GMM aborts any GMM procedure. GMM stops timers T3310 and T3330. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.AUTHREJ.M.010>, <R.GMM.AUTHREJ.M.011>, <R.GMM.AUTHREJ.M.012>

(GSIM 1)
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.AUTHREJ.M.005>, <R.GMM.AUTHREJ.M.006>,

(MM 1)

GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. The SIM is considered as invalid until switching off or the SIM is removed.

<R.GMM.AUTHREJ.M.007>, <R.GMM.AUTHREJ.M.008>, <R.GMM.AUTHREJ.M.009>

(LLC 1)
GMM deletes the TLLI in LLC with the primitive LLGMM_ASSIGN_REQ. LLC enters state 'TLLI Unassigned'.

<R.GMM.AUTHREJ.M.006>

(GRR 1)
GMM deletes the TLLI in GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.AUTHREJ.M.006>

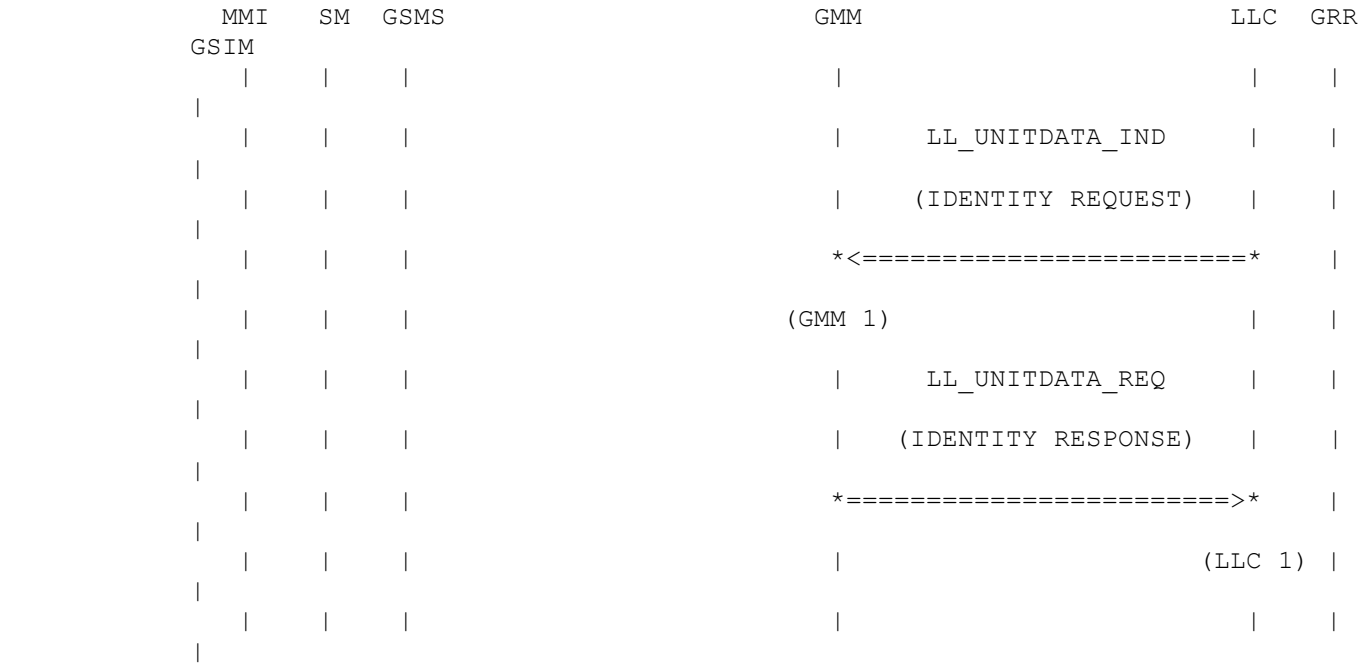
(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.AUTHREJ.M.012>

(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.AUTHREJ.M.012>

4.16 Identification procedure



(GMM 1)
GMM is in state GMM-REGISTERED.any-state). GMM receives the IDENTITY REQUEST message with the primitive LL_UNITDATA_IND.

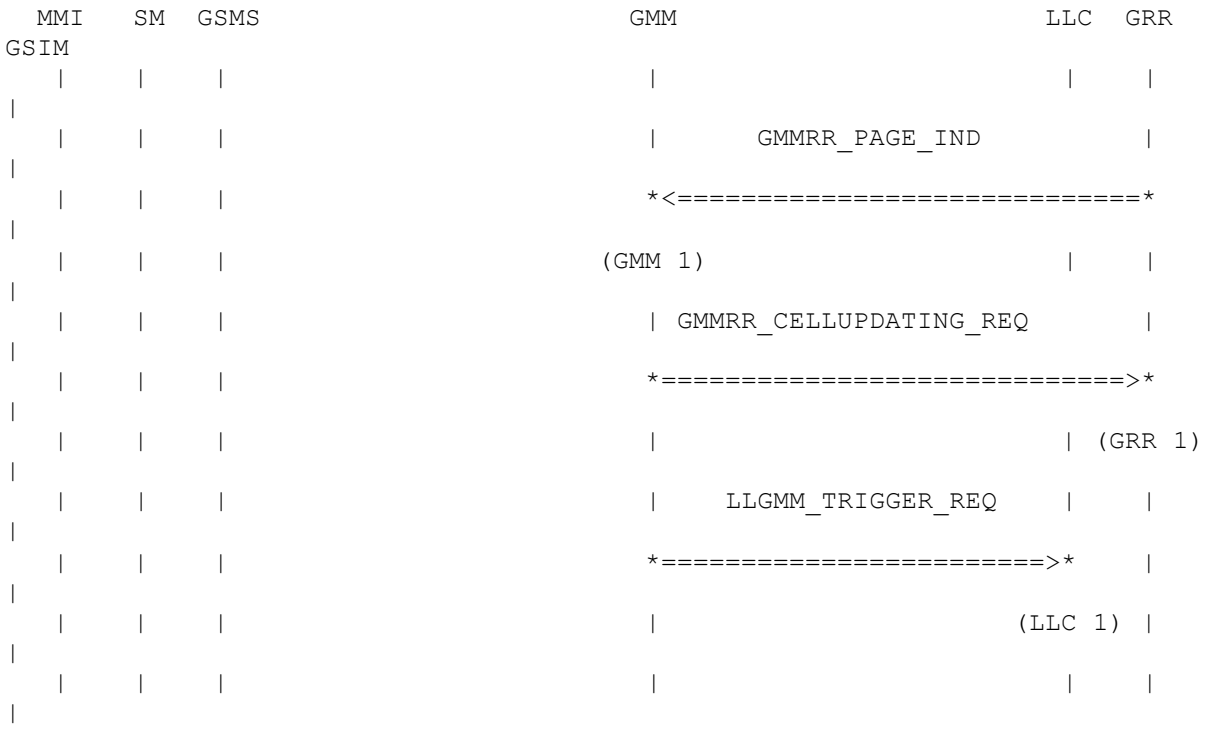
<R.GMM.IDNTRES.M.001>

(LLC 1)
GMM transmits the IDENTITY RESPONSE message with the primitive LL_UNITDATA_REQ. The message contains the requested identification parameters.

<R.GMM.IDNTRES.M.002>, <R.GMM.IDNTRES.M.003>

4.17 Paging procedure for GPRS services

4.17.1 Paging with the P-TMSI



(GMM 1)
GMM is in state GMM-REGISTERED.any-state. GMM receives the primitive GMMRR_PAGE_IND (Page ID = 'P-TMSI') from GRR. GMM starts timer T3314.

<R.GMM.PAGNGPRS.M.007>, <R.GMM.PAGNGPRS.M.015>

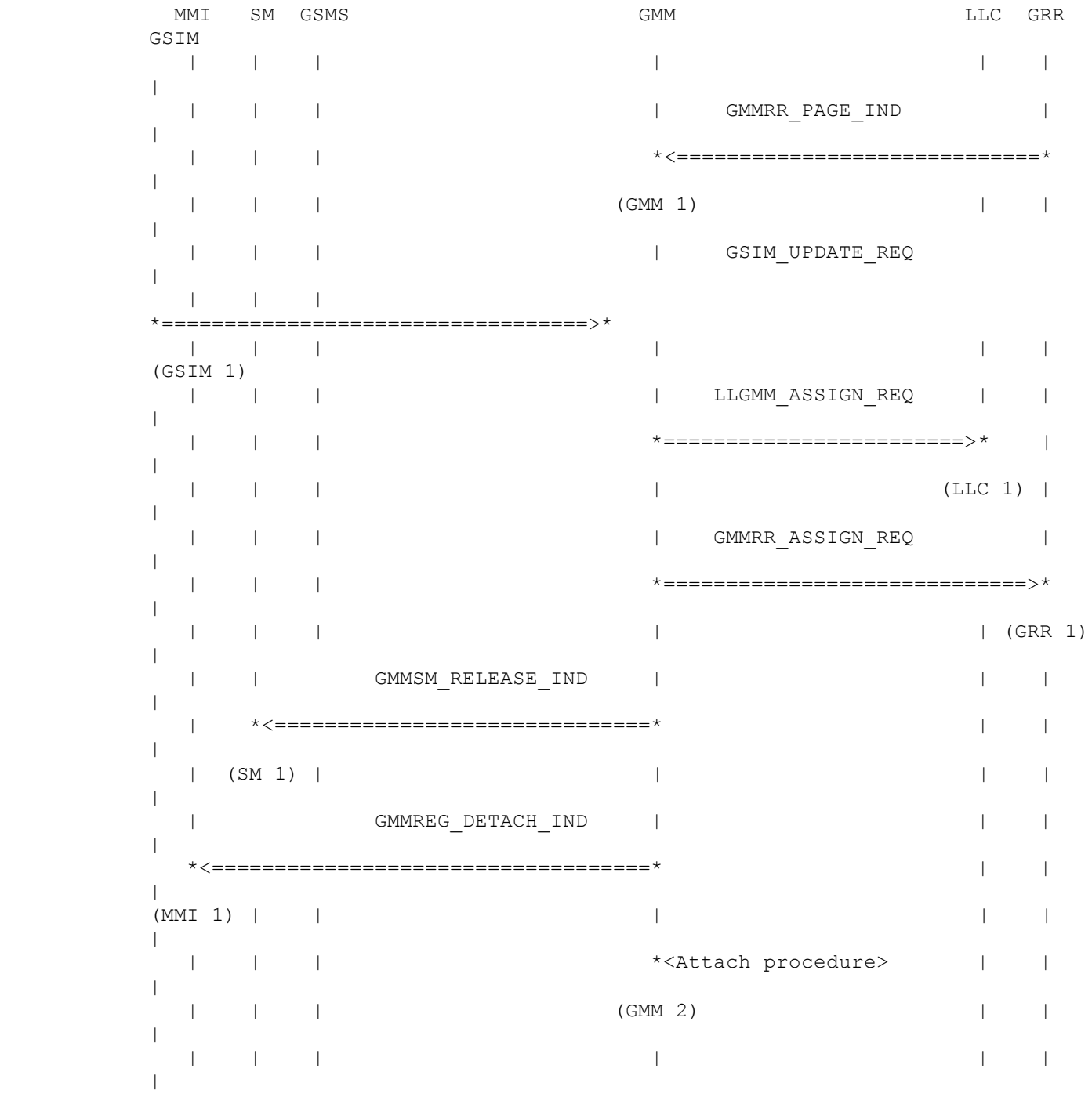
(GRR 1)
GMM requests GRR to perform the cell updating procedure when a new cell is selected.

<R.GMM.READYTIM.M.002>

(LLC 1)
GMM sends the primitive LLGMM_TRIGGER_REQ to LLC in order to request LLC to send any LLC frame.

<R.GMM.PAGNGPRS.M.016>

4.17.2 Paging with the IMSI



(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE. GMM receives the primitive GMMRR_PAGE_IND (Page ID = 'IMSI') from GRR. GMM enters state GMM-DEREGISTERED.NORMAL-SERVICE.

<R.GMM.PAGNGPRS.M.007>, <R.GMM.PAGNGPRS.M.010>, <R.GMM.PAGNGPRS.M.011>, <R.GMM.DSUBFANO.M.004>

(GSIM 1)
GMM enters GPRS update status GU2.

<R.GMM.PAGNGPRS.M.008>, <R.GMM.PAGNGPRS.M.009>

(LLC 1)
GMM unassigns all TLLIs in LLC with the primitive LLGMM_ASSIGN_REQ.
<R.GMM.PAGNGPRS.M.008>

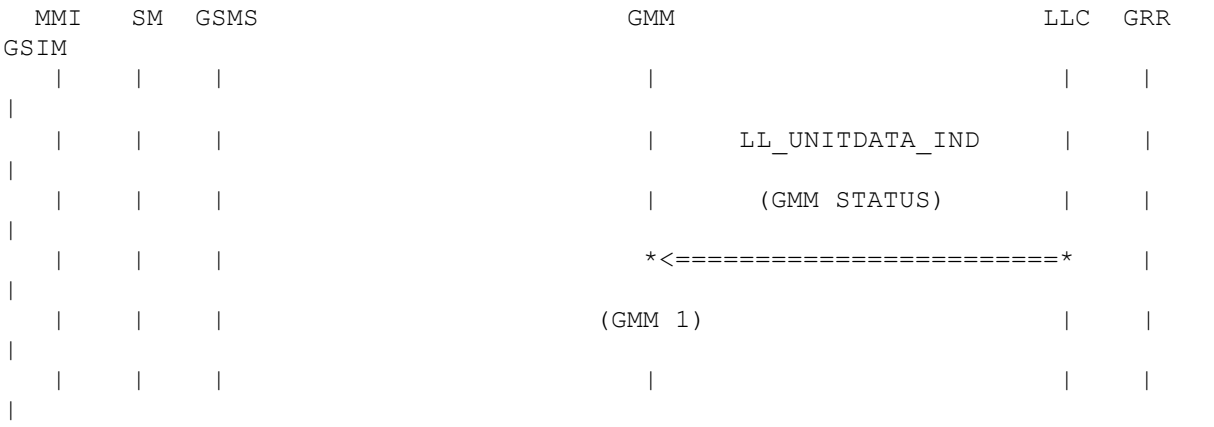
(GRR 1)
GMM unassigns all TLLIs in GRR with the primitive GMMRR_ASSIGN_REQ.
<R.GMM.PAGNGPRS.M.008>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.PAGNGPRS.M.010>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.PAGNGPRS.M.010>

(GMM 2)
Depending on the network operation mode, the normal or combined GPRS attach procedure is started (see section 4.7).
<R.GMM.ODNORMAL.M.001>, <R.GMM.ODNORMAL.M.002>, <R.GMM.ODNORMAL.M.003>, <R.GMM.ODNORMAL.M.005>, <R.GMM.DDNORMAL.M.001>, <R.GMM.ATTACH.M.002>, <R.GMM.ATTACH.M.003>

4.18 GMM STATUS message



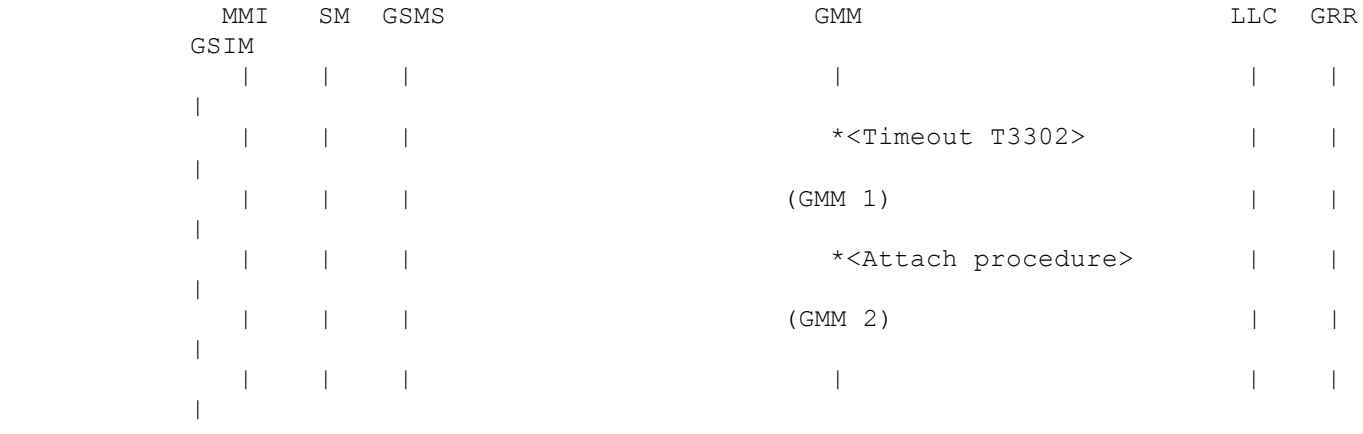
(GMM 1)
GMM receives the GMM STATUS message with the primitive LL_UNITDATA_IND. No state transition and no specific action is taken as seen from the radio interface, i.e. local actions are possible.

<R.GMM.GMMSTAT.M.001>

4.19 Timer

4.19.1 T3302 time-out

4.19.1.1 State GMM-DEREGISTERED



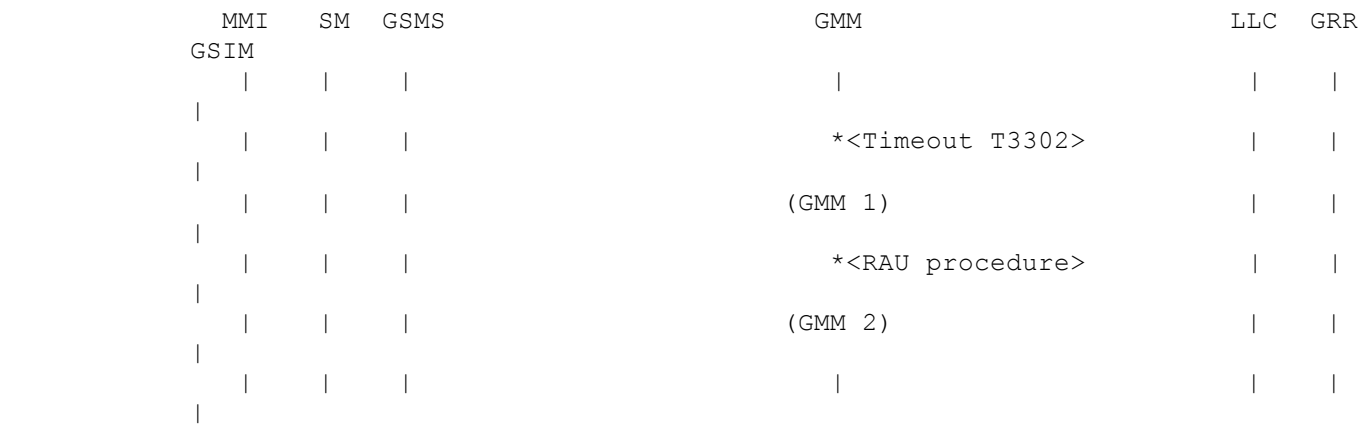
(GMM 1)
GMM is in state GMM-DEREGISTERED.ATTEMPTING-TO-ATTACH. Timeout of timer T3302. GMM resets the GPRS attach attempt counter.

<R.GMM.ATTACH.M.010>

(GMM 2)
GMM restarts the normal or combined GPRS attach procedure.

<R.GMM.DDATMATT.M.001>

4.19.1.2 State GMM-REGISTERED



(GMM 1)
GMM is in state GMM-REGISTERED.ATTEMPTING-TO-UPDATE. Timeout of timer T3302. GMM resets the RAU attempt counter.

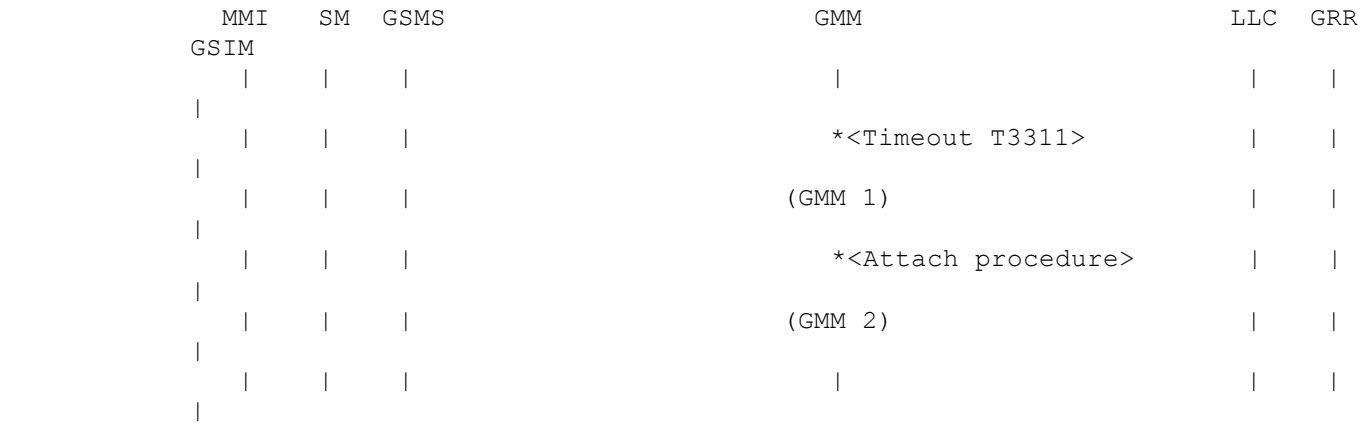
<R.GMM.RAU.M.012>

(GMM 2)
GMM restarts the normal or combined RAU procedure.

<R.GMM.DRATMUPD.M.002>

4.19.2 T3311 time-out

4.19.2.1 State GMM-DEREGISTERED



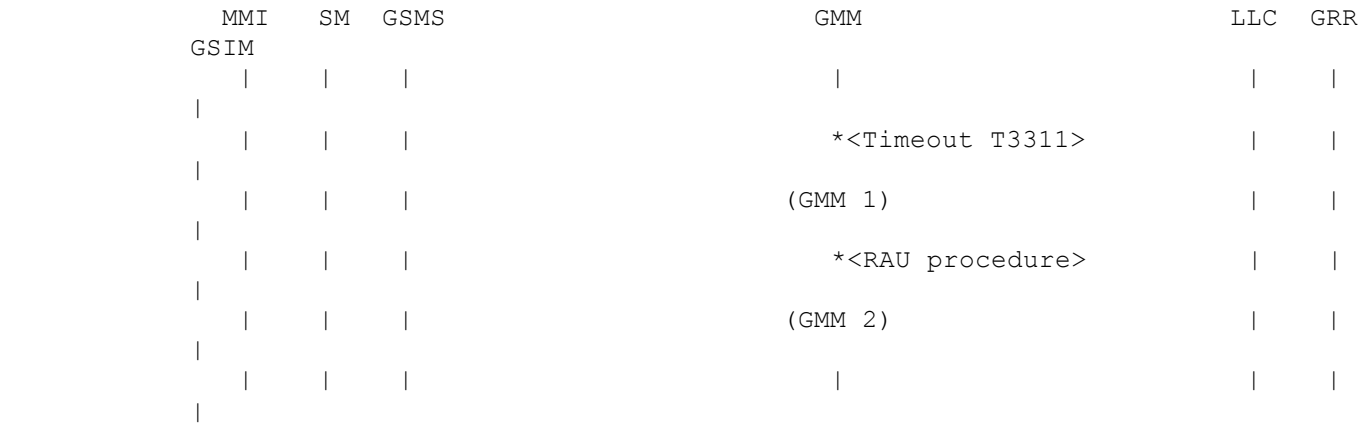
(GMM 1)
GMM is in state GMM-DEREGISTERED.ATTEMPTING-TO-ATTACH. Timeout of timer T3311.

<R.GMM.DDATMATT.M.001>

(GMM 2)
GMM restarts the normal or combined GPRS attach procedure.

<R.GMM.DDATMATT.M.001>

4.19.2.2 State GMM-REGISTERED



(GMM 1)
GMM is in state GMM-REGISTERED.ATTEMPTING-TO-UPDATE. Timeout of timer T3311.

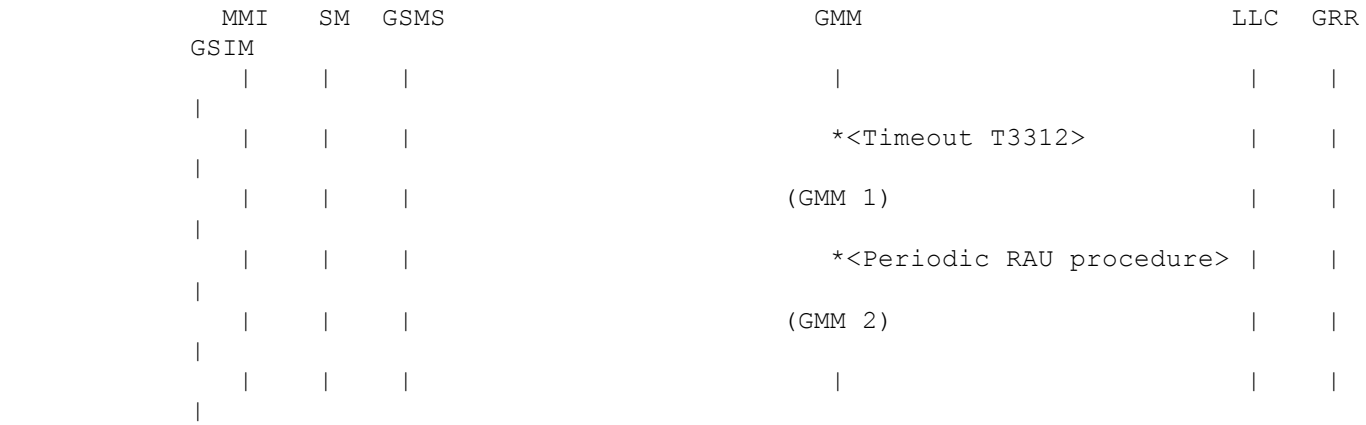
<R.GMM.DRATMUPD.M.002>

(GMM 2)
GMM restarts the normal or combined RAU procedure.

<R.GMM.DRATMUPD.M.002>

4.19.3 T3312 time-out

4.19.3.1 State GMM-REGISTERED.NORMAL-SERVICE



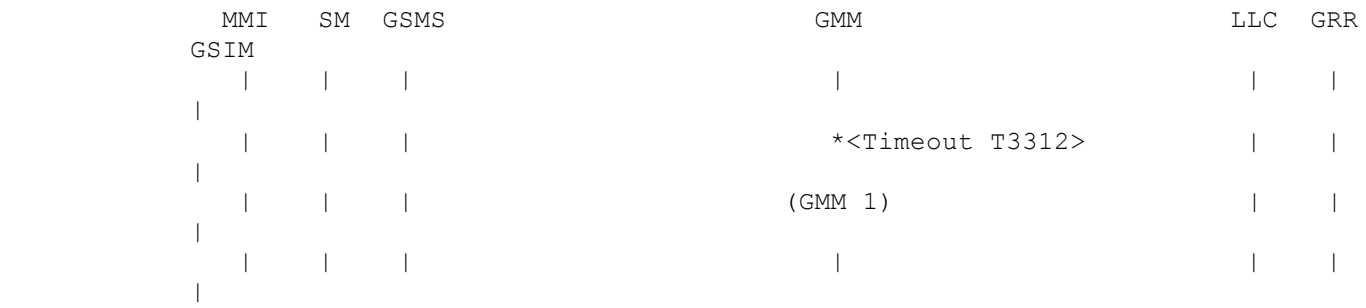
(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE. Timeout of timer T3312.

<R.GMM.RAUTIMER.M.007>, <R.GMM.RAU.M.003>

(GMM 2)
GMM starts the periodic RAU procedure.

<R.GMM.RAUTIMER.M.007>, <R.GMM.RAU.M.003>, <R.GMM.RAUNORM.M.005>

4.19.3.2 State GMM-REGISTERED.SUSPENDED



(GMM 1)
GMM is in state GMM-REGISTERED.SUSPENDED. Timeout of timer T3312. As soon as state GMM-REGISTERED.SUSPENDED is left, GMM starts the periodic RAU procedure.

<R.GMM.RAUTIMER.M.008>

4.19.3.3 State GMM-REGISTERED.NO-CELL-AVAILABLE

(GMM 1)
GMM is in state GMM-REGISTERED.NO-CELL-AVAILABLE, MM is not in state IDLE. Timeout of timer T3312. Depending on the state, the network operation mode, and the RA, GMM starts the corresponding RAU and/or LAU procedures, as soon

as GMM enters state GMM-REGISTERED.NORMAL-SERVICE or GMM-REGISTERED.LIMITED-SERVICE (see sections 4.6.1.1 and 4.6.2.1).

<R.GMM.RAUTIMER.M.011>, <R.GMM.RAUTIMER.M.012>, <R.GMM.RAUTIMER.M.013>, <R.GMM.RAUTIMER.M.014>, <R.GMM.RAUTIMER.M.015>, <R.GMM.RAUTIMER.M.016>

4.19.3.4 State GMM-REGISTERED.LIMITED-SERVICE

(GMM 1)
GMM is in state GMM-REGISTERED.LIMITED-SERVICE, MM is not in state IDLE, and the network operates in mode I. Timeout of timer T3312. As soon as GMM returns to state GMM-REGISTERED.NORMAL-SERVICE and the network still operates in mode I, GMM starts the combined RAU procedure indicating 'combined RA/LA updating with IMSI attach'.

<R.GMM.RAUTIMER.M.018>

(MM 1)
GMM requests MM to perform the LAU procedure.

<R.GMM.RAUTIMER.M.017>

4.19.3.5 Other state

(GMM 1)
GMM is in other state than GMM-REGISTERED.NORMAL-SERVICE. Timeout of timer T3312. As soon as GMM returns to state GMM-REGISTERED.NORMAL-SERVICE, GMM starts the periodic RAU procedure.

<R.GMM.RAUTIMER.M.009>

4.19.4 T3314 time-out

(GMM 1)
GMM is in state GMM-REGISTERED.any-state. Timeout of timer T3314. GMM starts timer T3312.
<R.GMM.READYTIM.M.020>, <R.GMM.RAUTIMER.M.005>

(GRR 1)
GMM requests GRR to not perform the cell updating procedure when a new cell is selected.
<R.GMM.READYTIM.M.005>

4.19.5 T3316 time-out

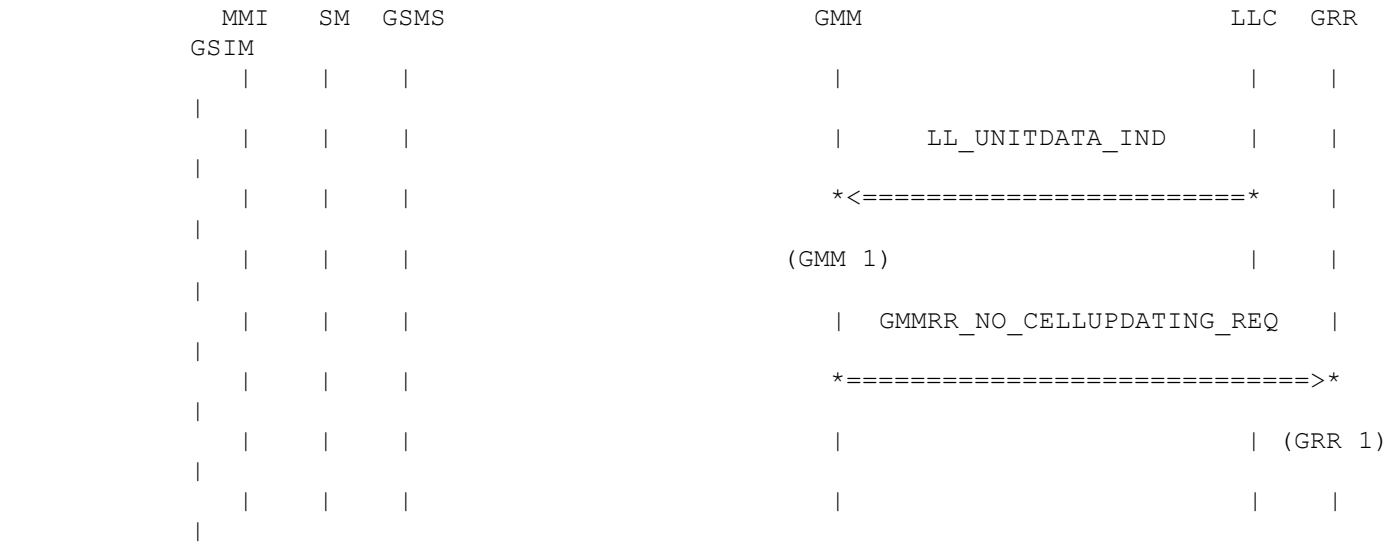
(GMM 1)
GMM-AA is in state GMM-REGISTERED. Timeout of timer T3316. GMM-AA enters state GMM-DEREGISTERED.
<R.GMM.READYTIM.M.007>, <R.GMM.GMMAAMS.M.003>, <R.GMM.GMMAAMS.M.004>

(SM 1)
GMM informs SM that the anonymous GMM contexts are deactivated.

<R.GMM.PARELIND.M.001>, <R.GMM.READYTIM.M.006>, <R.GMM.GMMAAMS.M.003>

4.19.6 Force to standby IE

4.19.6.1 Standby requested



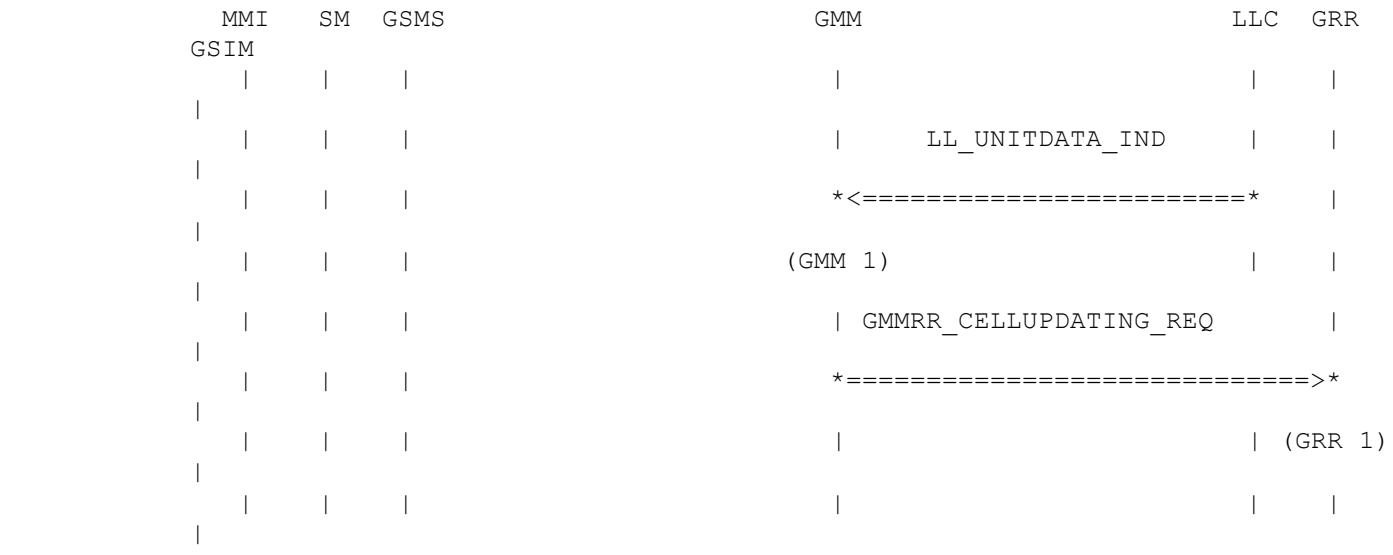
(GMM 1)
GMM is in any other state than GMM-DEREGISTERED. GMM receives a message from the network with IE Force to standby = 'Force to standby indicated'. GMM stops timer T3314. GMM starts timer T3312.

<R.GMM.READYTIM.A.011>, <R.GMM.READYTIM.M.012>, <R.GMM.READYTIM.M.020>, <R.GMM.RAUTIMER.M.005>

(GRR 1)
GMM requests GRR to not perform the cell updating procedure when a new cell is selected.

<R.GMM.READYTIM.M.005>

4.19.6.2 Standby not requested



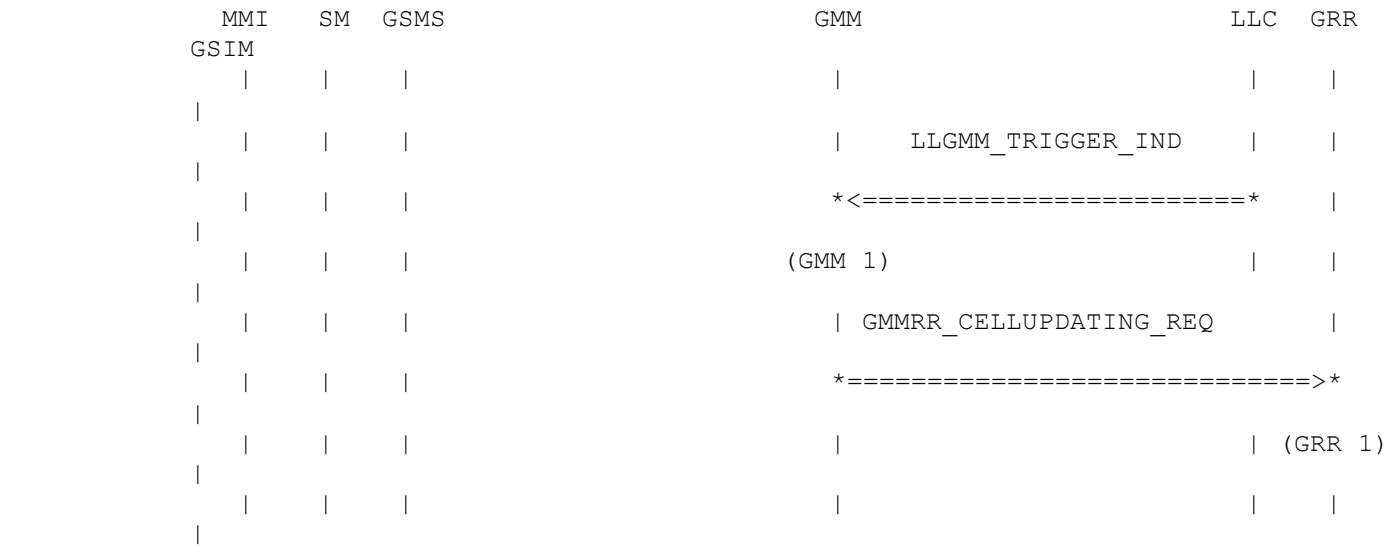
(GMM 1)
GMM is in any other state than GMM-DEREGISTERED. GMM receives a message from the network with IE Force to standby = 'Force to standby not indicated'. GMM stops timer T3312. GMM starts timer T3314.

<R.GMM.READYTIM.A.011>, <R.GMM.READYTIM.M.012>

(GRR 1)
GMM requests GRR to perform the cell updating procedure when a new cell is selected.

<R.GMM.READYTIM.M.002>

4.19.7 Receipt of LLGMM-TRIGGER-IND



(GMM 1)
GMM is in state GMM-REGISTERED.any-state and/or GMM-AA is in state GMMAA-REGISTERED. GMM receives the indication from LLC that a frame has been sent. If GMM is in state GMM-REGISTERED.any-state, GMM stops timer T3312 and starts timer T3314. If GMM-AA is in state GMMAA-REGISTERED, timer T3316 is started.

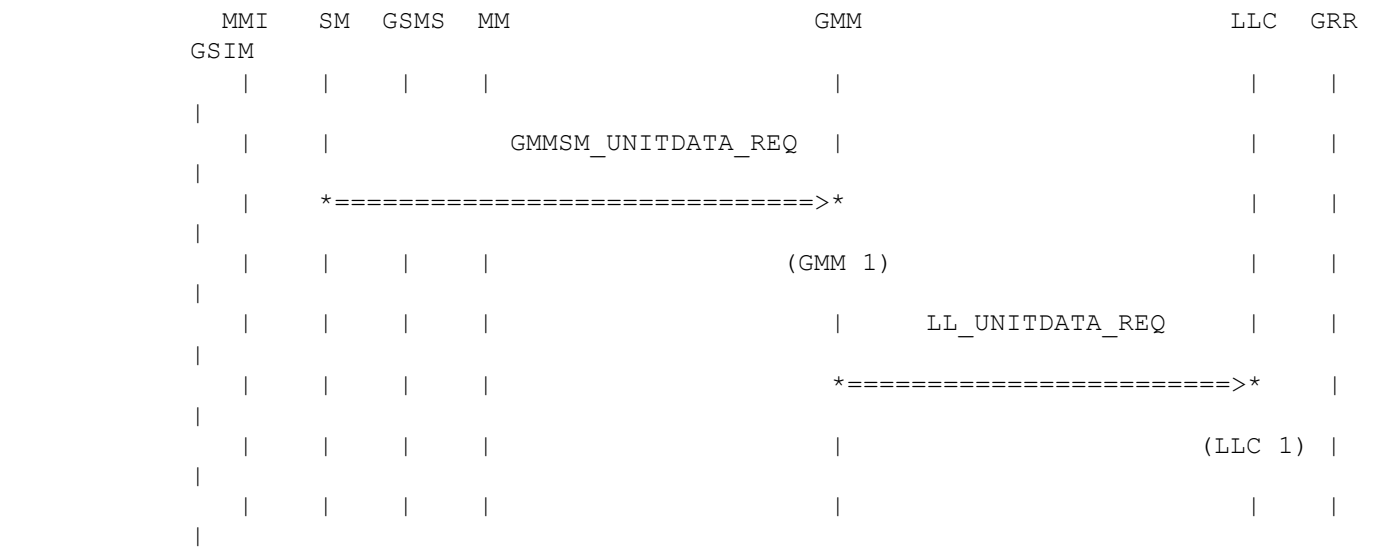
<R.GMM.READYTIM.M.009>, <R.GMM.RAUTIMER.M.006>, <R.GMM.GMMAAMS.M.002>

(GRR 1)
GMM requests GRR to perform the cell updating procedure when a new cell is selected.

<R.GMM.READYTIM.M.002>, <R.GMM.GMMAAMS.M.005>

4.20 SM data transfer

4.20.1 Transmission of SM data

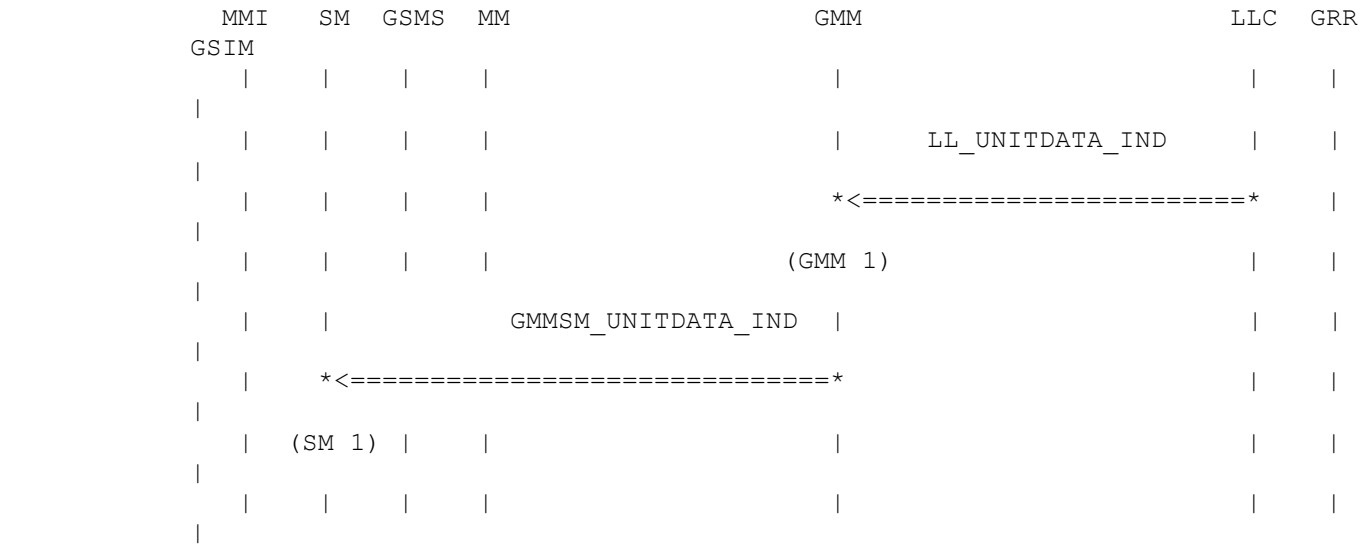


(GMM 1)
GMM is in state GMM-REGISTERED, or GMM is in state GMM-DEREGISTERED and the timer T3316 is running. GMM is requested by SM to send an SM message in LLC unacknowledged mode to the peer SM.

<R.GMM.PUNITREQ.M.001>

(LLC 1)
GMM requests LLC to transmit the received SM message in LLC unacknowledged mode of operation.
<R.GMM.PUNITREQ.M.001>

4.20.2 Receipt of SM data



(GMM 1)
GMM is in state GMM-REGISTERED, or GMM is in state GMM-DEREGISTERED and the timer T3316 is running. GMM receives a message for SM (PD = 'Session Management messages') with the LL_UNITDATA_IND primitive from LLC.
<R.GMM.PUNITIND.M.001>

(SM 1)
GMM forwards the received SM message to SM with the GMMSM_UNITDATA_IND primitive.

<R.GMM.PUNITIND.M.001>

4.21 Dedicated mode

4.21.1 Entering dedicated mode

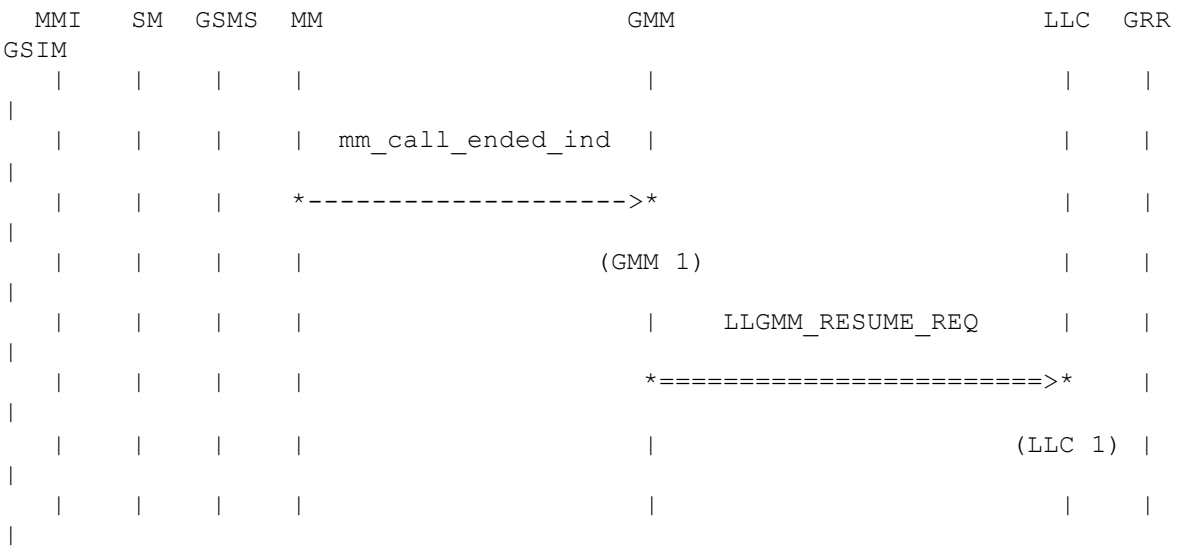
(GMM 1)
GMM is in state GMM-REGISTERED.any-state. MM informs GMM that a circuit switched call is started. GMM enters state GMM-REGISTERED.SUSPENDED.

<R.GMM.ORSUSPND.M.001>, <R.GMM.RAUTIMER.M.019>

(LLC 1)
GMM suspends data transmission in LLC.

<R.GMM.ORSUSPND.M.002>, <R.GMM.DRSUSPND.M.001>

4.21.2 Leaving dedicated mode

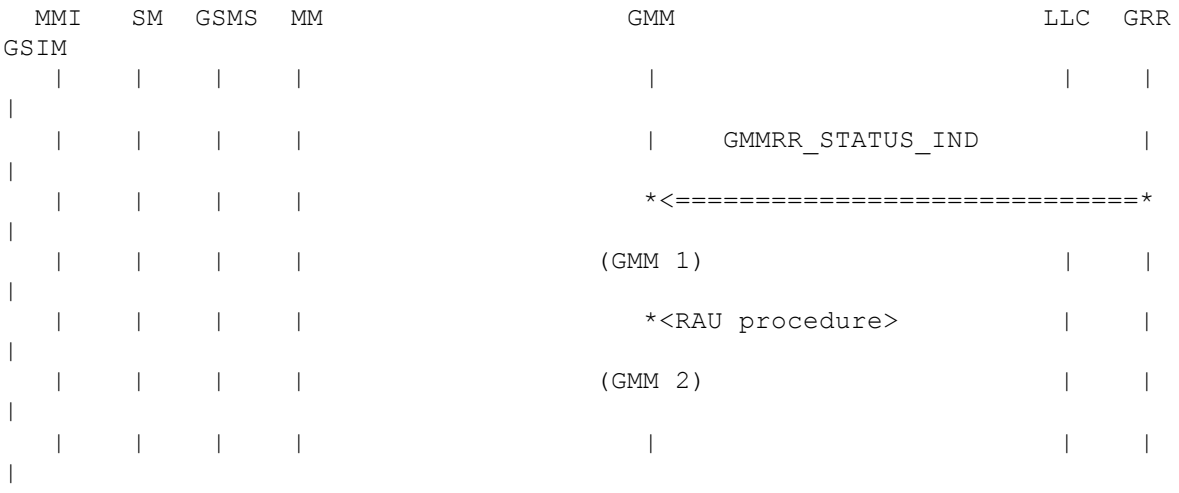


(GMM 1)
GMM is in state GMM-REGISTERED.SUSPENDED. MM informs GMM that the circuit switched call has ended. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

<R.GMM.ORSUSPND.M.004>, <R.GMM.MSREG.M.002>

(LLC 1)
GMM resumes data transmission in LLC.
<R.GMM.ORSUSPND.M.002>, <R.GMM.DRSUSPND.M.001>

4.21.3 Resumption failure after dedicated mode was left



(GMM 1)
GRR indicates to GMM a resumption failure after dedicated mode was left.
<R.GMM.RAU.M.005>

(GMM 2)
The normal or combined RAU procedure is started.
<R.GMM.RAU.M.005>

4.22 Interaction with GSMS

(GMM 1)
GMM is in any state. GMM is requested to send the current IMSI registration state to GSMS.
<R.GMM.PSTATREQ.M.001>

(GSMS 1)
GMM sends the current IMSI registration state to GSMS.

<R.GMM.PSTATRSP.M.001>

Appendices

A. Acronyms

DS-WCDMA	Direct Sequence/Spread Wideband Code Division Multiple Access

B. Glossary

International Mobile Telecommunication 2000 (IMT-2000/ITU-2000)	Formerly referred to as FPLMTS (Future Public Land-Mobile Telephone System), this is the ITU's specification/family of standards for 3G. This initiative provides a global infrastructure through both satellite and terrestrial systems, for fixed and mobile phone users. The family of standards is a framework comprising a mix/blend of systems providing global roaming. <URL: http://www.imt-2000.org/>