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GSM GENERAL PACKET RADIO SERVICES

MESSAGE SEQUENCE CHARTS

GMM

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

1.1 References

[1] GSM 05.02 version 8.0.0 Release 1999
Digital cellular telecommunications system (Phase 2+);
Multiplexing and multiple access on the radio path

[2] GSM 04.60 version 6.3.0 Release 1997
Digital cellular telecommunications system (Phase 2+);
General Packet Radio Service (GPRS);
Mobile Station (MS) - Base Station System (BSS) interface;
Radio Link Control/ Medium Access Control (RLC/MAC) protocol

[3] GSM 04.08 version 6.3.0 Release 1997
Digital cellular telecommunications system (Phase 2+);
Mobile radio interface layer 3 specification

[4] GSM 03.64 version 6.1.0 Release 1997
Digital cellular telecommunications system (Phase 2+);
General Packet Radio Service (GPRS);
Overall description of the GPRS radio interface; Stage 2

[5] GSM 03.60 version 6.3.1 Release 1997
Digital cellular telecommunications system (Phase 2+);
General Packet Radio Service (GPRS);
Service description; Stage 2

[6] GSM 04.07 version 6.3.0 Release 1997
Digital cellular telecommunications system (Phase 2+);
Mobile radio interface signalling layer 3; General aspects

[7] GSM 04.64 version 6.3.0 Release 1997
Digital cellular telecommunications system (Phase 2+);
General Packet Radio Service (GPRS);
Mobile Station - Serving GPRS Support Node (MS-SGSN)
Logical Link Control (LLC) layer specification

[8] GSM 05.08 version 6.4.0 Release 1997
Digital cellular telecommunications system (Phase 2+);
Radio subsystem link control

[9] GSM 05.10 version 6.3.0 Release 1997
Digital cellular telecommunications system (Phase 2+);
Radio subsystem synchronization

[10] GSM 03.20 TS 100 929: July 1998 (GSM 03.20 version 6.0.1)
Security related network functions, ETSI

[11] Draft GSM 03.22: August 1998 (GSM 03.22 version 6.1.0)
Functions related to Mobile Station (MS) in idle mode and group receive mode, ETSI

[12] GSM 04.65 V6.3.0: Subnetwork Dependant Convergence Protocol
ETSI, March 1999

[13] ITU-T V42bis ITU-T, Recommendation V.42 bis 1990

[14] GSM 09.60 GPRS Tunneling Protocol (GTP) across the Gn and Gp Interface

[15] RFC 1661 IETF STD 51 July 1994
The Point-to-Point Protocol (PPP)

[16] RFC 1662 IETF STD 51 July 1994
PPP in HDLC-like Framing

[17] RFC 1570 January 1994
PPP LCP Extensions

[18] RFC 1989 August 1996
PPP Link Quality Monitoring

[19] RFC 1332 May 1992
The PPP Internet Protocol Control Protocol (IPCP)

[20] RFC 1877 December 1995
PPP IPCP Extensions for Name Server Addresses

[21] RFC 2153 May 1997
PPP Vendor Extensions

[22] RFC 1334 October 1992
PPP Authentication Protocols (for Password Authentication Protocol only)

[23] RFC 1994 August 1996
PPP Challenge Handshake Authentication Protocol (CHAP)

1.2 Abbreviations

AGCH	Access Grant Channel
AT	Attention sequence "AT" to indicate valid commands of the ACI
BCCH	Broadcast Control Channel
BS	Base Station
BSIC	Base Station Identification Code
C/R	Command/Response
C1	Path Loss Criterion
C2	Reselection Criterion
CBCH	Cell Broadcast Channel
CBQ	Cell Bar Qualify
CC	Call Control
CCCH	Common Control Channel
CCD	Condat Coder Decoder
CHAP	Challenge Handshake Authentication Protocol
CKSN	Ciphering Key Sequence Number
CRC	Cyclic Redundancy Check
DCCH	Dedicated Control Channel
DCOMP	Identifier of the user data compression algorithm used for the N-DPU
DISC	Disconnect Frame
DL	Data Link Layer
DM	Disconnected Mode Frame
DTX	Discontinuous Transmission
E	Extension bit
EA	Extension Bit Address Field
EL	Extension Bit Length Field
EMMI	Electrical Man Machine Interface
F	Final Bit
FACCH	Fast Associated Control Channel
FHO	Forced Handover
GACI	GPRS AT Command Interpreter
GMM	GPRS Mobility Management
GP	Guard Period
GRR	GPRS RR
GSM	Global System for Mobile Communication
HDLC	High-level Data Link Control
HISR	High level Interrupt Service Routine
HPLMN	Home Public Land Mobile Network
I	Information Frame
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPCP	Internet Protocol Control Protocol
ITU	International Telecommunication Union
IWF	Interworking Function
Kc	Ciphering Key
L	Length Indicator
LAI	Location Area Information
LCP	Link Control Protocol
LISR	Low level Interrupt Service Routine
LLC	Logical Link Control

LPD	Link Protocol Discriminator
LQM	Link Quality Monitoring
M	More bit used to indicate the last segment of N-DPU
MAC	Medium Access Control
MCC	Mobile Country Code
MM	Mobility Management
MMI	Man Machine Interface
MNC	Mobile Network Code
MS	Mobile Station
MT	Mobile Termination
N(R)	Receive Number
N(S)	Send Number
NC	Network Control
NCC	National Colour Code
NCP	Network Control Protocol
NECI	New Establishment Causes included
N-PDU	Network Protocol Data Unit
NSAPI	Network Layer Service Access Point Identifier
OTD	Observed Time Difference
P	Poll Bit
P/F	Poll/Final Bit
PACCH	Packet Associated Control Channel
PAP	Password Authentication Protocol
PBCCH	Packet BCCH
PCCCH	Packet CCCH
PCOMP	Identifier of the protocol control information compression algorithm used for the N-DPU
PDCH	Packet Data Channel
PDP	Packet Data Protocol e.g. IP or X.25
PDTCH	Packet Data Traffic Channel
PRACH	Packet RACH
PSI	Packet System Information
PCH	Paging Channel
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PL	Physical Layer
PLMN	Public Land Mobile Network
PPP	Point-to-Point Protocol
PTP	Point to Point
QoS	Quality of Service
RACH	Random Access Channel
REJ	Reject Frame
RLC	Radio Link Control
RNR	Receive Not Ready Frame
RR	Radio Resource Management
RR	Receive Ready Frame
RTD	Real Time Difference
RTOS	Real Time Operating System
SABM	Set Asynchronous Balanced Mode
SACCH	Slow Associated Control Channel
SAP	Service Access Point
SAPI	Service Access Point Identifier
SDCCH	Slow Dedicated Control Channel
SDU	Service Data Unit
SGSN	Serving GPRS Support Node
SIM	Subscriber Identity Module
SM	Session Management

SMS	Short Message Service
SMSCB	Short Message Service Cell Broadcast
SNDCP	Subnetwork Dependant Convergence Protocol
SNSM	SNDCP-SM
SS	Supplementary Services
TAP	Test Application Program
TBF	Temporary Block Flow
TCH	Traffic Channel
TCH/F	Traffic Channel Full Rate
TCH/H	Traffic Channel Half Rate
TCP	Transmission Control Protocol
TDMA	Time Division Multiple Access
TE	Terminal Equipment - e. g. a PC
TFI	Temporary Flow Identifier
TLLI	Temporary Logical Link Identifier
TMSI	Temporary Mobile Subscriber Identity
TQI	Temporary Queuing Identifier
UA	Unnumbered Acknowledgement Frame
UART	Universal Asynchronous Receiver Transmitter
UI	Unnumbered Information Frame
USF	Uplink State Flag
V(A)	Acknowledgement State Variable
V(R)	Receive State Variable
V(S)	Send State Variable
VPLMN	Visiting Public Land Mobile Network

1.3 Terms

Entity:	Program which executes the functions of a layer
Message:	A message is a data unit which is transferred between the entities of the same layer (peer-to-peer) of the mobile and infrastructure side. Message is used as a synonym to protocol data unit (PDU). A message may contain several information elements.
Primitive:	A primitive is a data unit which is transferred between layers on one component (mobile station or infrastructure). The primitive has an operation code which identifies the primitive and its parameters.
Service Access Point:	A Service Access Point is a data interface between two layers on one component (mobile station or infrastructure).

2 Overview

The Protocol Stacks are used to define the functionality of the GSM protocols for interfaces. The GSM specifications are normative when used to describe the functionality of interfaces, but the stacks and the subdivision of protocol layers does not imply or restrict any implementation.

The protocol stack for GPRS consists of several entities. Each entity has one ore more service access points, over which the entity provides a service for the upper entity.

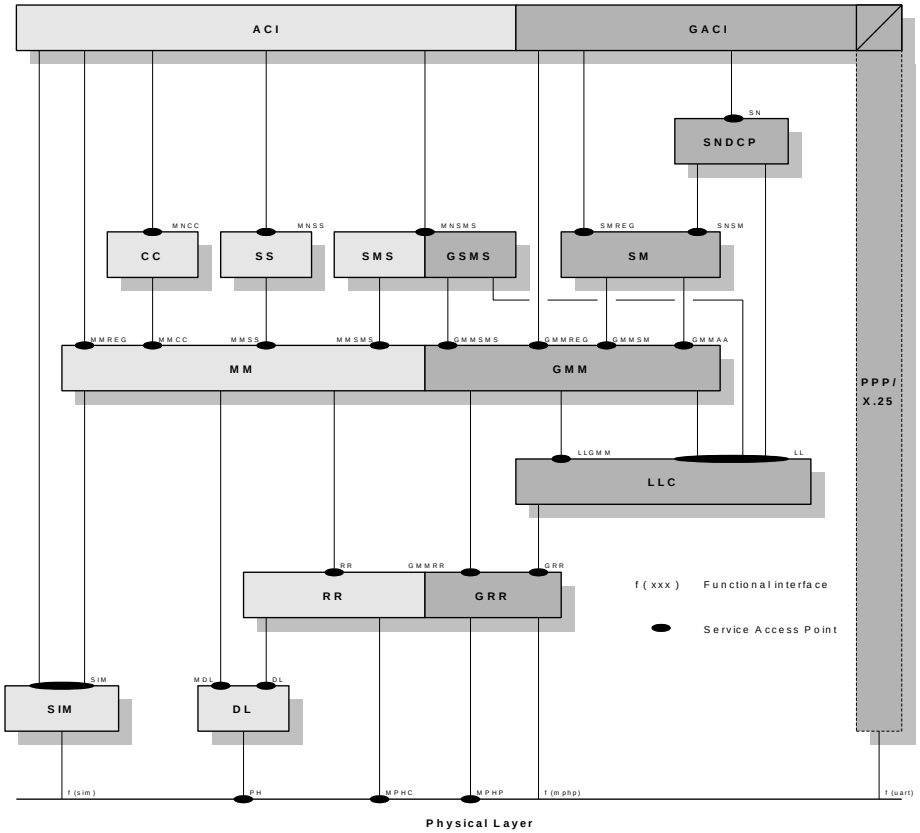


Figure 2-1: Architecture of the GSM/GPRS protocol stack

The information units passed via the SAPs are called primitives and consists of an operation code and several parameters. See the Users Guide for details.

The entities of the GPRS protocol stack are:

2.1 GRR (RLC/MAC) – Radio Link Control/Medium Access Control

This layer contains two functions: The Radio Link Control function provides a radio-solution-dependent reliable link. The Medium Access Control function controls the access signalling (request and grant) procedures for the radio channel, and the mapping of LLC frames onto the GSM physical channel.

2.2 LLC – Logical Link Control

The LLC entity provides multiple highly reliable logical links for asynchronous data transfer between the MS and the network. It supports variable-length information frames, acknowledged and unacknowledged data transfer, flow and sequence control, error detection and recovery, notification of unrecoverable errors, user identity confidentiality, and ciphering of user data.

2.3 GMM – GPRS Mobility Management

The GMM entity provides procedures for the mobility of the MS, such as informing the network of its present location, and user identity confidentiality. It manages the GMM context (attach, detach, routing area updating), supports security functions such as authentication of user and MS, controls ciphering of user data, and initiates the response to paging messages.

2.4 SM – Session Management

The main function of the session management (SM) is to support PDP context handling of the user terminal. Session Management activates, modifies and deletes the contexts for packet data protocols (PDP). Session Management services are provided at the SMREG-SAP and the SNSM-SAP for anonymous and non-anonymous access. The non-anonymous and anonymous access procedures for PDP context activation and PDP context deactivation are available at the SMREG-SAP. In addition there exists a PDP context modification for non-anonymous PDP contexts.

2.5 SNDCP - Subnetwork Dependant Convergence Protocol

SNDCP carries out all functions related to transfer of Network layer Protocol Data Units (N-PDUs) over GPRS in a transparent way. SNDCP helps to improve channel efficiency by means of compression techniques. The set of protocol entities above SNDCP consists of commonly used network protocols. They all use the same SNDCP entity, which then performs multiplexing of data coming from different sources to be sent using the service provided by the LLC layer.

2.6 GACI – GPRS AT Command Interpreter

The ACI is the GPRS extension of the ACI. It is specified in GSM 07.60. It is responsible for processing of the GPRS related AT Commands to setup, activate and deactivate the PDP context parameter. It also provides funtionallity for the interworking between GMM/SM/SNDCP and a packet oriented protocol like PPP.

2.7 USART - Universal Synchronous Asynchronous Receiver Transmitter Driver

The USART is a hardware component that facilitates a connection between the mobile station and terminal equipment (e.g. a PC). This interface uses some of the circuits described in V.24.

The data exchange provided by this unit is serial and asynchronous (synchronous communication is not in the scope of this document). A driver that uses interrupts to manage a circular buffer for the sending and receiving direction is necessary in order to use this component in the GPRS. The driver has to be able to perform flow control.

3 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).
Substate GMM-DEREGISTERED.SUSPENDED	The MS shall enter this substate when entering dedicated mode and the MS limitations make it unable to communicate on GPRS channels. The MS shall leave this substate when leaving dedicated mode.
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.
Substate 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.
Substate GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM	A combined routing area updating procedure or a combined GPRS attach procedure was successful for GPRS services only. The MS retries the procedure controlled by timers and a GPRS attempt counter. User data and signalling information may be sent and received.
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.

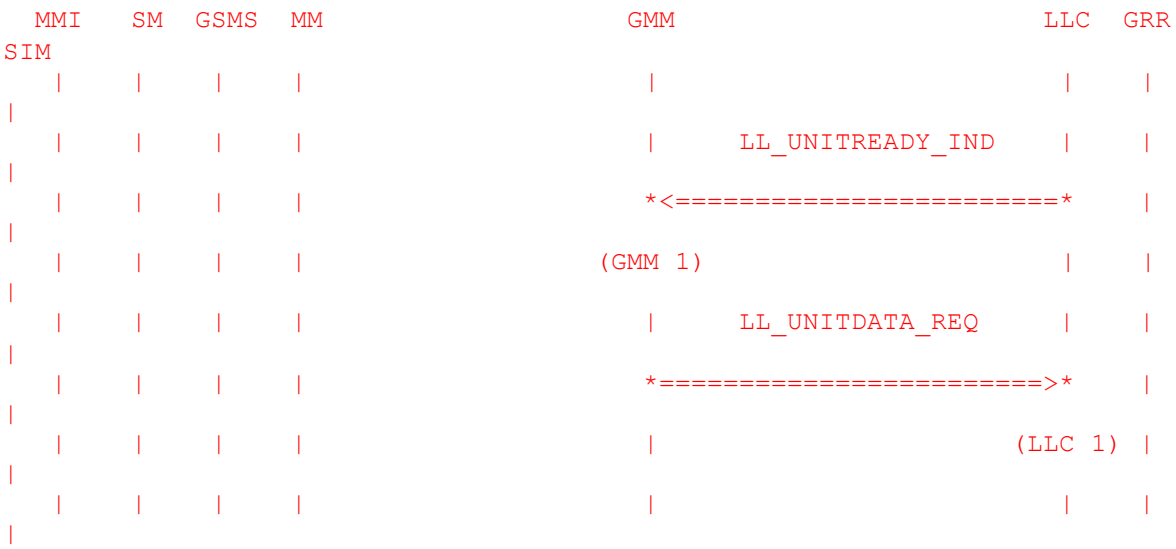
4 Protocol

4.1 REMOVED Flow Control

Every data transmission through LLC is controlled by flow control. Thus, every LL_UNITDATA_REQ primitive must be preceded by a LL_UNITREAD_IND primitive.

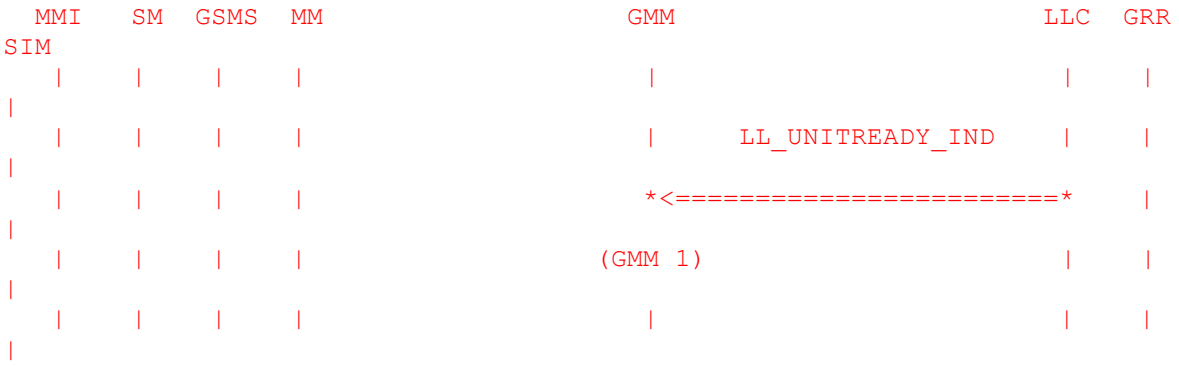
Flow control is not regarded within the MSCs of this document except in this section. If LLC is ready to receive data, the LL_UNITDATA_REQ primitive is immediately sent to LLC. If LLC is not ready to receive data, the corresponding procedure which sends LL_UNITDATA_REQ to LLC is suspended until the primitive can be sent (LL_UNITREADY_IND has been received from LLC, see below).

4.1.1 REMOVED LLC indicates ready, data available



(GMM 1)
GMM receives the indication that LLC is ready to receive data. A GMM procedure already requested to send a message to LLC with the LL_UNITDATA_REQ primitive. This message is now sent through LLC and the procedure which has sent the message is continued (if necessary).

4.1.2 REMOVED LLC indicates ready, no data available



(GMM 1)
GMM receives the indication that LLC is ready to receive data. No data has to be sent. GMM stores the information that data can be sent to LLC.

4.2 SIM

4.2.1 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. SIM sends the stored temporary GPRS data, if any, and the GPRS update status to GMM.
<R.GMM.ATTACH.M.007>, <R.GMM.GUPDATE.M.002>, <R.GMM.GUPDATE.M.004>

4.2.2 No SIM present or SIM not valid

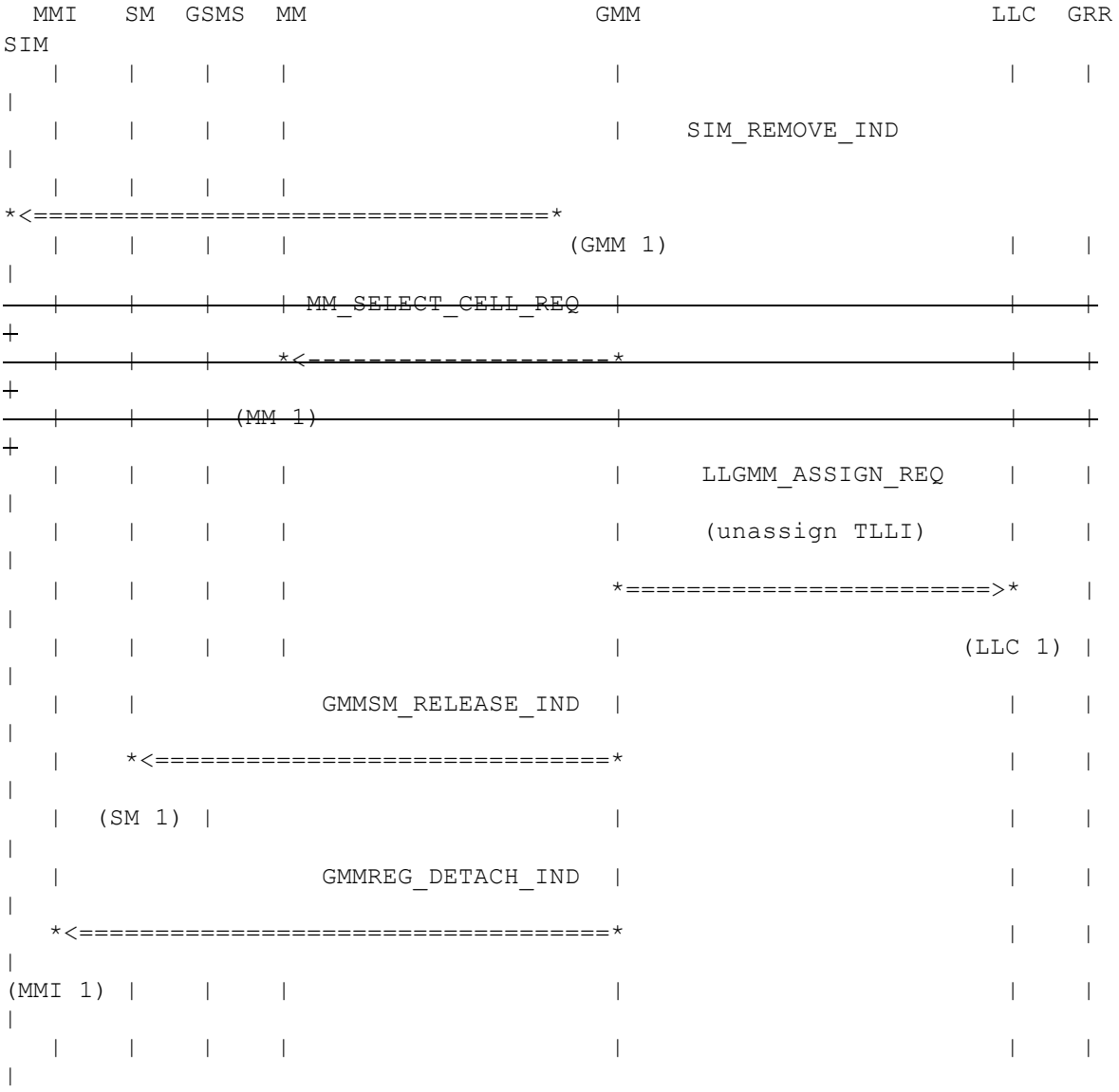
4.2.2.1 State GMM-DEREGISTERED

(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>

4.2.2.2 State GMM-REGISTERED

4.2.2.2.1 Network not reachable

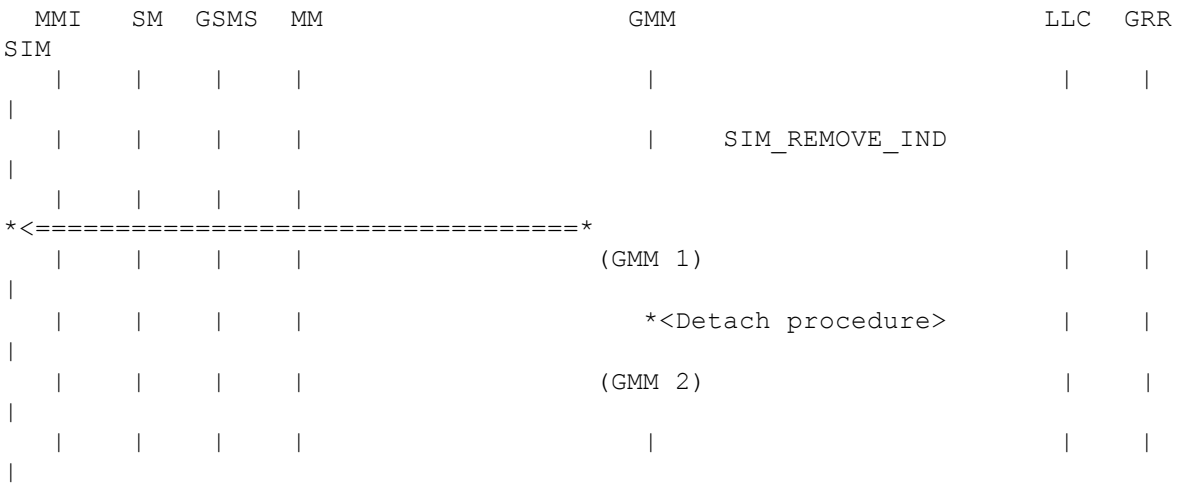


(GMM 1)
GMM is in GMM-REGISTERED, any other substate than NORMAL-SERVICE. GMM receives the indication that no SIM is present or that the SIM is not valid. GMM enters state GMM-DEREGISTERED.NO-IMSI. GMM starts an 'local detach'.
<R.GMM.DSUBFANO.M.003>, <R.GMM.DETACH.M.005>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.DETACH.M.005>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DETACH.M.005>, <R.GMM.PDETIND.M.002>

4.2.2.2.2 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.

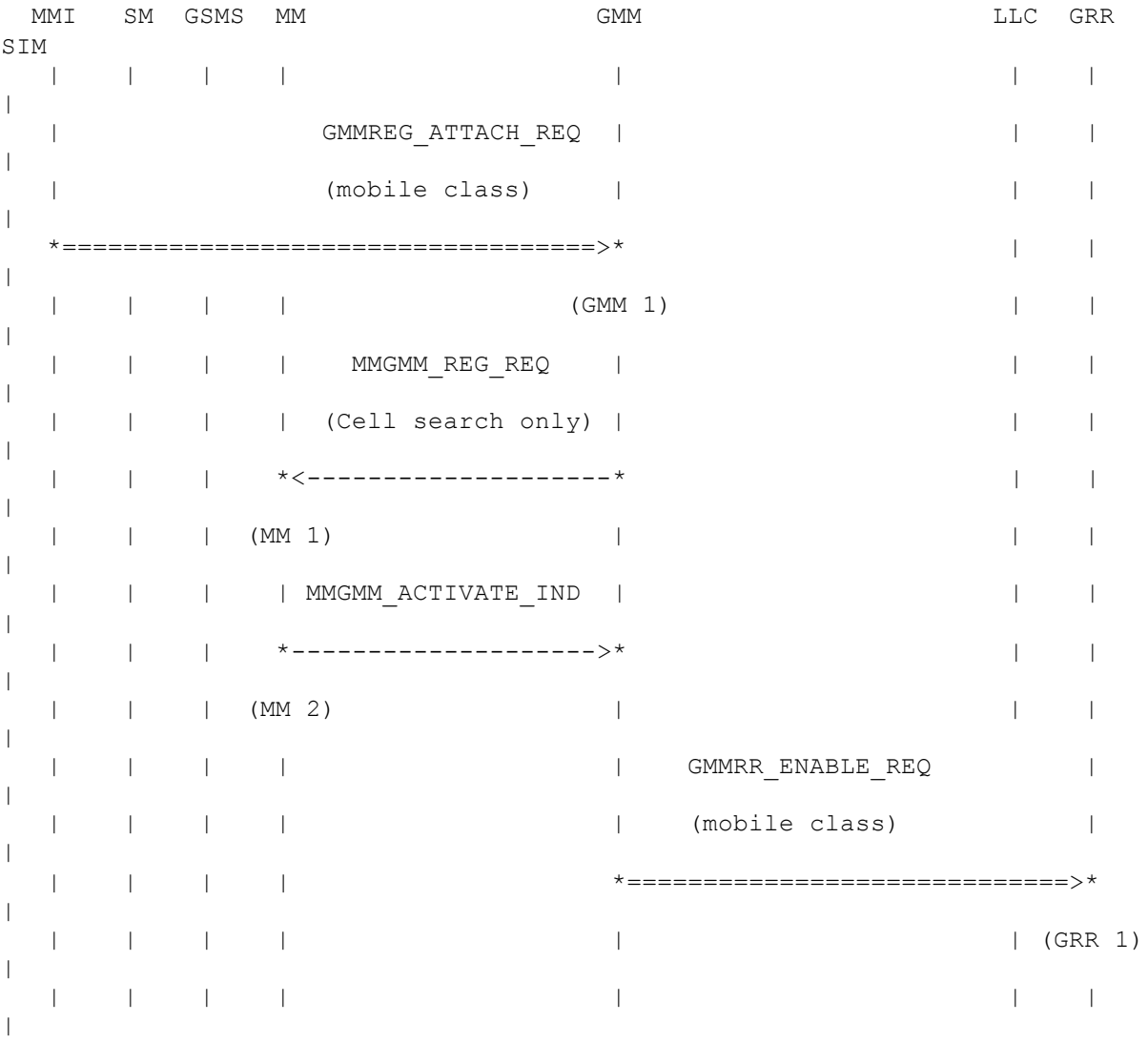
<R.GMM.DETACH.M.005>

(GMM 2)
Depending on the network operation mode, the normal or combined GPRS detach procedure is started.

<R.GMM.DETACH.M.005>

4.3 Enable/disable GPRS capability

4.3.1 Enable GPRS capability



(GMM 1)
GMM is in state GMM-NULL. MMI enables the GPRS capability in the MS by sending the GMMREG_ATTACH_REQ primitive to GMM with mobile class different from class CC. GMM enters state GMM-DEREGISTERED.

<R.GMM.DSUBPWRN.M.009>

<R.GMM.STNULL.M.001>

<R.GMM.STNULL.M.002>

<R.GMM.DETACH.M.005>

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

<R.GMM.ODSEARCH.M.001>

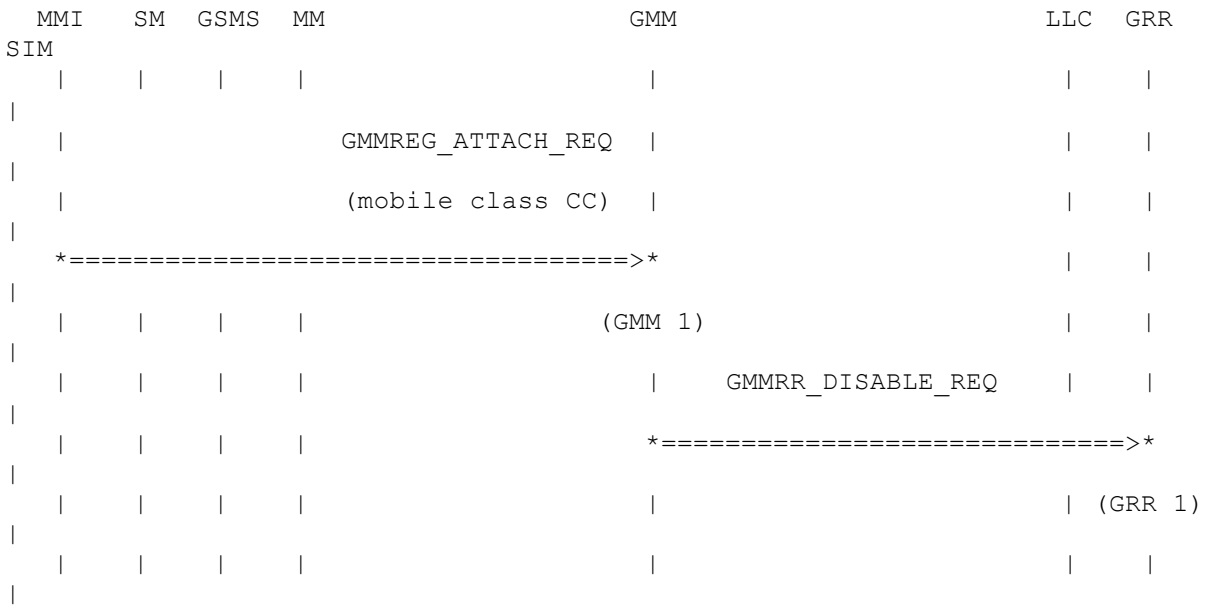
(MM 2)
MM confirms the cell cellection procedure.

<R.GMM.ODSEARCH.M.001>

(GRR 1)
GMM informs GRR, that GPRS is enabled. The mobile class is forwared to GRR.

<none>

4.3.2 Disable GPRS capability



(GMM 1)
MMI disables the GPRS capability in the MS by sending the GMMREG_ATTACH_REQ primitive to GMM with mobile class class CC. GMM enters state GMM-NULL.

(GRR 1)
GMM informs GRR, that GPRS is disabled.

<none>

4.4 MMI-initiated normal/combined GPRS attach

4.4.1 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).

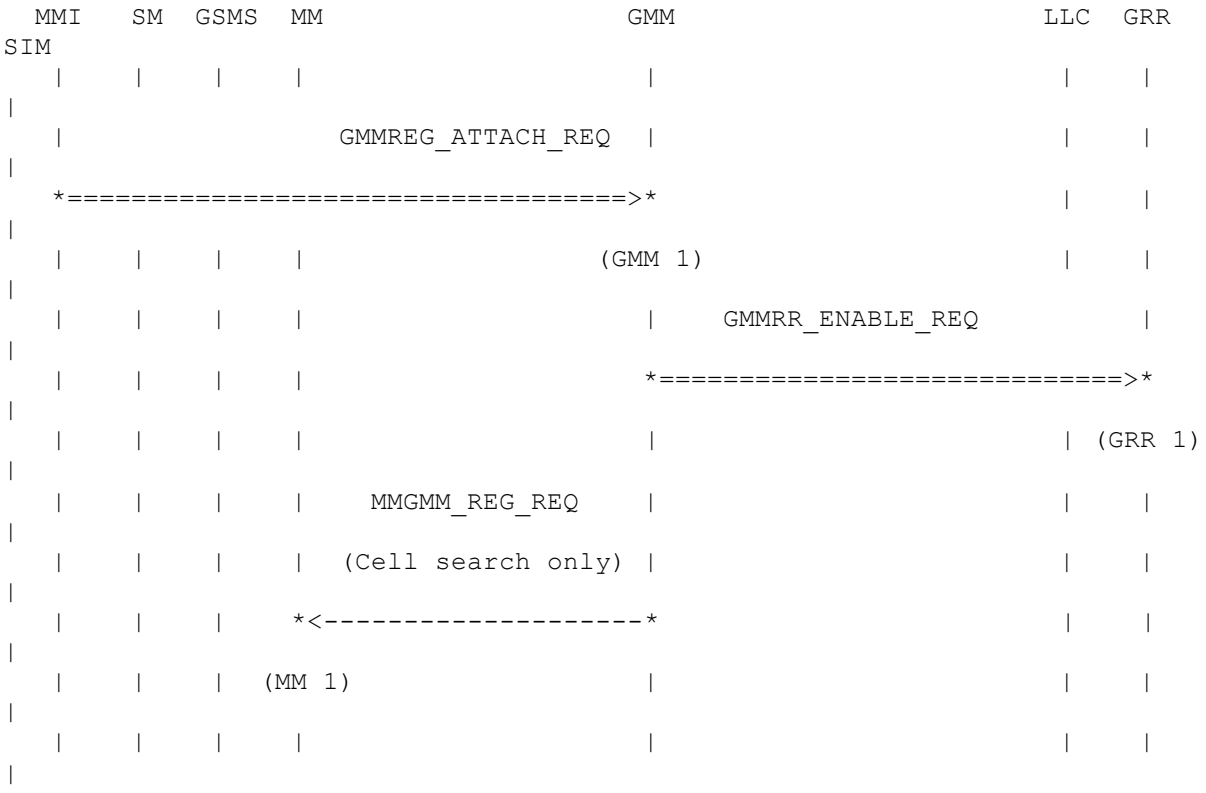
<R.GMM.PATTREQ.M.001>

(GRR 1)
The mobile class type is passed to GRR.

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

<R.GMM.ODSEARCH.M.001>

4.4.2 GPRS attach while already IMSI attached

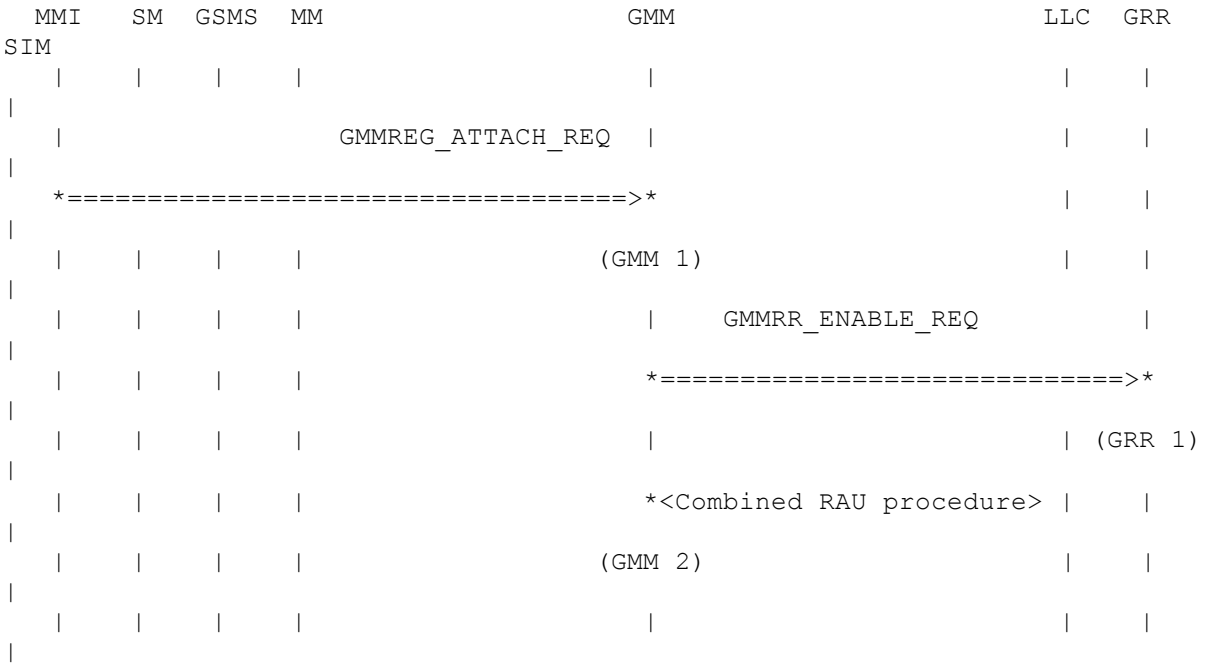


(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH and access to the cell is not barred because of access class control. MMI orders GMM to perform a GPRS attach while already IMSI attached (Attach type = 'GPRS attach while IMSI attached').
<R.GMM.PATTREQ.M.001>

(GRR 1)
The mobile class type is passed to GRR.

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

4.4.3 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').

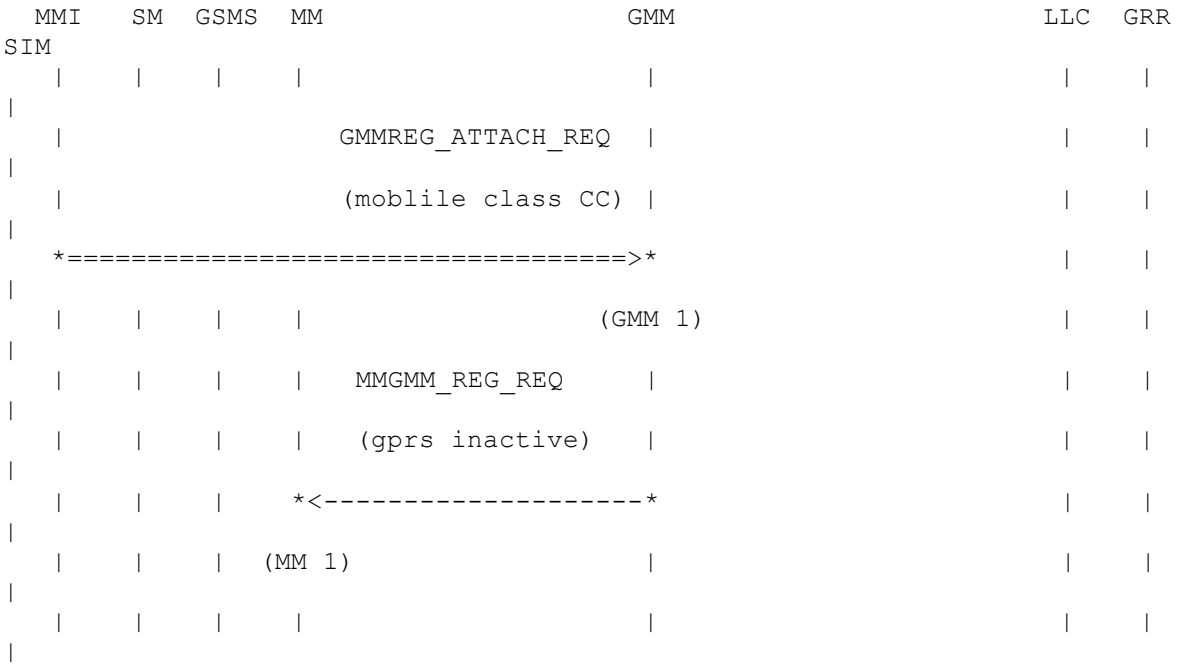
<R.GMM.PATTREQ.M.001>

(GRR 1)
The mobile class type is passed to GRR.

(GMM 2)
GMM starts the combined RAU procedure (see section 4.10.2).

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

4.4.4 IMSI attach w/o GPRS attach



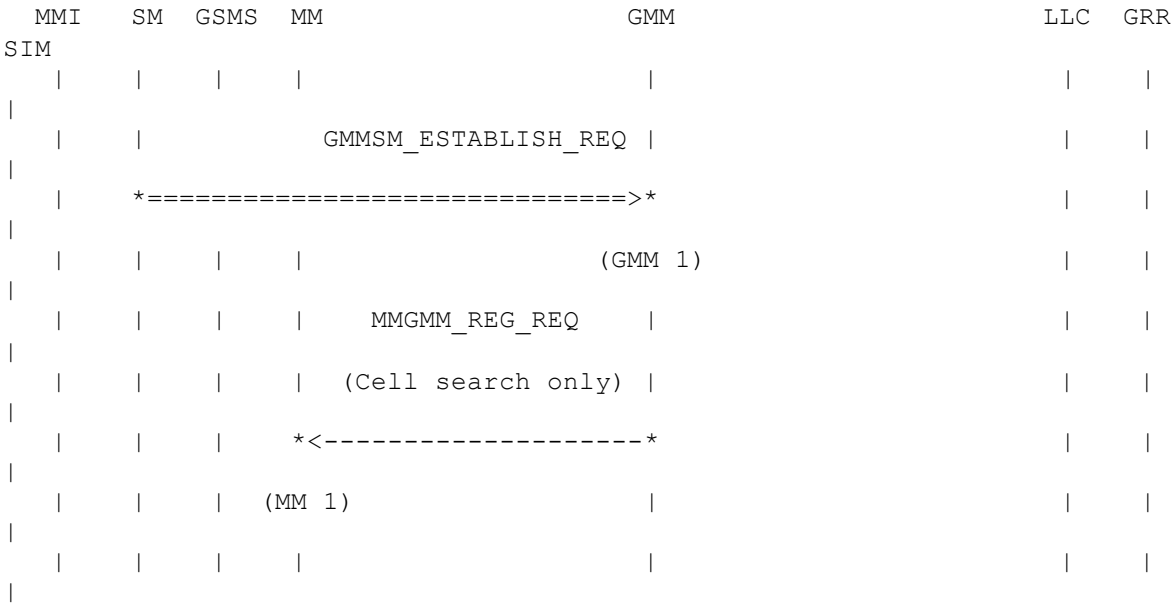
(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE, GMM-REGISTERED.ATTEMPTING-TO-UPDATE, or GMM-REGISTERED.LIMITED-SERVICE, and access to the cell is not barred because of access class control. MMI orders GMM to perform an IMSI attach (Attach type = 'Combined GPRS/IMSI attach').

<R.GMM.PATTREQ.M.001>

(MM 1)
MM is requested to act as an CS-only mobile.

4.5 SM-initiated normal/combined GPRS attach

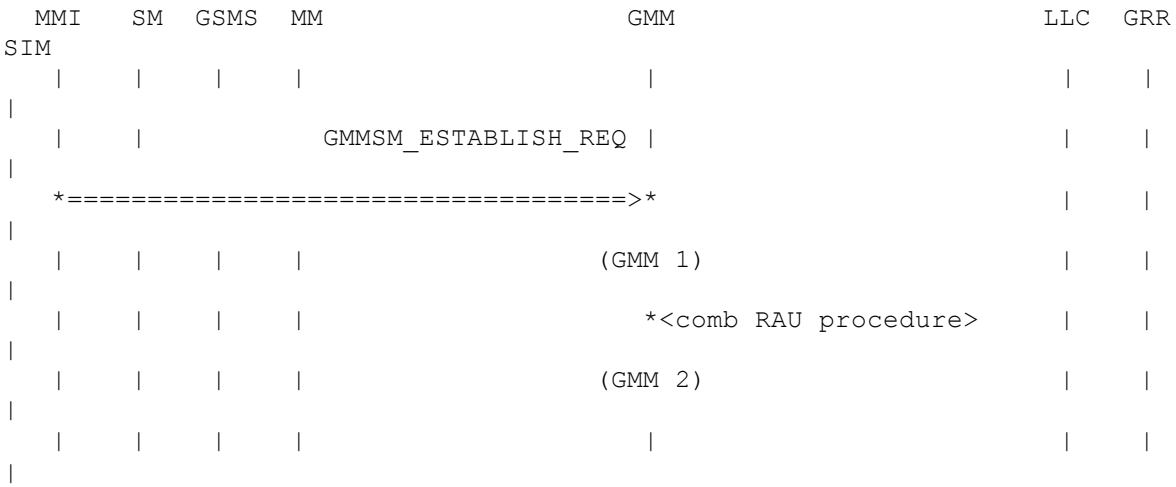
4.5.1 Not yet GPRS/IMSI attached



(GMM 1)
GMM is in state GMM-DEREGISTERED.PLMN-SEARCH and access to the cell is not barred because of access class control. 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>

4.5.2 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.PESTREQ.M.001>

(GMM 2)
Depending on the network operation mode, the normal or combined GPRS attach procedure (see 4.8.1 Normal GPRS attach procedure for GPRS services) is started.

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

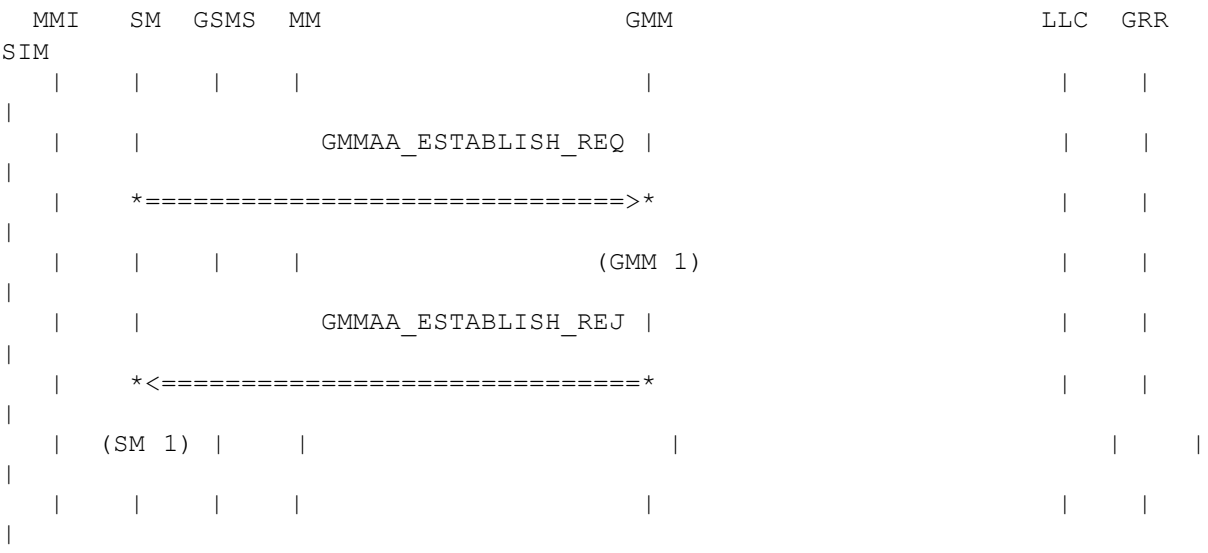
4.6 Anonymous access initiation

4.6.1 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>

4.6.2 GMM suspended



(GMM 1)
GMM-AA is in state GMMAA-DEREGISTERED, or GMM is in state GMM-REGISTERED.SUSPENDED. GMM-AA receives the request from SM to support anonymous access.

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

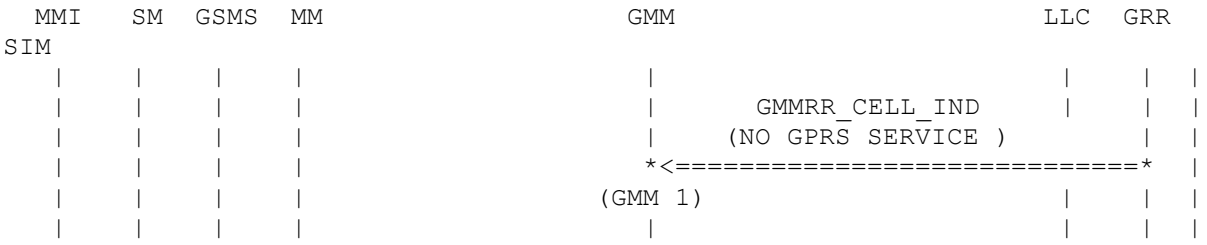
(SM 1)
GMM-AA informs SM that anonymous access is not possible.

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

4.7 Cell updating

4.7.1 No GPRS cell has been found

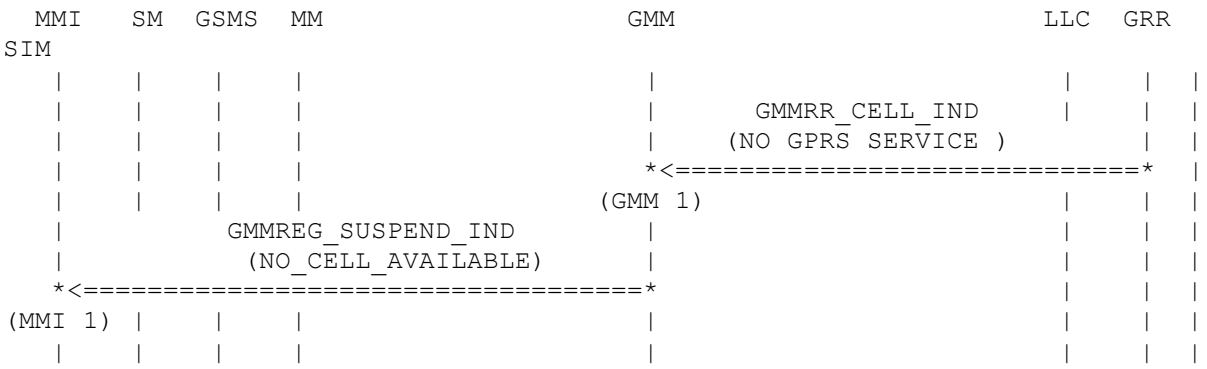
4.7.1.1 State GMM-DEREGISTERED



(GMM 1)
GMM is in state GMM-DEREGISTERED. GMM receives the indication that no cell has been found. GMM enters state GMM-DEREGISTERED.NO-CELL-AVAILABLE.

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

4.7.1.2 State GMM-REGISTERED



(GMM 1/2)
GMM is in state GMM-REGISTERED. GMM receives the indication that no cell has been found. GMM enters state GMM-REGISTERED.NO-CELL-AVAILABLE.

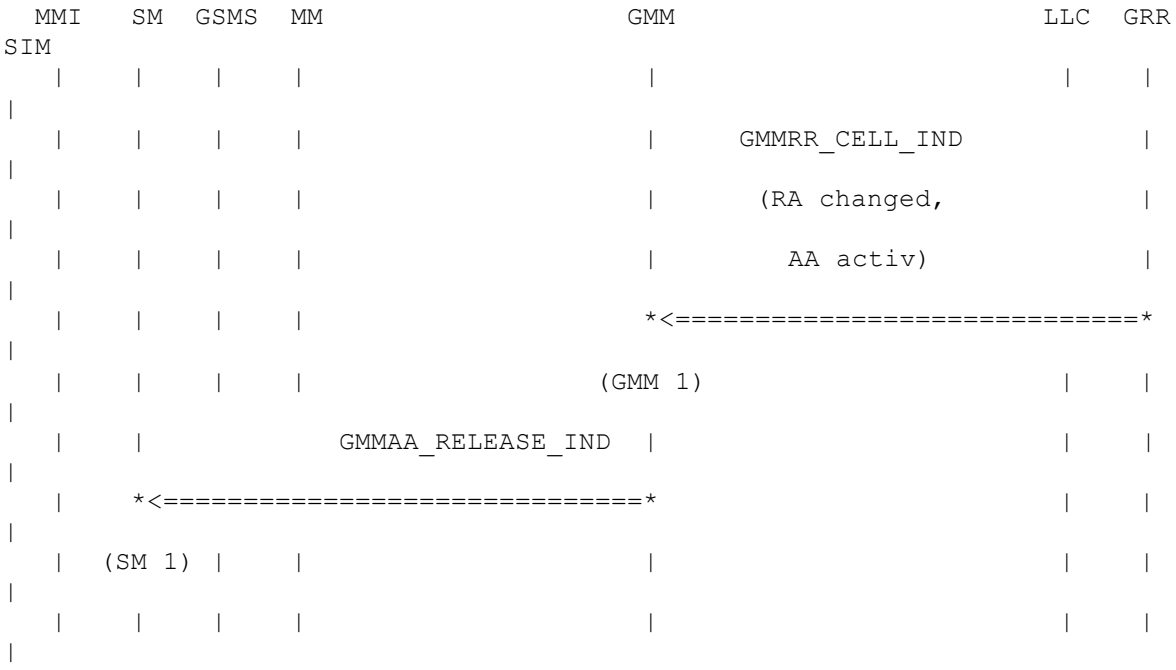
<R.GMM.DRNORMAL.M.001>, <R.GMM.DRLIMITD.M.001>, <R.GMM.ORNOCELL.M.001>, <R.GMM.ORNOCELL.M.002>

(MM 1)
MMI is suspended

<none>

4.7.2 A GPRS cell has been found

4.7.2.1 Anonymous access active and RA changed



(GMM 1)
GMM receives the indication from GMM that a cell supporting GPRS has been found. AA-READY Timer T3316 is stopped. GMM-AA enters state GMMAA-DEREGISTERED.

<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.

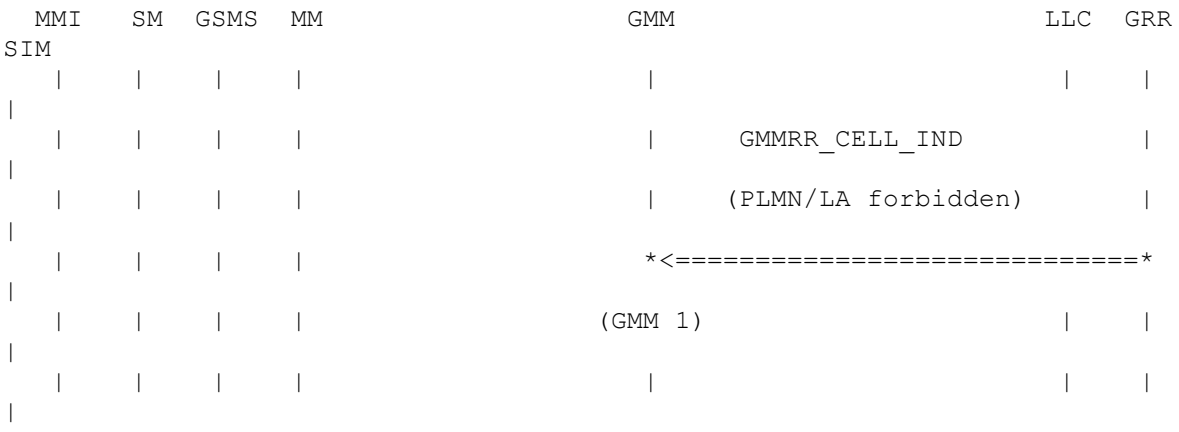
<R.GMM.PARELIND.M.001>

4.7.2.2 State GMM-DEREGISTERED.PLMN-SEARCH

(GMM 1)
GMM is in state GMM-DEREGISTERED-PLMN-SEARCH. GMM receives the information from MM that a cell has been found and PLMN or LA are in forbidden list. The network operates in mode I.
GRR indicates that the cell supports GPRS service. GMM enters state GMM-DEREGISTERED-LIMITED-SERVICE.

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

4.7.2.3 State GMM-REGISTERED



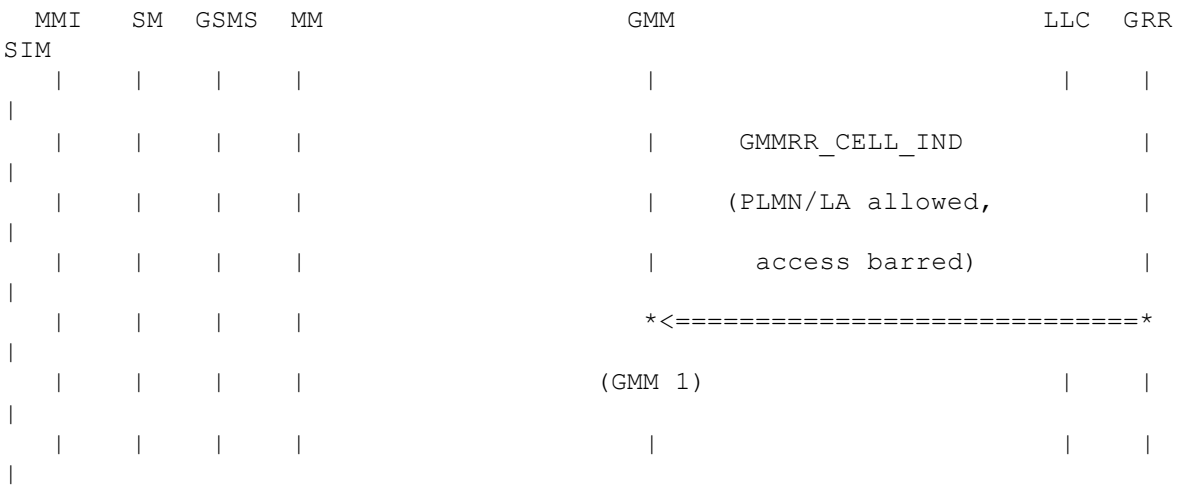
(GMM 1)
GMM is in state GMM-REGISTERED. GMM receives the information that a cell has been found and PLMN or LA are in forbidden list.
GRR indicates that the cell supports GPRS service. GMM enters state GMM-REGISTERED.LIMITED-SERVICE.

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

4.7.3 Cell is not in a forbidden PLMN/LA

4.7.3.1 State GMM-DEREGISTERED

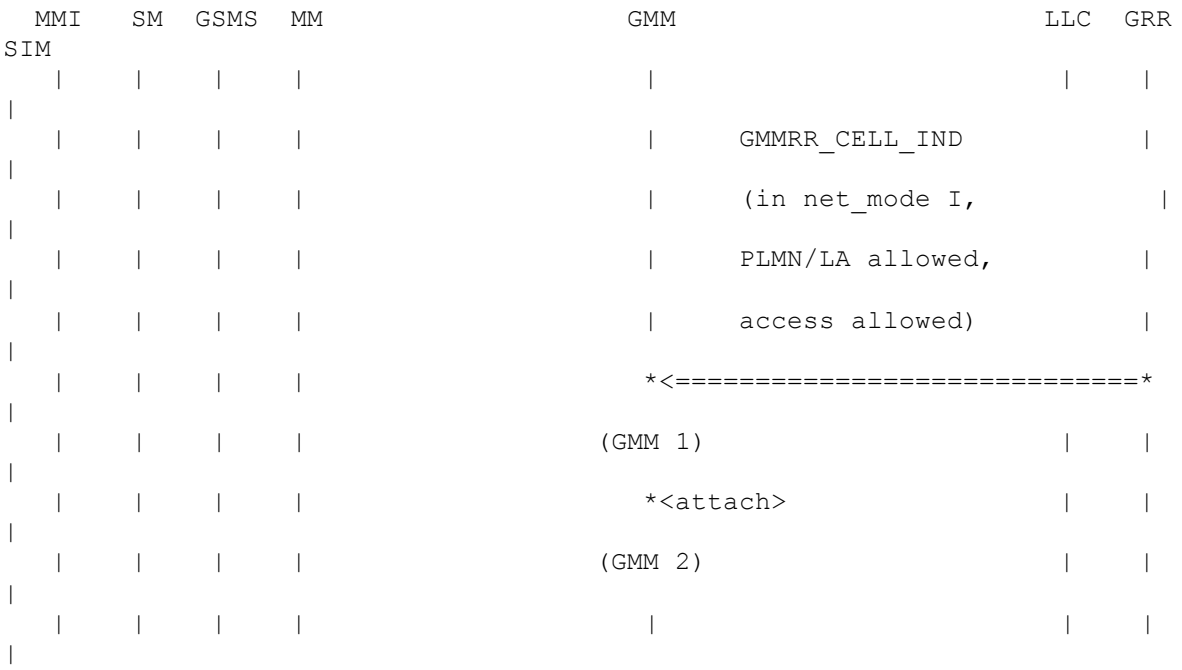
4.7.3.1.1 Access barred



(GMM 1)
GMM is in state GMM-DEREGISTERED. GMM receives the indication from MM that the access class is not allowed in the selected cell. GMM stores the information. Any further action due to the loss of PLMN coverage is not regarded within this section. GMM enters state GMM-DEREGISTERED.ATTACH-NEEDED.

<R.GMM.ODATTNEE.M.003>

4.7.3.1.2 Access allowed



(GMM 1)

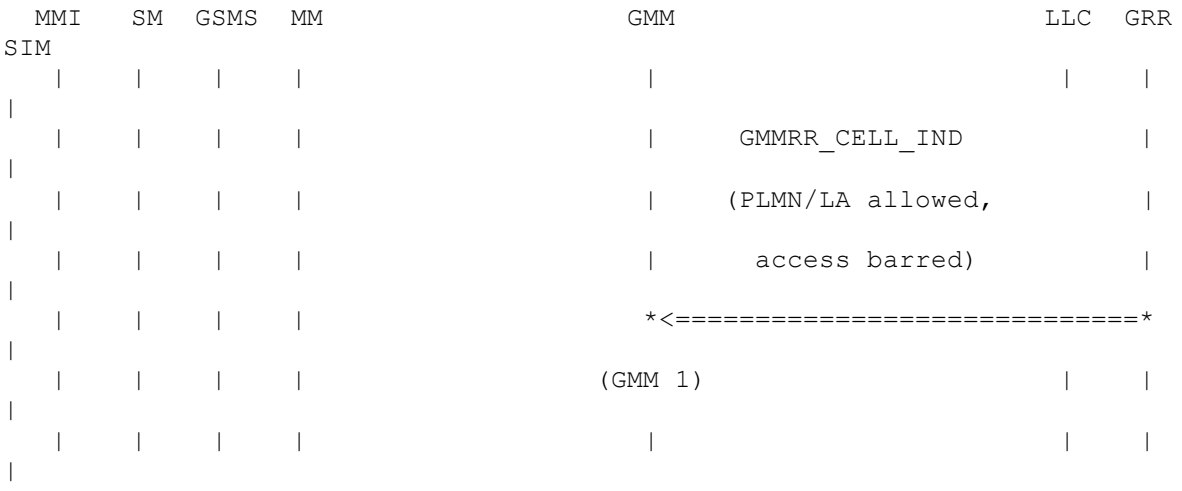
GMM is in state GMM-DEREGISTERED and receives the information that a cell has been found and PLMN and LA are not forbidden list. GRR indicates that the cell supports GPRS service.

(GMM 2)
GMM enters state GMM-DEREGISTERED.NORMAL-SERVICE.

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

4.7.3.2 State GMM-REGISTERED

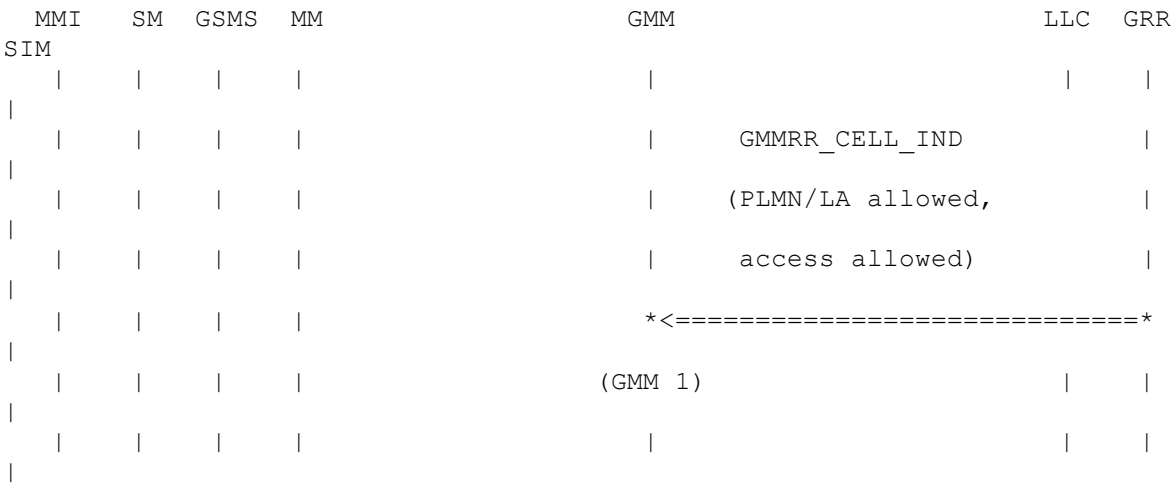
4.7.3.2.1 Access class barred



(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 enters state GMM-REGISTERED.UPDATE-NEEDED.

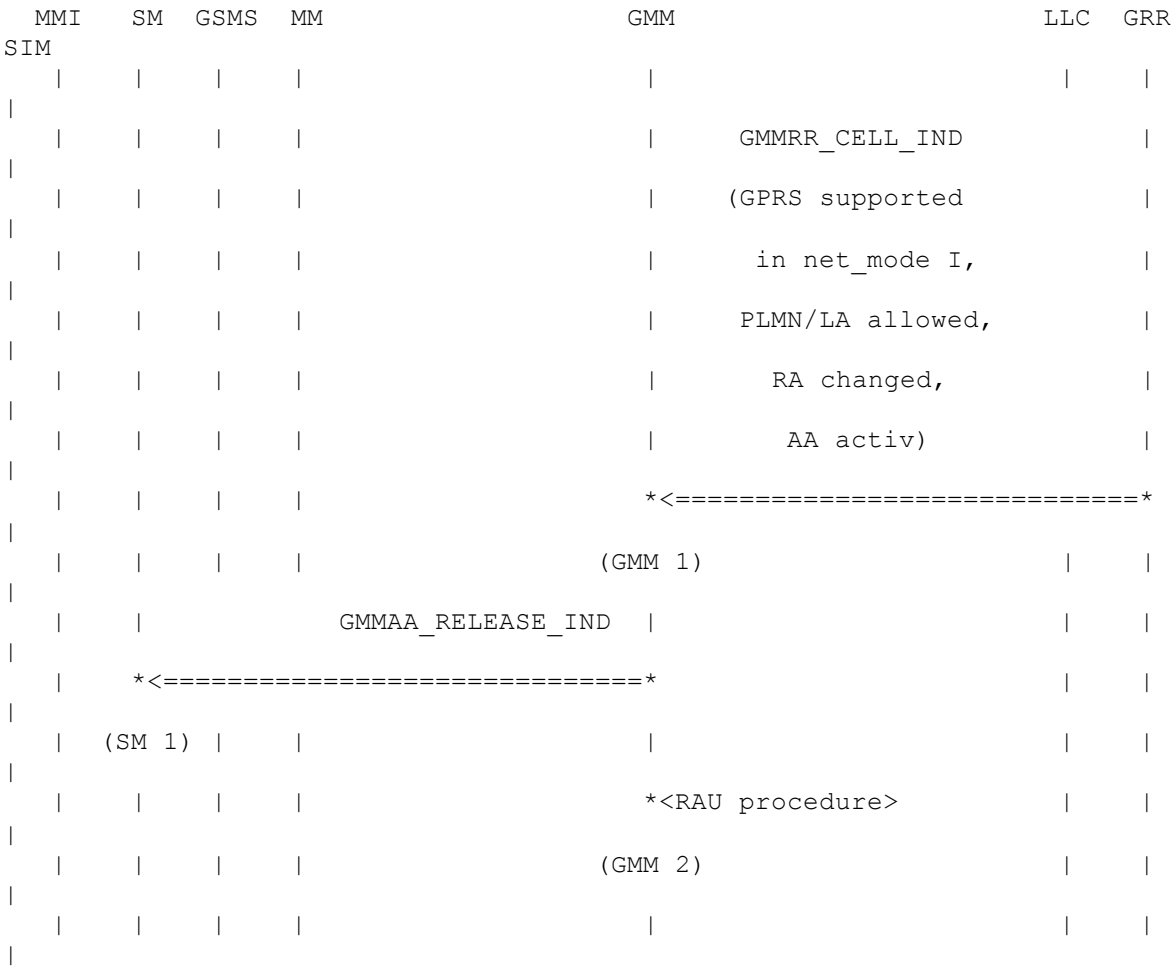
<R.GMM.ORUPDNEE.M.001>

4.7.3.2.2 Access allowed



(GMM 1)
GMM is in state GMM-REGISTERED and receives the information that a cell has been found and PLMN and LA are not forbidden list. GRR indicates that the cell supports GPRS service and the RA border is not crossed. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.

4.7.3.2.3 RA changed



(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 GMM 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. AA-READY Timer T3316 is stopped if active. GMM-AA enters state GMMAA-DEREGISTERED.

<R.GMM.RAU.M.011>, <R.GMM.GMMAA.A.003>, <R.GMM.GMMAAMS.M.003>, <R.GMM.GMMAAMS.M.004>

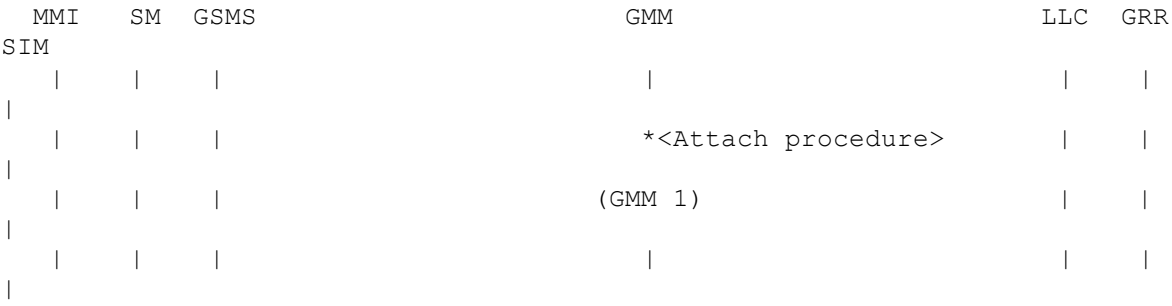
(SM 1)
If anonymous access active than GMM has to inform SM that the anonymous PDP contexts are deactivated.

<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 **Error! Reference source not found.** and 4.17.3.3). Otherwise the normal or combined RAU procedure is started (see section 4.10).

<R.GMM.RCINIT.M.001>, <R.GMM.RCINIT.M.002>, <R.GMM.RCINIT.M.004>

4.8 GPRS attach procedure



(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 4.4).
- Receipt of the primitive GMMSM_ESTABLISH_REQ from SM (see section 0).
- Receipt of the primitive GMMRR_PAGE_IND (Page ID = 'IMSI') from GRR (see section 4.14.2.2).
- Receipt of the DETACH REQUEST message with Detach type = 're-attach requested' (see section 4.9.4).
- GMM enters state GMM-DEREGISTERED.NORMAL-SERVICE (see section **Error! Reference source not found.**).
- GMM is in state GMM-DEREGISTERED.ATTACH-NEEDED and the access class allows network contact in the selected cell (see section **Error! Reference source not found.**).
- GMM is in state GMM-DEREGISTERED.LIMITED-SERVICE and a cell is entered which may provide normal service (see section **Error! Reference source not found.**).

If the network operates in mode II or III, GMM starts the normal GPRS attach procedure (see section 4.8.1). If the network operates in mode I, GMM starts the combined GPRS attach procedure (see section 4.8.2).

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

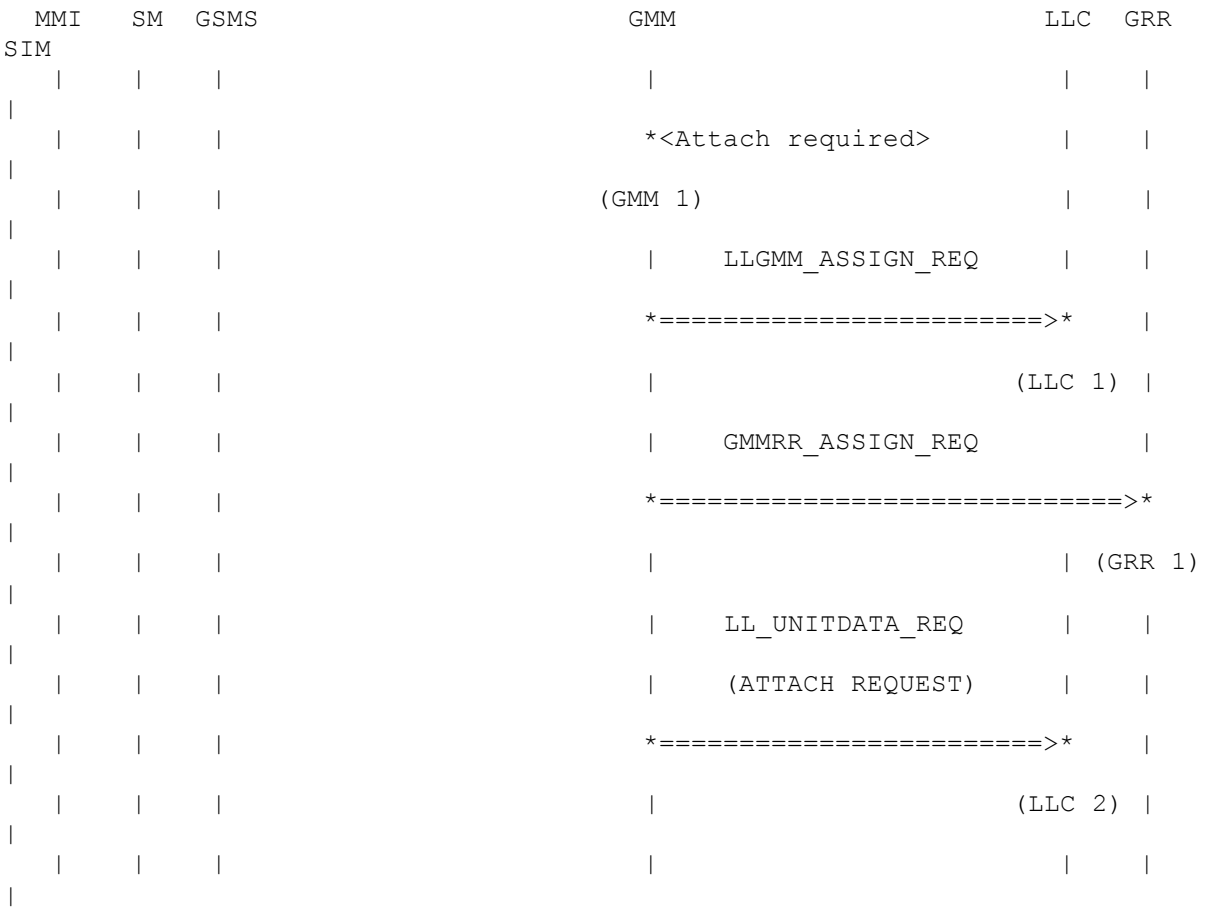
(If a GPRS attach was performed during the circuit-switched transaction and the MS is in operation mode A than the MS performs the combined RAU procedure with IMSI attach.

<R.GMM.RCINIT.M.016>)

4.8.1 Normal GPRS attach procedure for GPRS services

4.8.1.1 Initiation

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



(GMM 1)
Normal GPRS attach is required (see section 4.8). 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.TLLIUSE.M.001>, <R.GMM.TLLIUSE.M.005>, <R.GMM.TLLIUSE.M.013>

(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>, <R.GMM.TLLIUSE.M.013>

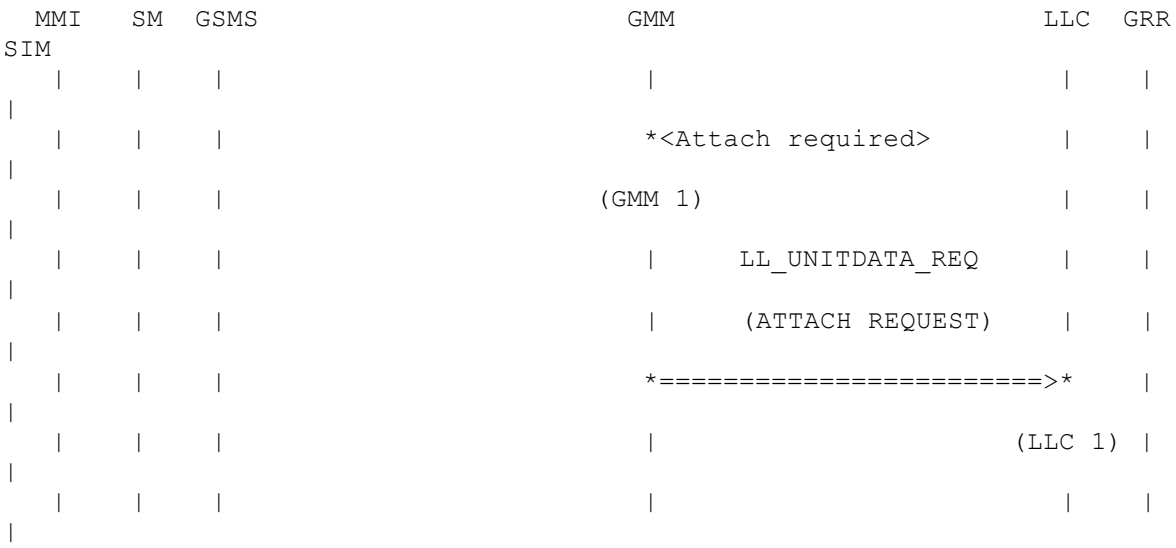
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.TLLIUSE.M.013>

(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.TLLIUSE.M.013>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>, <R.GMM.PATTREQ.M.002>

4.8.1.1.2 TLLI already assigned to lower layers



(GMM 1)
Normal GPRS attach is required (see section 4.8). 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.

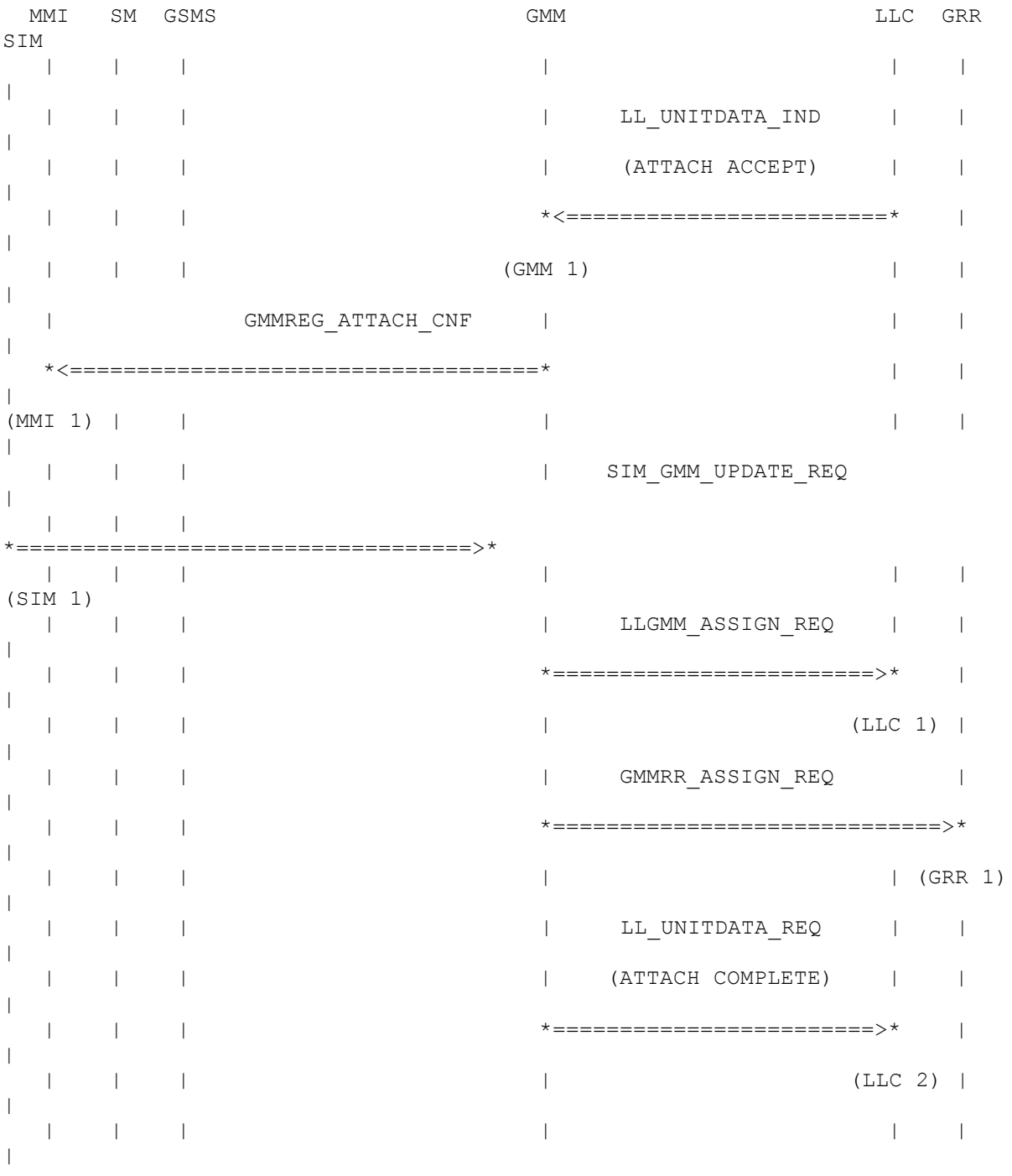
<R.GMM.ATTGPRS.M.001>, <R.GMM.AGINIT.M.001>, <R.GMM.AGINIT.M.002>, <R.GMM.AGINIT.M.003>, <R.GMM.AGINIT.M.004>, <R.GMM.AGINIT.M.005>, <R.GMM.AGINIT.M.006>, <R.GMM.AGINIT.M.007>, <R.GMM.AGINIT.M.008>, <R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>,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

4.8.1.2 GPRS attach accepted by the network

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

4.8.1.2.1 MMI-initiated attach accepted

4.8.1.2.1.1 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>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>, <R.GMM.READYTIM.M.023>, <R.GMM.READYTIM.M.024>

(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>

(SIM 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>

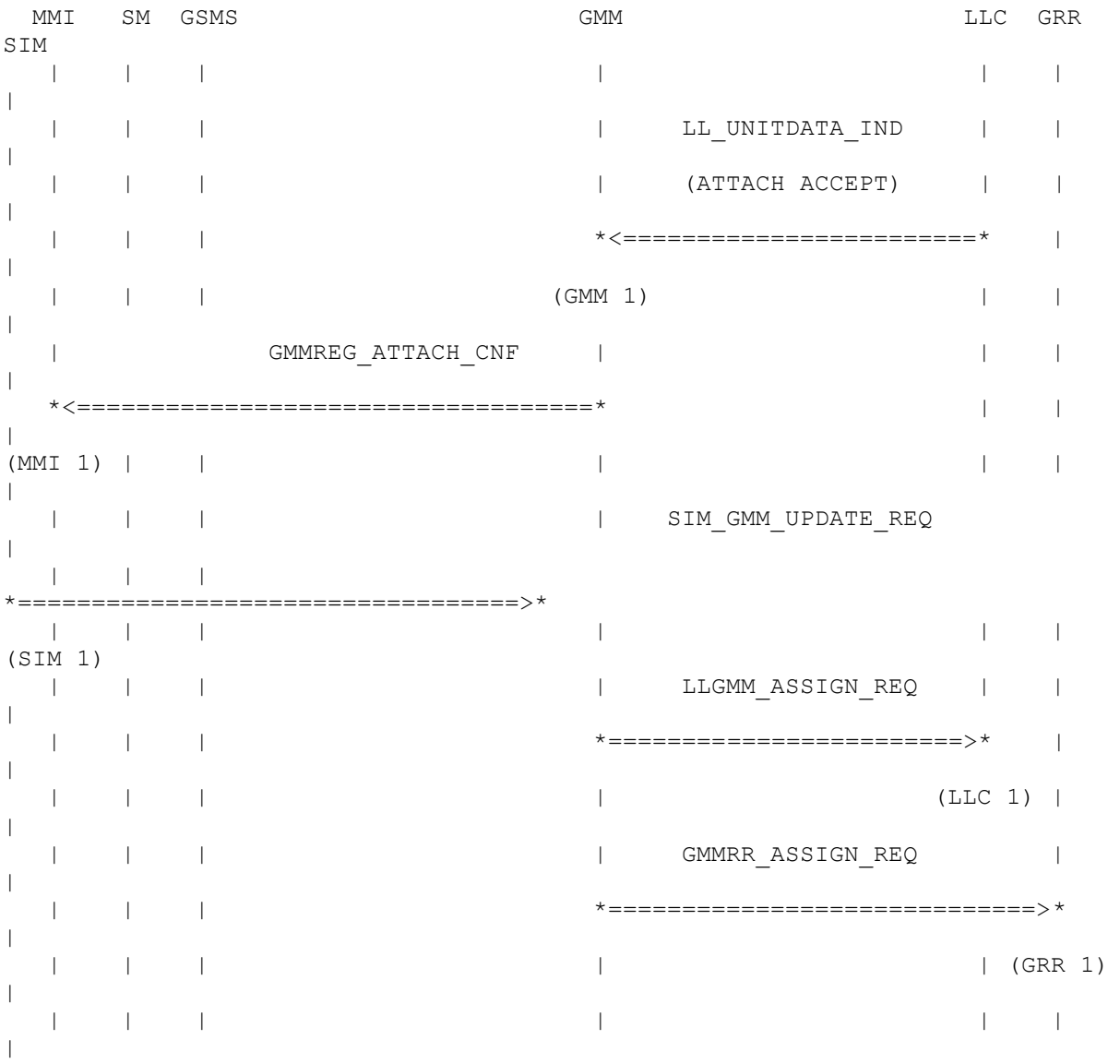
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<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>

4.8.1.2.1.2 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>, <R.GMM.READYTIM.M.021>, <R.GMM.READYTIM.A.023>, <R.GMM.READYTIM.A.024>

(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>

(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>

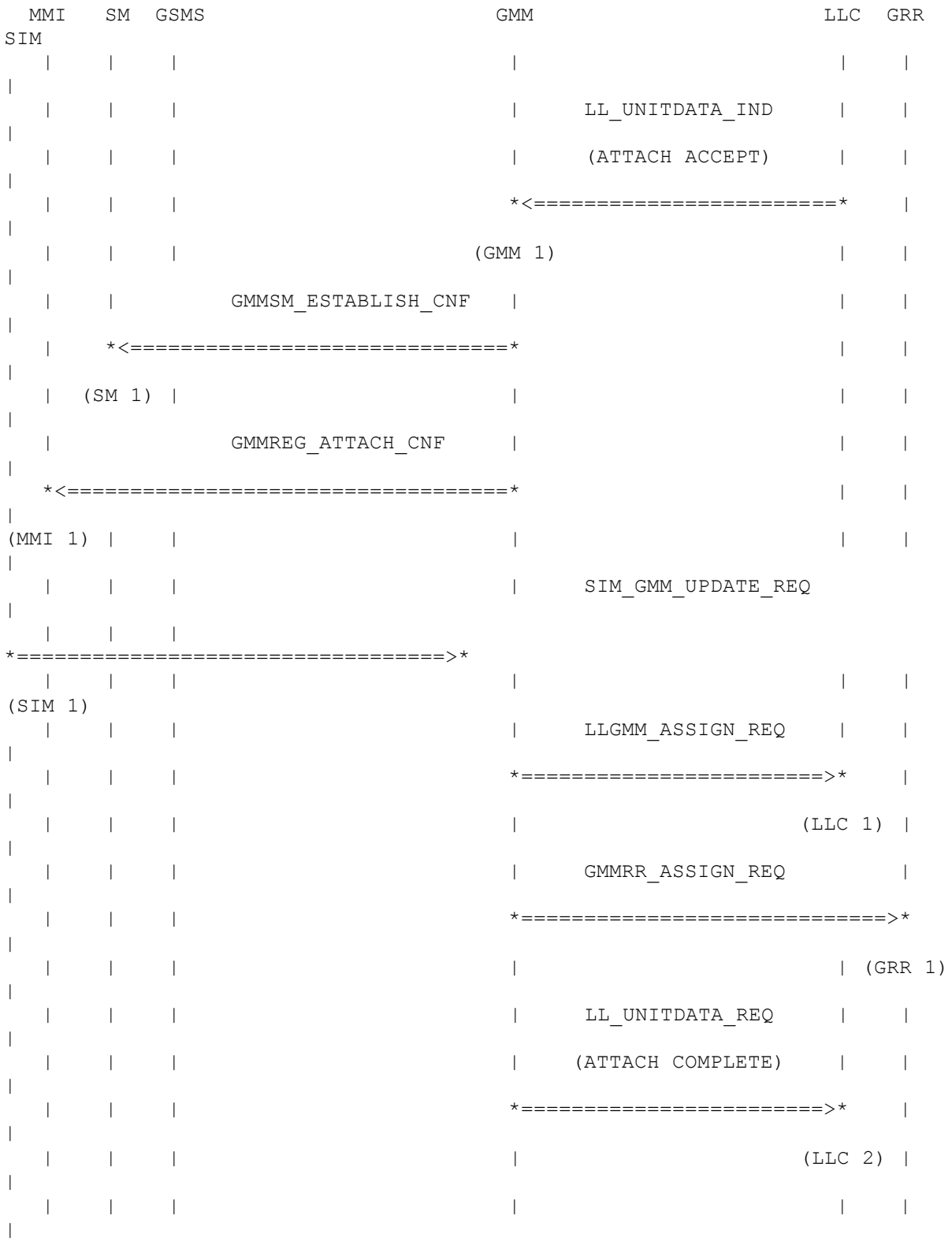
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

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

(SIM 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>

4.8.1.2.2 SM-initiated attach accepted

4.8.1.2.2.1 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>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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>

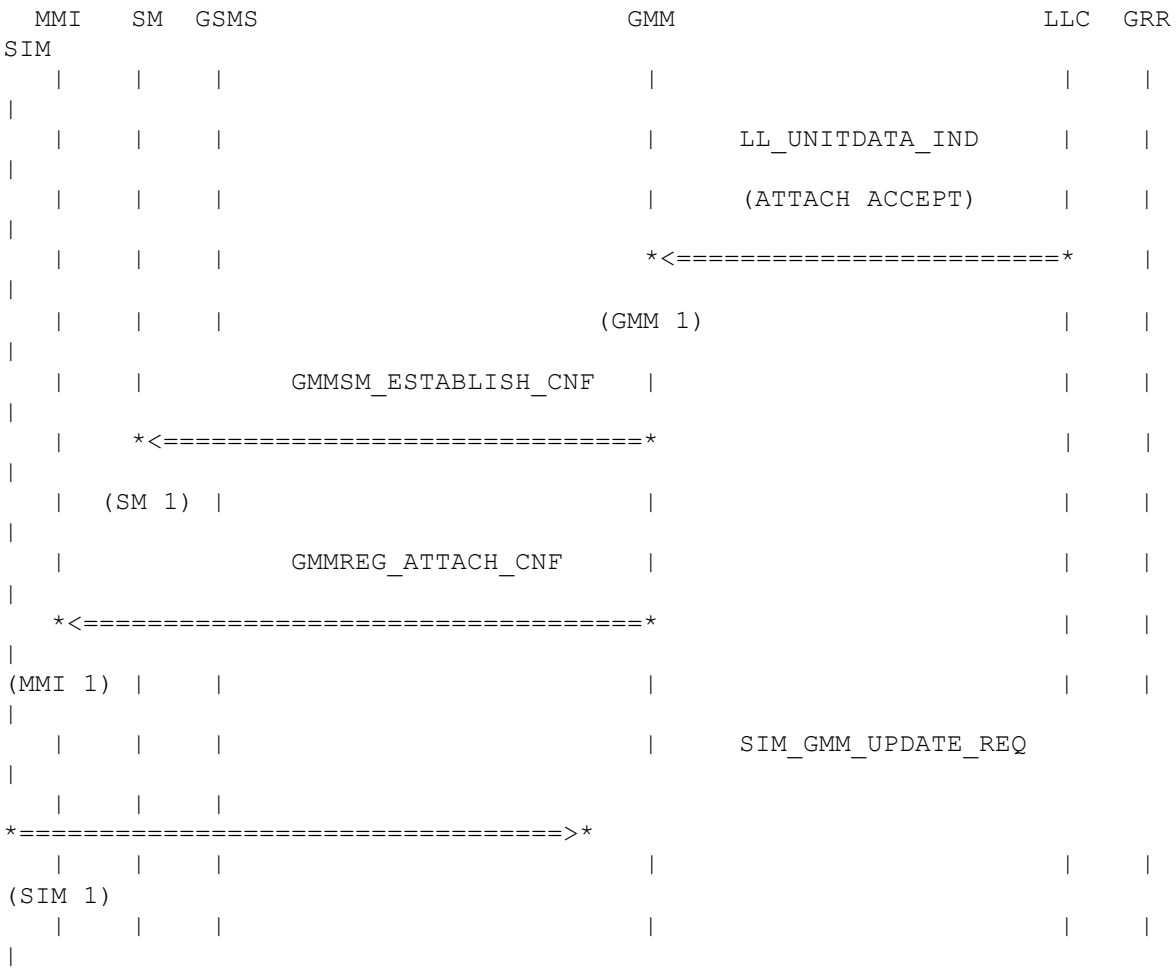
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<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>

4.8.1.2.2.2 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>, <R.GMM.READYTIM.M.021>

(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>

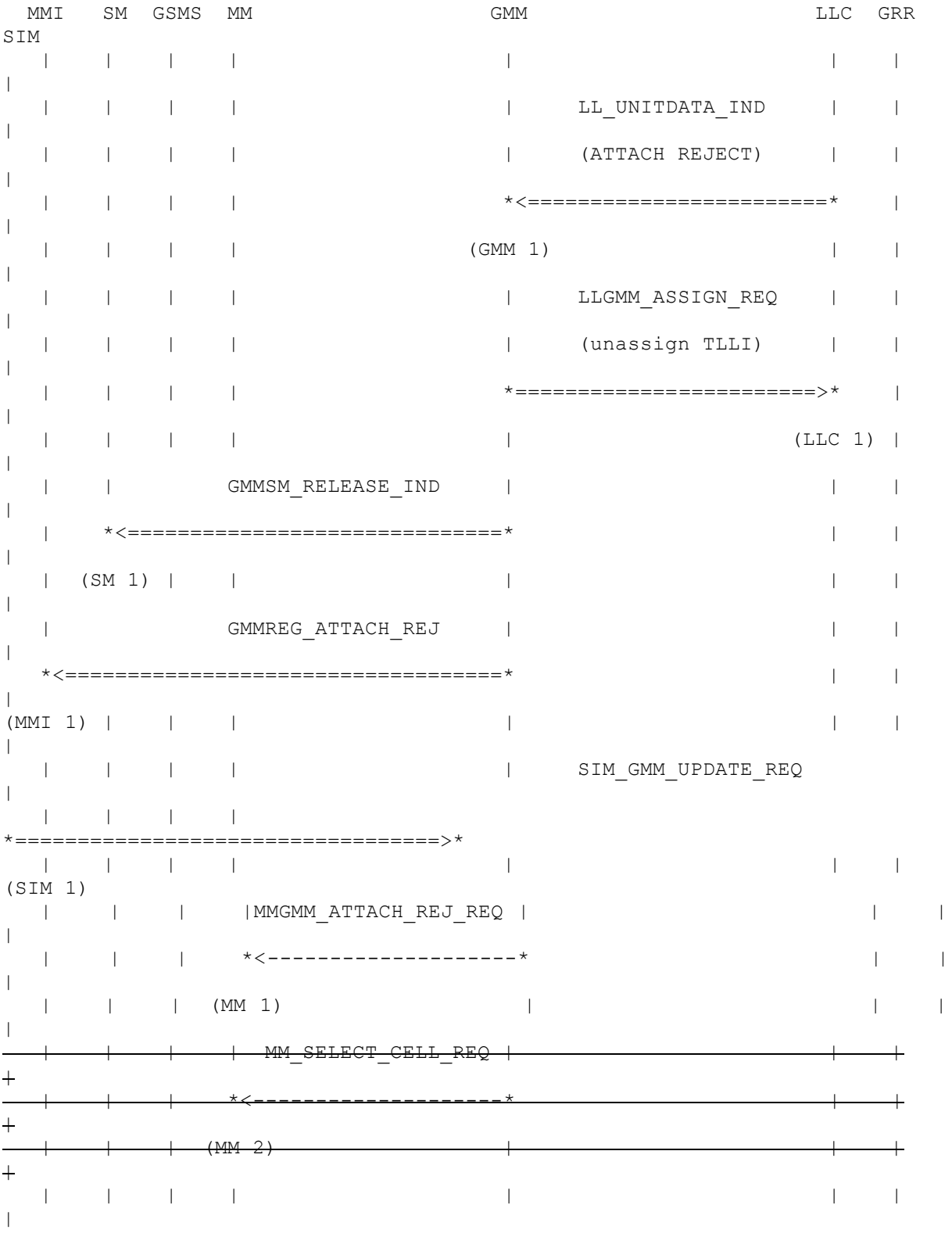
(SIM 1)
GMM enters GPRS update status GU1.

<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>

4.8.1.3 GPRS attach not accepted by the network

4.8.1.3.1 MMI-initiated attach

4.8.1.3.1.1 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.001>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.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>, <R.GMM.PRELIND.M.001>

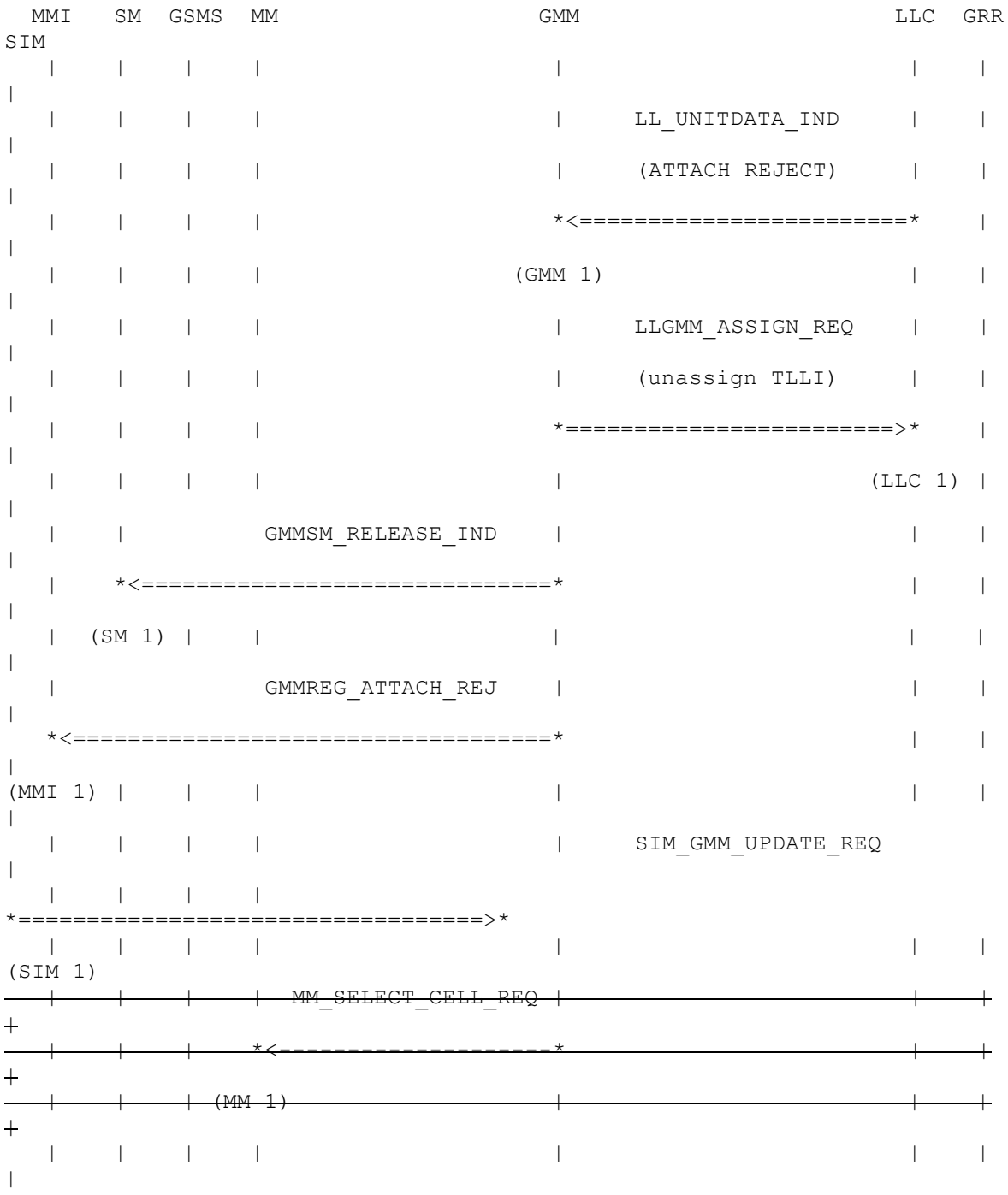
(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.AGREJECT.M.005>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

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

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~
~~<R.GMM.DSUBFANO.M.001>~~

4.8.1.3.1.2 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.LIMITED-SERVICE.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.014>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.003>

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

<R.GMM.AGREJECT.M.014>

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

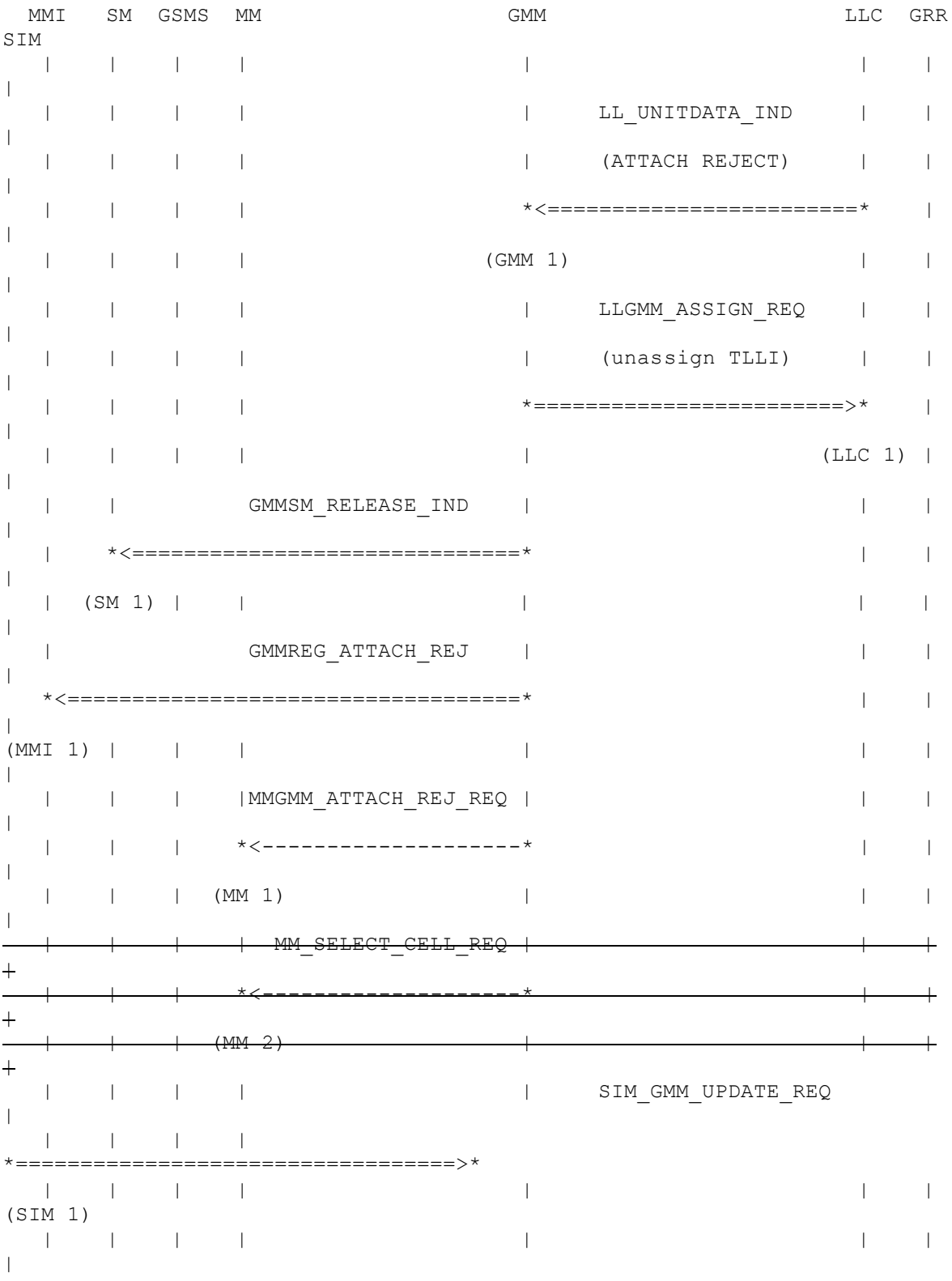
<R.GMM.AGREJECT.M.014>, <R.GMM.PRELIND.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.AGREJECT.M.014>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~
~~<R.GMM.DSUBFANO.M.001>~~

4.8.1.3.1.3 Reject cause #8



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #8) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.LIMITED-SERVICE.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.030>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.003>

(LLC 1)
GMM informs LLC, that the GMM context is released.
<R.GMM.AGREJECT.M.030>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.AGREJECT.M.030>, <R.GMM.PRELIND.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.AGREJECT.M.030>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

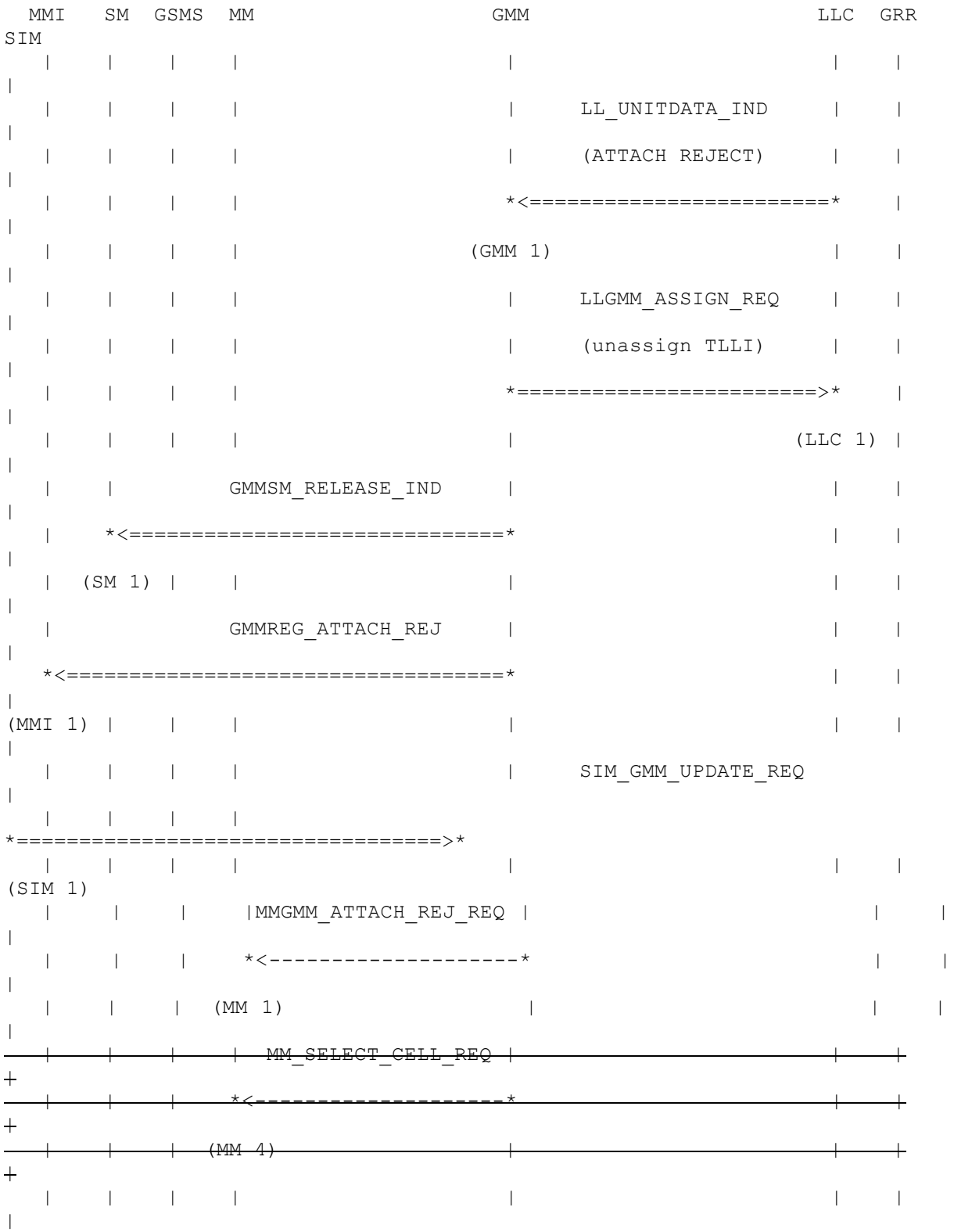
(MM 1)
MM shall enter state MM IDLE. he MS shall set the update status to U3 ROAMING NOT ALLOWED. The MS shall delete any TMSI, LAI, and CKSN.
<R.GMM.AGREJECT.M.031>, <R.GMM.AGREJECT.M.032>, <R.GMM.AGREJECT.M.033>

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

(SIM 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.028>, <R.GMM.AGREJECT.M.029>, <R.GMM.AGREJECT.M.034>

4.8.1.3.1.4 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.~~ 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.AGREJECT.M.027>, <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.ATTACH.M.009>

(LLC 1)
GMM informs LLC, 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>, <R.GMM.PRELIND.M.001>

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

<R.GMM.AGREJECT.M.017>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. PLMN and LA are stored in the forbidden list. MM has to perform a PLMN selection instead of a cell cellection.

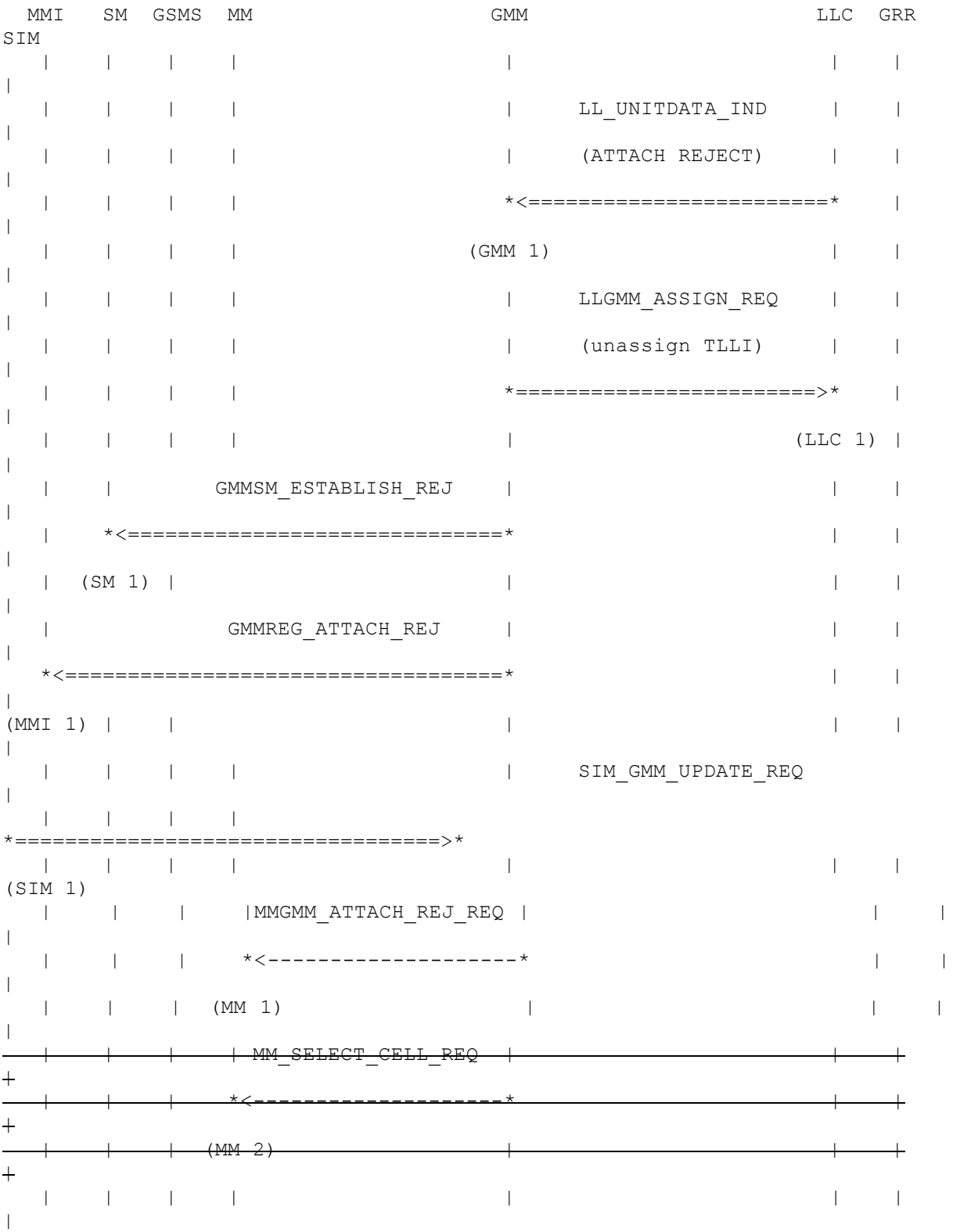
<R.GMM.AGREJECT.M.018>, <R.GMM.AGREJECT.M.019>, <R.GMM.AGREJECT.M.21>, <R.GMM.AGREJECT.M.024>, <R.GMM.AGREJECT.M.022>, <R.GMM.AGREJECT.M.025>

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.1.3.2 SM-initiated attach

4.8.1.3.2.1 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.001>, <R.GMM.DSUBFANO.M.003>, <R.GMM.ODNOIMSI.M.001>, <R.GMM.DDNOIMSI.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>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

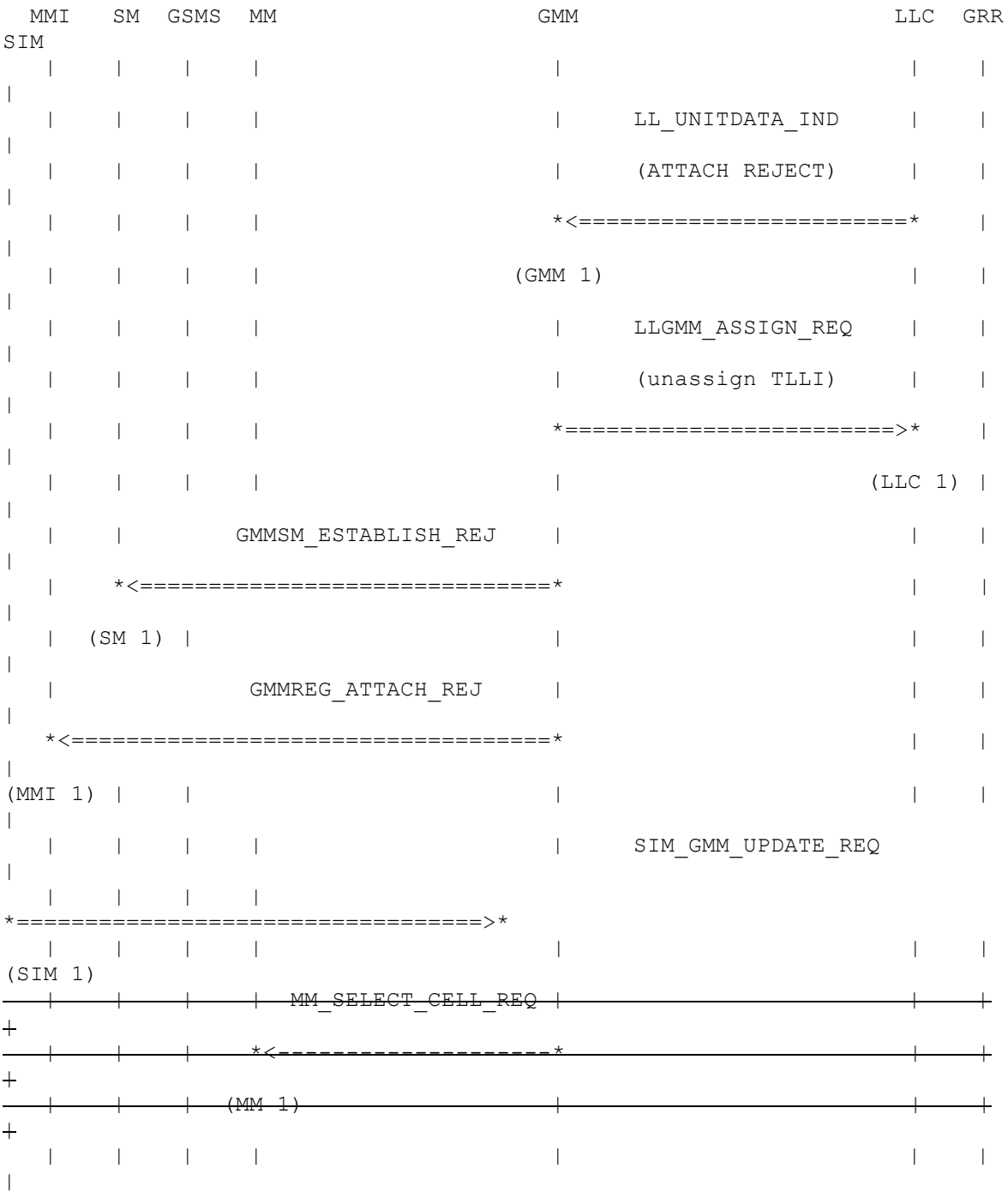
(SIM 1)
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.
<R.GMM.AGREJECT.M.003>, <R.GMM.AGREJECT.M.004>, <R.GMM.AGREJECT.M.006>

(MM 1)
If MM is not IMSI attached via MM procedure no further actions are taken. GMM informs MM, that MM has to enter 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>

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.1.3.2.2 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.LIMITED-SERVICE.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.014>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.003>

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

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

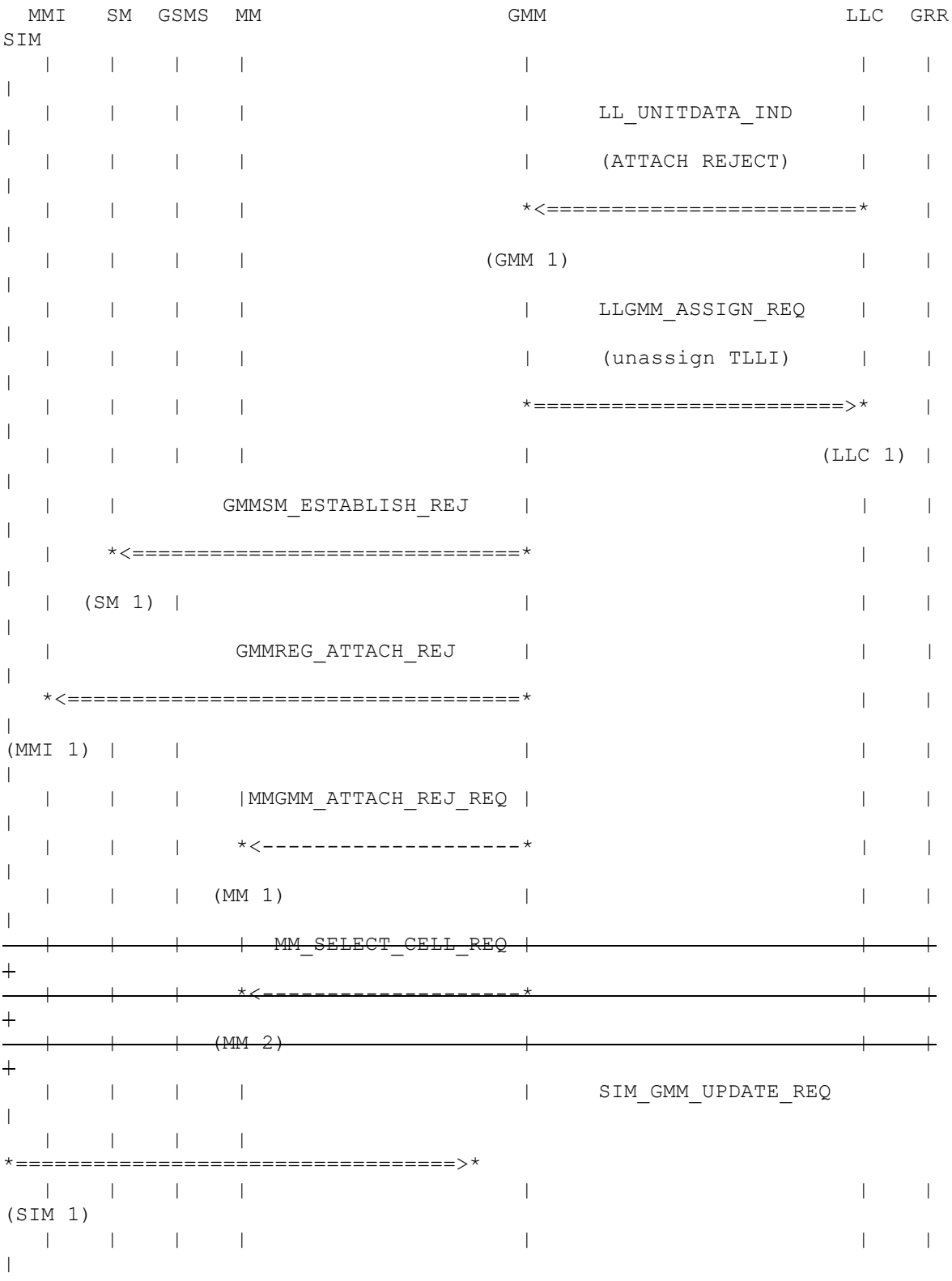
(SIM 1)

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>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.1.3.2.3 Reject cause #8



(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive LL_UNITDATA_IND from LLC containing the ATTACH REJECT (Reject cause = #8) message from the network. GMM stops timer T3310. GMM enters state GMM-DEREGISTERED.LIMITED-SERVICE.

<R.GMM.AGREJECT.M.002>, <R.GMM.AGREJECT.M.030>, <R.GMM.DSUBFANO.M.001>, <R.GMM.DSUBFANO.M.005>, <R.GMM.ODLIMITD.M.003>

(LLC 1)
GMM informs LLC, that the GMM context is released.
<R.GMM.AGREJECT.M.030>

(SM 1)
GMM informs SM, that the GMM connection setup has failed.
<R.GMM.AGREJECT.M.030>, <R.GMM.PRELIND.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.AGREJECT.M.030>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

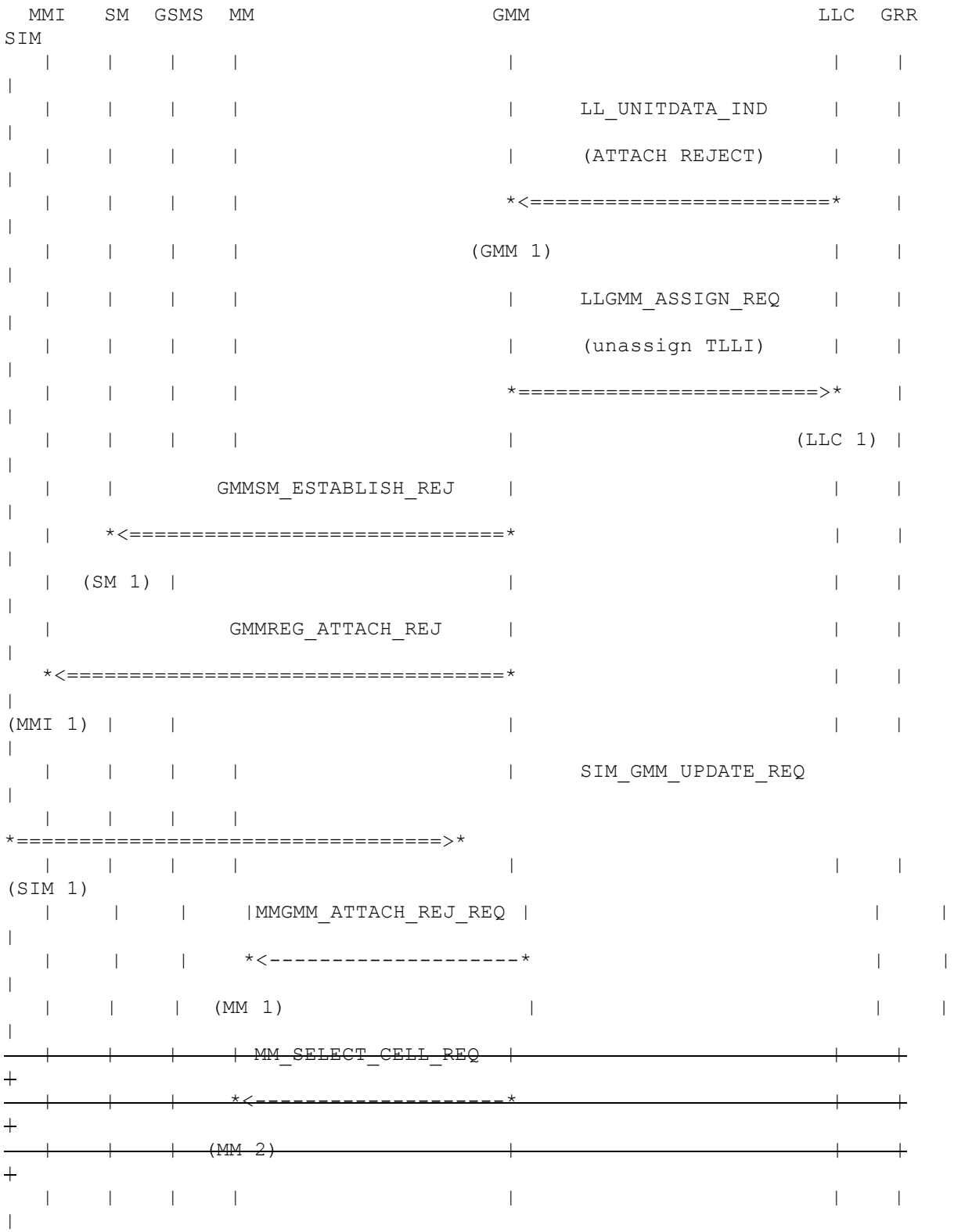
(MM 1)
MM shall enter state MM IDLE. he MS shall set the update status to U3 ROAMING NOT ALLOWED. The MS shall delete any TMSI, LAI, and CKSN.
<R.GMM.AGREJECT.M.031>, <R.GMM.AGREJECT.M.032>, <R.GMM.AGREJECT.M.033>

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

(SIM 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.028>, <R.GMM.AGREJECT.M.029>, <R.GMM.AGREJECT.M.034>

4.8.1.3.2.4 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. 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.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.ATTACH.M.009>

(LLC 1)
GMM informs LLC, 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>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

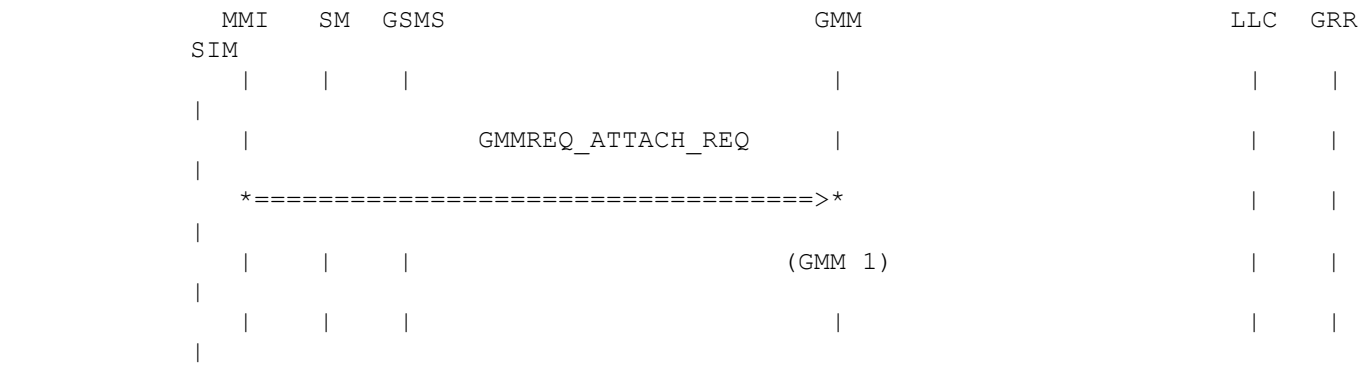
<R.GMM.AGREJECT.M.018>, <R.GMM.AGREJECT.M.019>, <R.GMM.AGREJECT.M.021>, <R.GMM.AGREJECT.M.023>, <R.GMM.AGREJECT.M.024>

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.1.4 Abnormal cases

4.8.1.4.1 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.~~

<R.GMM.AGABNORM.M.001>, <R.GMM.AGABNORM.M.001>, <R.GMM.ODATTNEE.M.003>, <R.GMM.DDATTNEE.M.001>

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

(GMM 1)
The attach procedure is aborted.

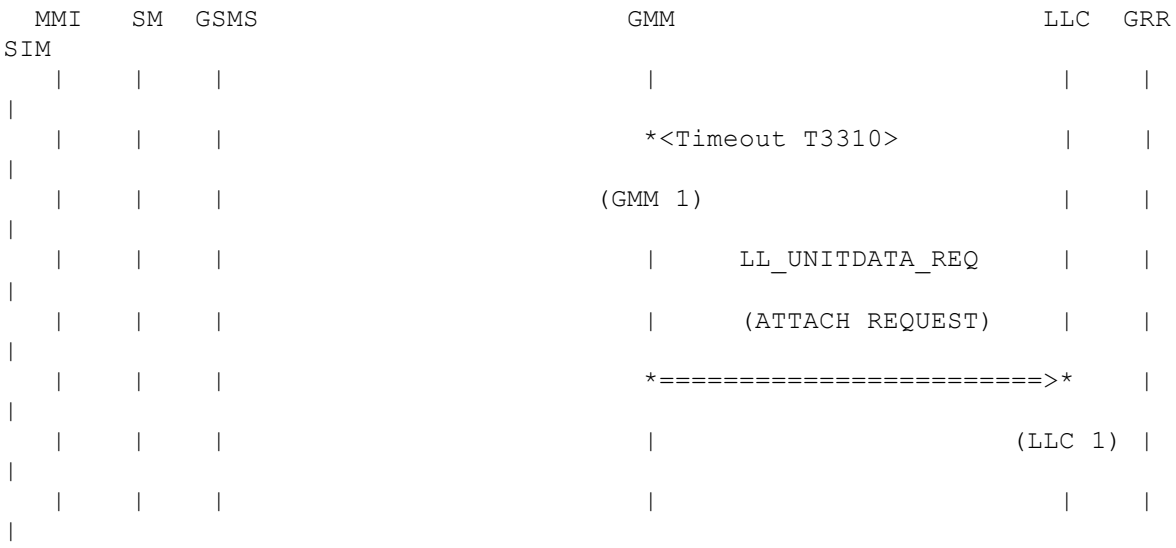
<R.GMM.AGABNORM.M.004>, <R.GMM.LOWERFAIL.M.001>

(GMM 2)
The attach attempt procedure is started (see section 4.8.1.5).

<R.GMM.AGABNORM.M.005>

4.8.1.4.3 c) T3310 time-out

4.8.1.4.3.1 Maximum retransmissions not reached



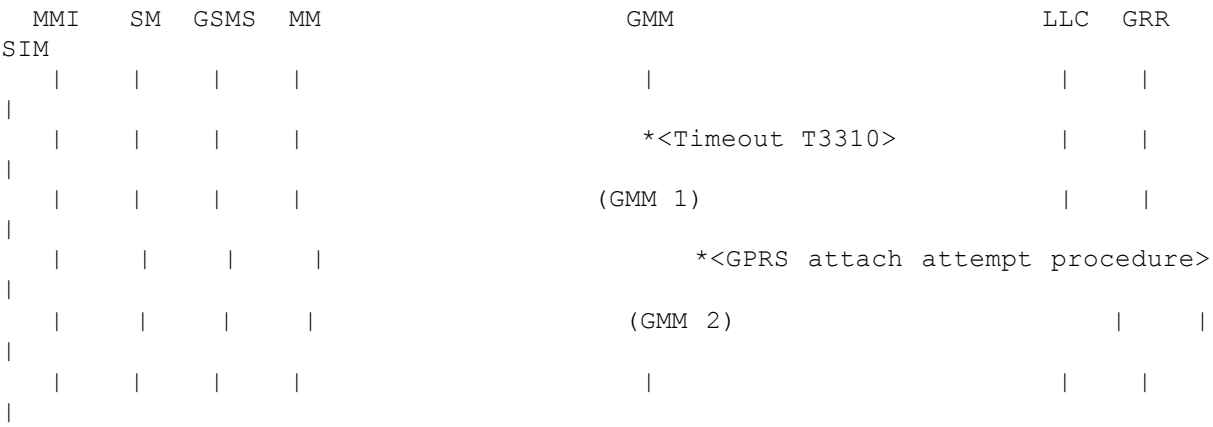
(GMM 1)
Timeout of timer T3310 for the first, second, third or fourth time. GMM starts timer T3310.

<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>

4.8.1.4.3.2 Maximum retransmissions reached



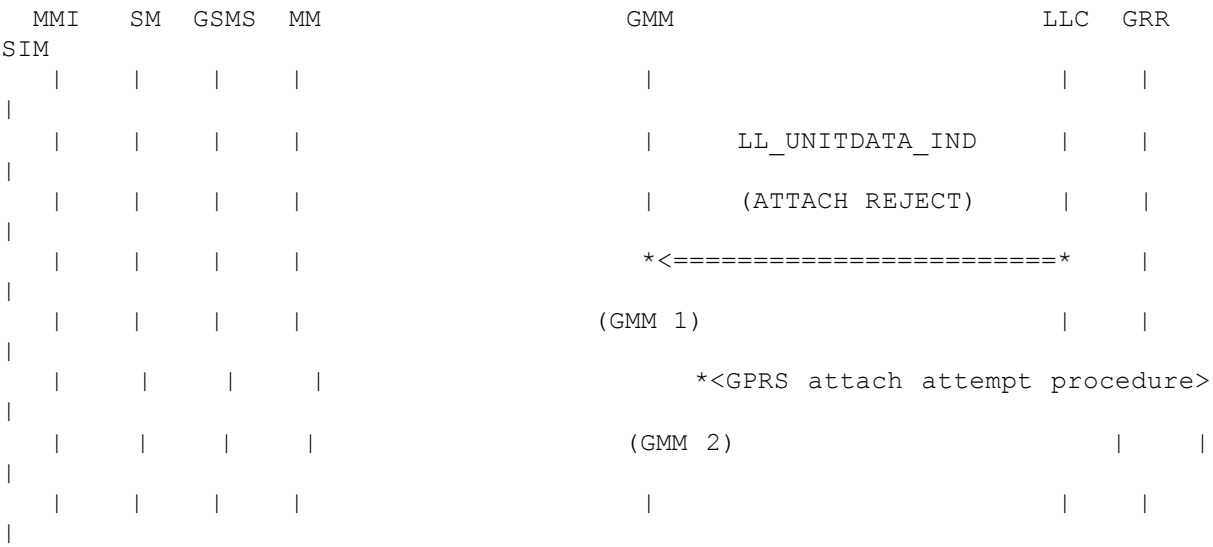
(GMM 1)
Timeout of timer T3310 for the fifth time. GMM aborts the attach procedure.

<R.GMM.AGABNORM.M.008>

(GMM 2)
The GPRS attach attempt procedure is started (see section 4.8.1.5).

<R.GMM.AGABNORM.M.009>

4.8.1.4.4 d) ATTACH REJECT, other causes than #3, #6, #7, #8, #11, #12, or #13



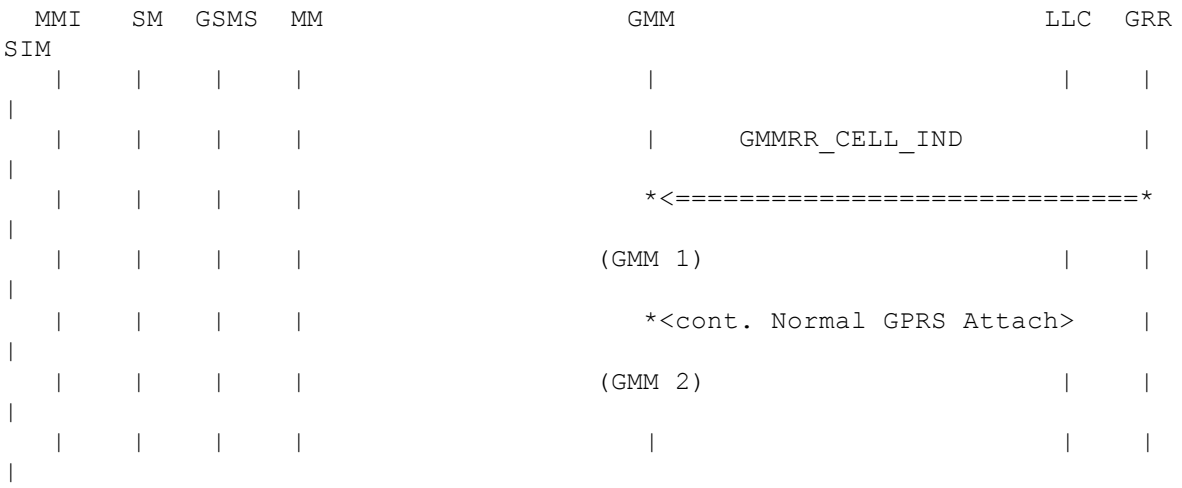
(GMM 1)
GMM receives the ATTACH REJECT message with any other cause than #3, #6, #7, #8, #11, #12, or #13. The RAU attempt counter is reset, if reject cause is #8, #9 or #16.

<R.GMM.ATTACH.M.009>

(GMM 2)
The GPRS attach attempt procedure is started (see section 4.8.1.5).

<R.GMM.AGABNORM.M.028>

4.8.1.4.5 e) Change of cell within the same RA

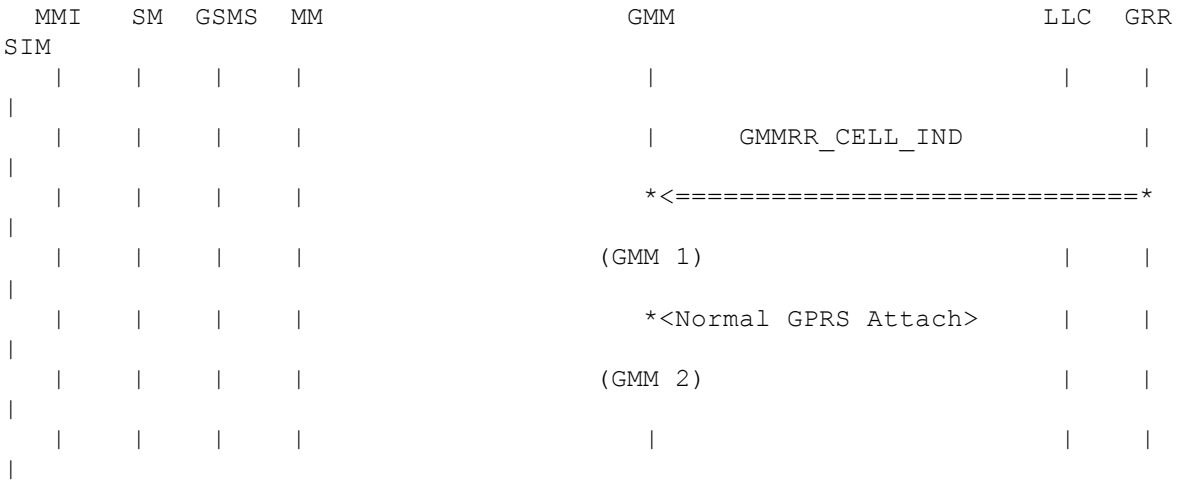


(GMM 1)
GMM is still in state GMM-REGISTERED-INITIATED. GMM receives the indication that a new cell has been entered, but the RA does not changed.

(GMM 2)
The GPRS attach procedure is continued.

<R.GMM.AGABNORM.M.029>

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

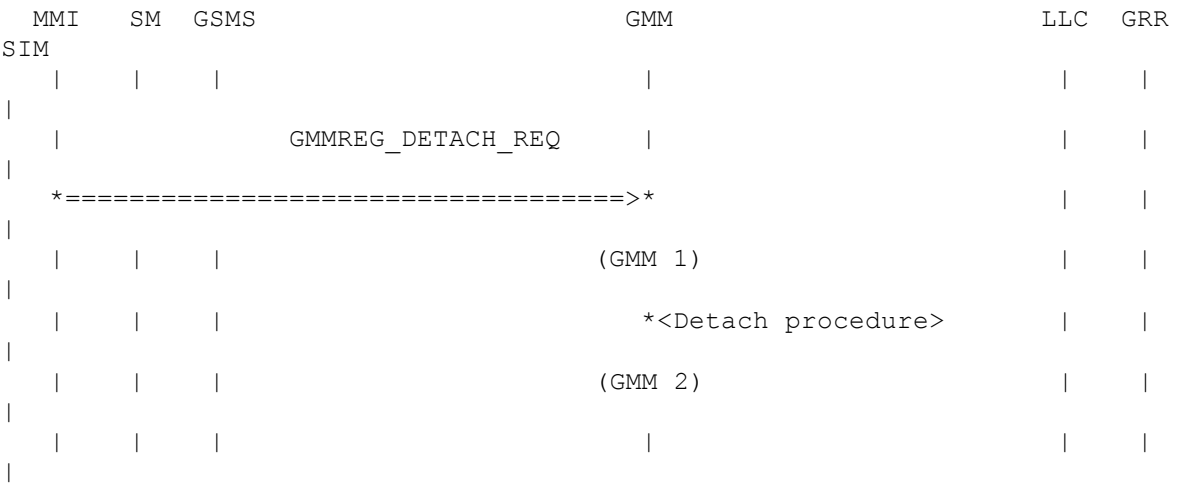


(GMM 1)
GMM is still in state GMM-REGISTERED-INITIATED. GMM receives the indication that a new RA has been entered.

(GMM 3)
The GPRS attach procedure is aborted and re-initiated immediately.

<R.GMM.AGABNORM.M.010>

4.8.1.4.7 g) Power off

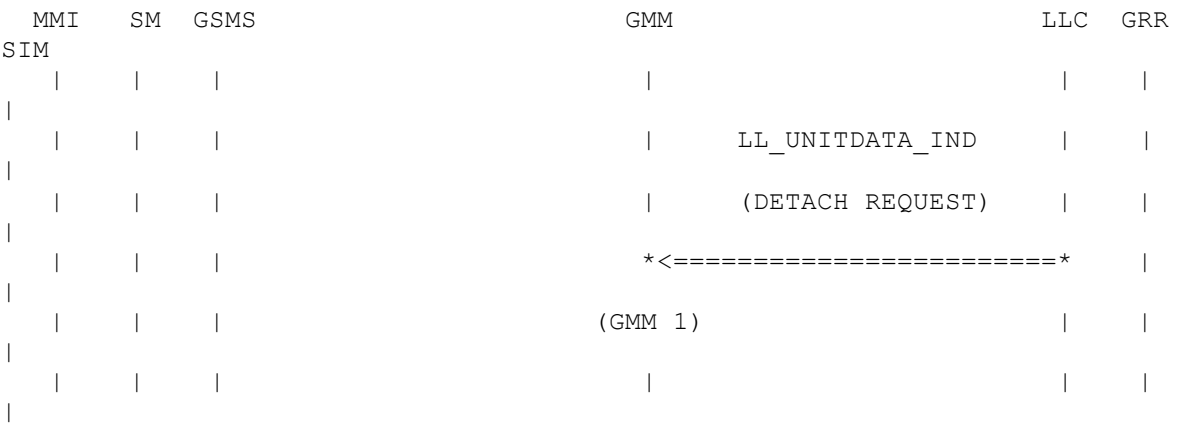


(GMM 1)
GMM is in state GMM-REGISTERED-INITIATED. GMM receives the primitive GMMREG_DETACH_REQ (Power off = 'power switched off') from MMI.
<R.GMM.AGABNORM.M.015>, <R.GMM.PDETREQ.M.001>, <R.GMM.PDETREQ.M.002>

(GMM 2)
The GPRS detach procedure is performed.
<R.GMM.AGABNORM.M.015>

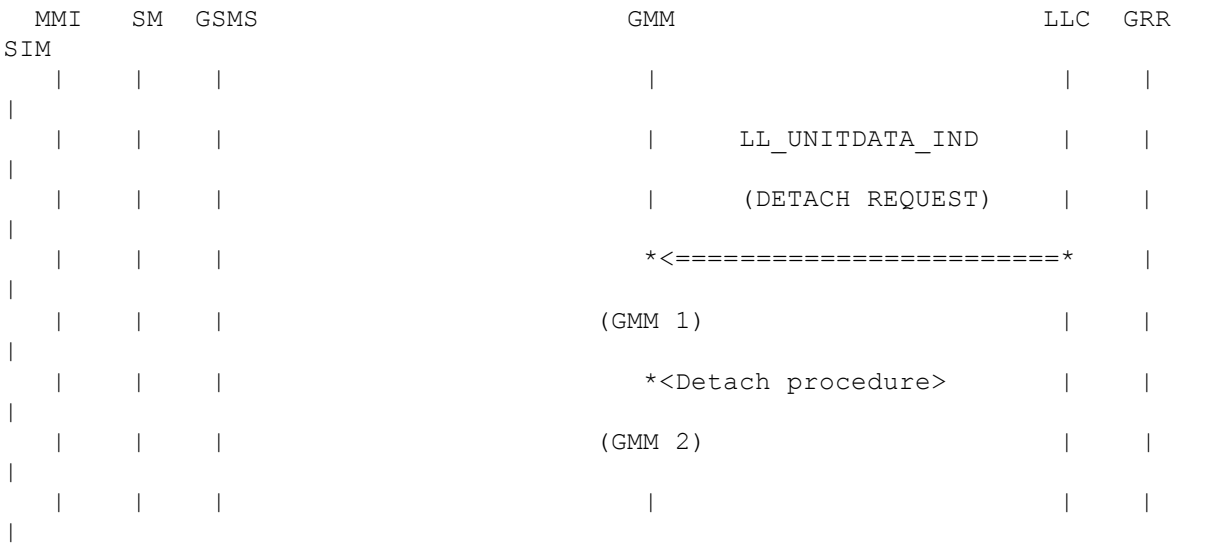
4.8.1.4.8 h) Procedure collision

4.8.1.4.8.1 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>

4.8.1.4.8.2 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>

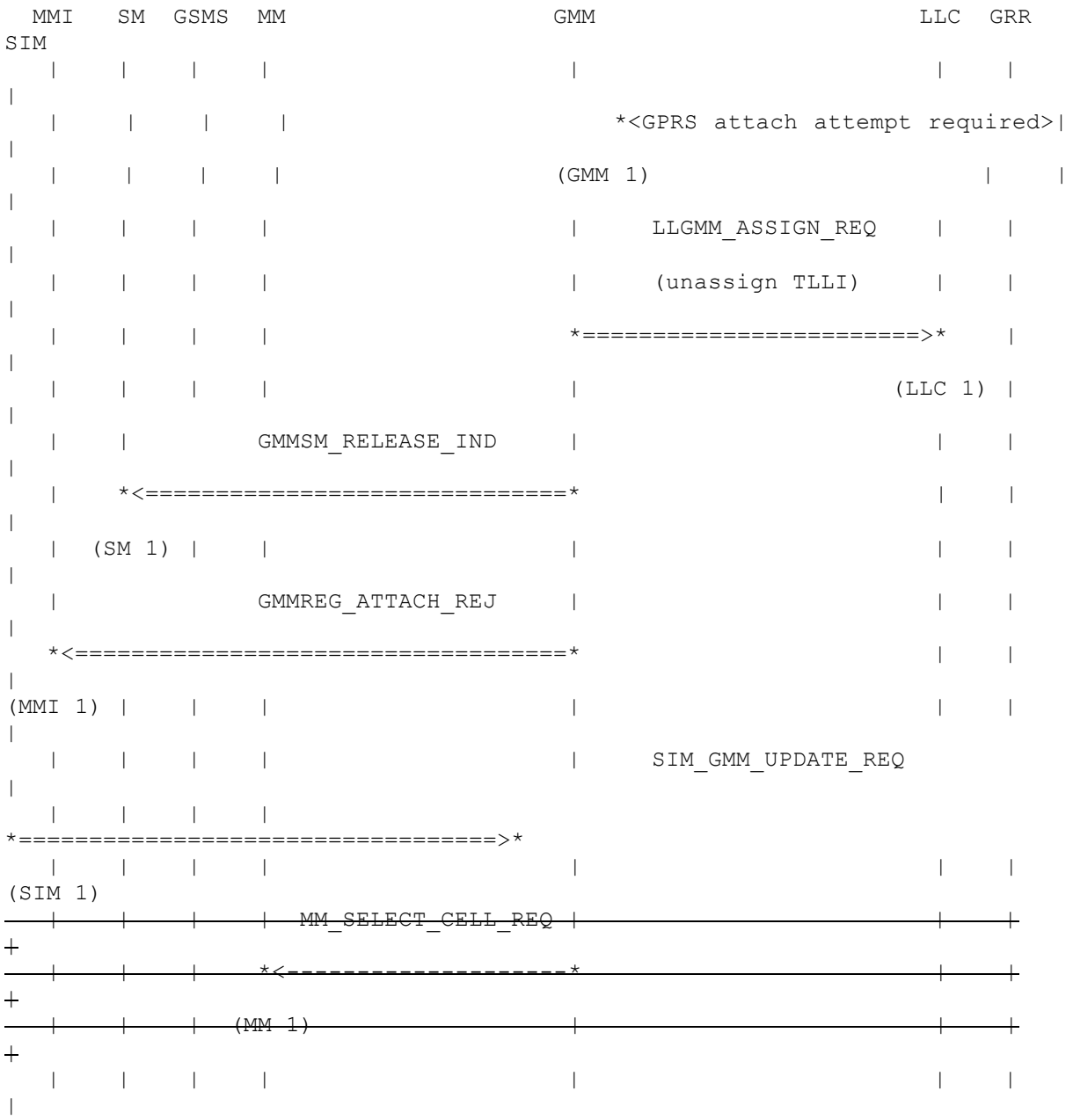
4.8.1.5 GPRS attach attempt procedure

4.8.1.5.1 GPRS attach attempt counter less than 5

(GMM 1)
The GPRS attach attempt counter is incremented and does not reach 5. 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>

4.8.1.5.2 GPRS attach attempt counter greater than or equal to 5

4.8.1.5.2.1 MMI-initiated attach



(GMM 1)
The GPRS attach attempt counter is incremented and is greater than or equal to 5. The timer T3310 is stopped, if still running. GMM starts timer T3302. GMM enters state GMM-DEREGISTERED.ATTEMPTING-TO-ATTACH.
<R.GMM.AGABNORM.M.020>, <R.GMM.AGABNORM.M.021>, <R.GMM.AGABNORM.M.026>, <R.GMM.AGABNORM.M.027>

(LLC 1)
GMM informs LLC, 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>, <R.GMM.PATTREJ.M.001>

(SIM 1)

GMM enters GPRS update status GU2 NOT UPDATED.

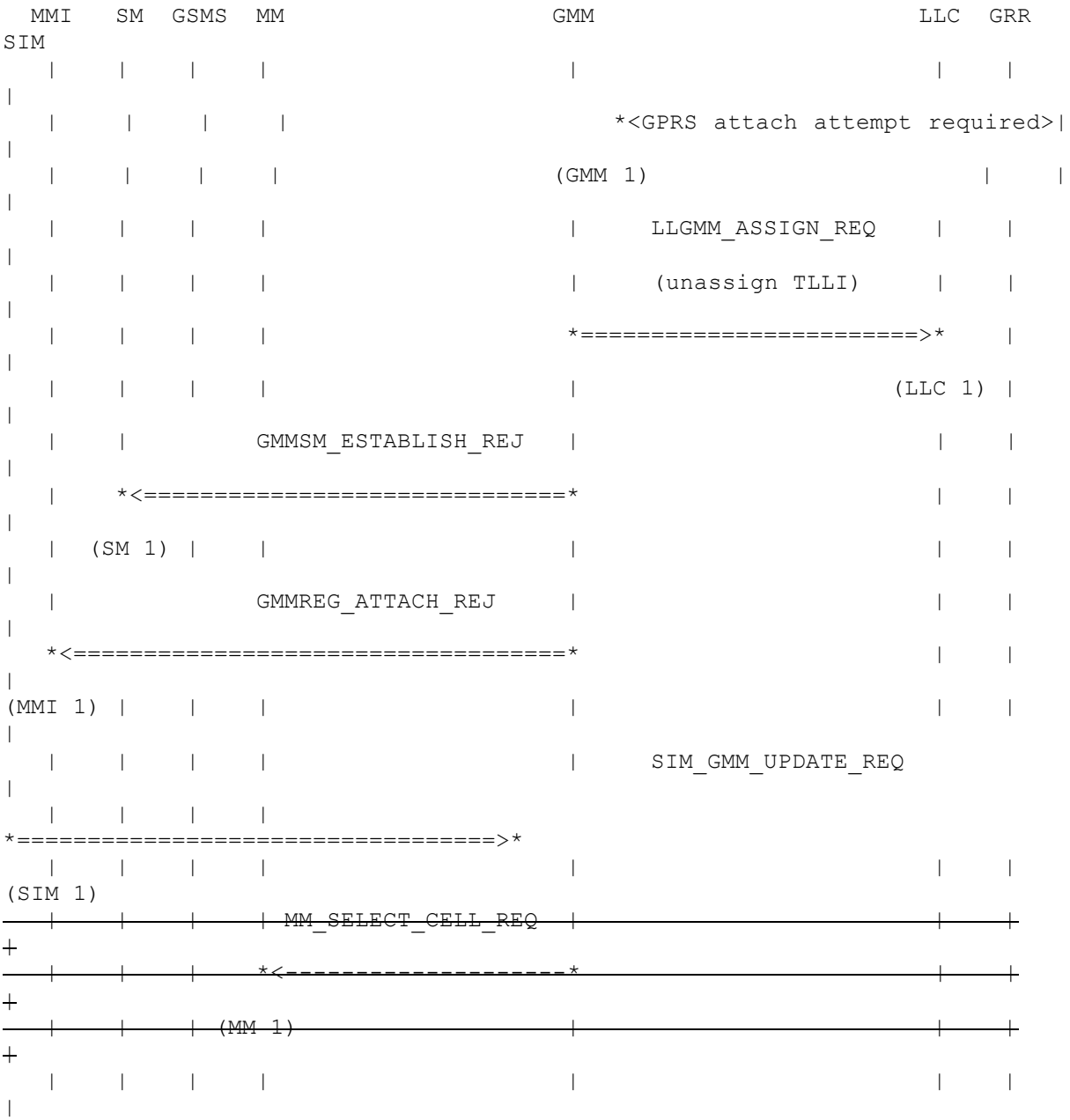
<R.GMM.AGABNORM.M.024>, <R.GMM.AGABNORM.M.025>

~~(MM 1)~~

~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.1.5.2.2 SM-initiated attach



(GMM 1)

The GPRS attach attempt counter is incremented and is greater than or equal to 5. 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>

(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>, <R.GMM.PATTREJ.M.001>

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

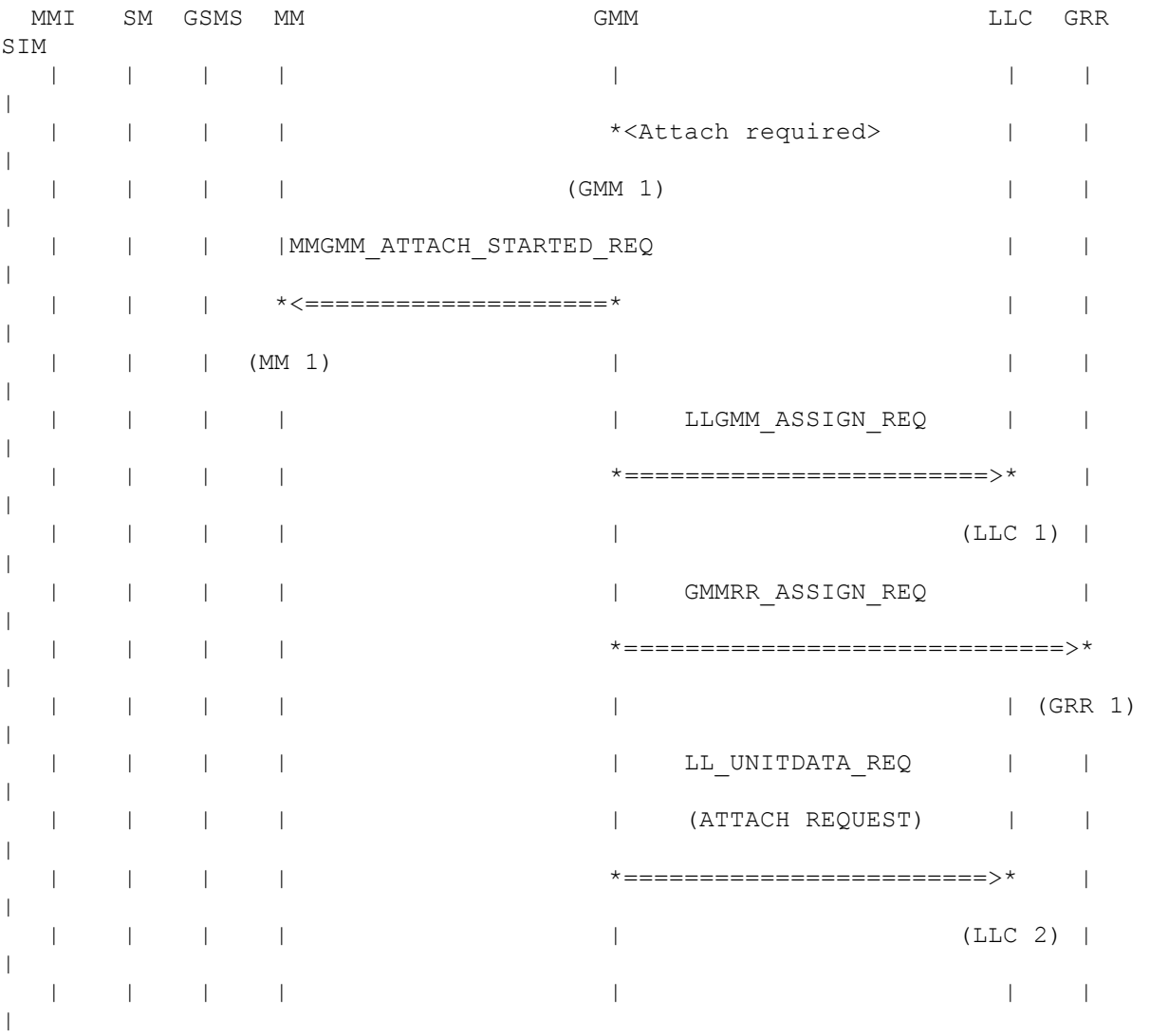
~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

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

4.8.2.1 Combined GPRS attach procedure initiation

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



(GMM 1)
Combined GPRS attach is required (see section 4.8). 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>, <R.GMM.TLLIUSE.M.013>

(MM 1)
MM has to enter state MM-LOCATION-UPDATING-PENDING.

<R.GMM.MMONE.M.004>

(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>, <R.GMM.TLLIUSE.M.013>

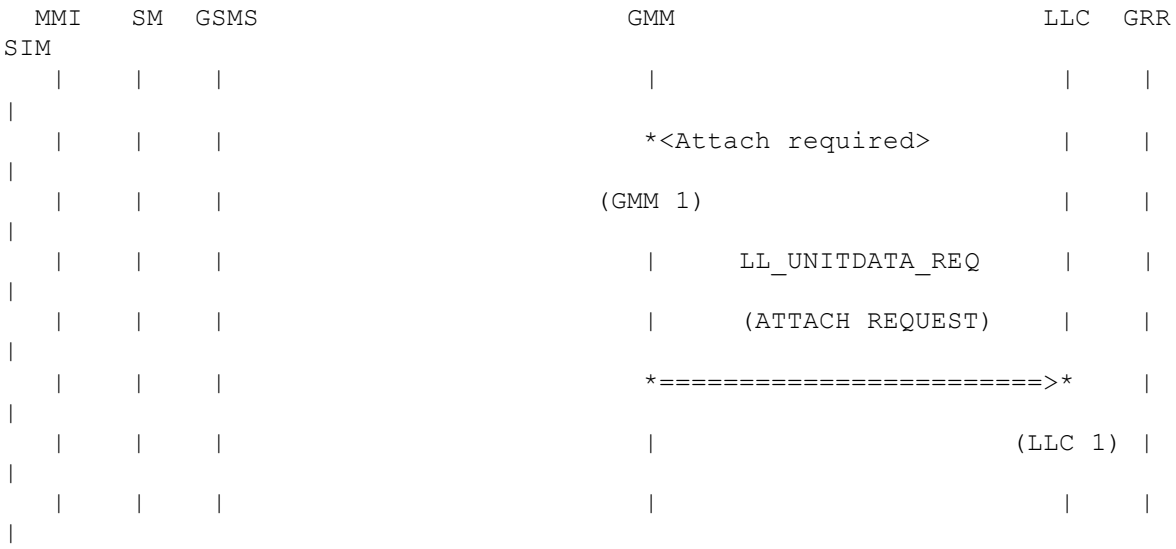
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

<R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.TLLIUSE.M.013>

(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.TLLIUSE.M.013>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>, <R.GMM.PATTREQ.M.002>

4.8.2.1.2 TLLI already assigned to lower layers



(GMM 1)
Combined GPRS attach is required (see section 4.8). 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.

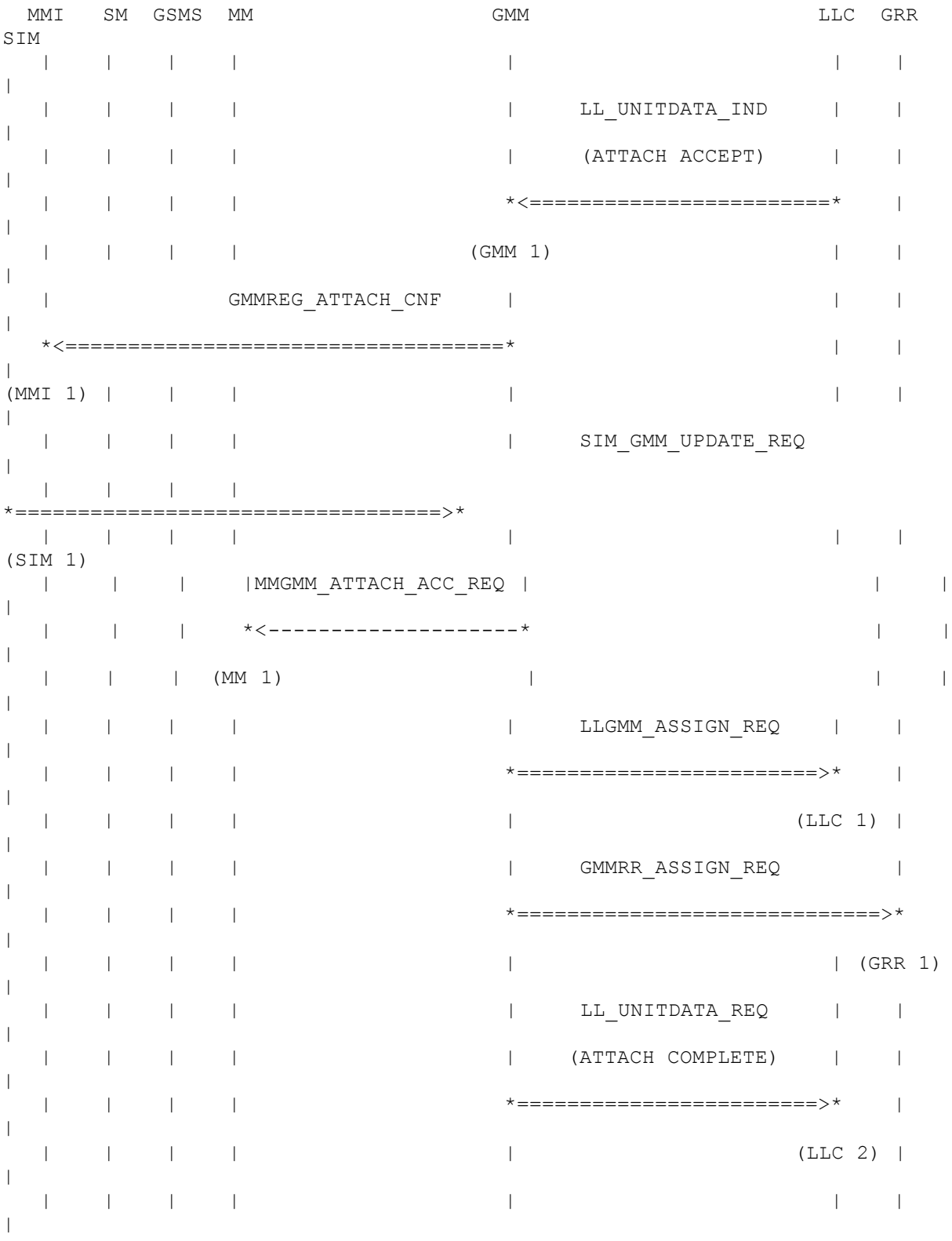
<R.GMM.ATTCOMBN.M.003>, <R.GMM.ACINIT.M.002>, <R.GMM.ACINIT.M.003>, <R.GMM.ACINIT.M.004>, <R.GMM.ACINIT.M.005>, <R.GMM.ACINIT.M.006>, <R.GMM.ACINIT.M.007>, <R.GMM.ACINIT.M.008>, <R.GMM.AGINIT.M.006>, <R.GMM.TLLIUSE.M.002>, <R.GMM.TLLIUSE.M.005>, <R.GMM.TLLIUSE.M.013>, <R.GMM.PTMSISIG.M.002>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>, <R.GMM.PATTREQ.M.002>

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

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

4.8.2.2.1 MMI-initiated attach accepted

4.8.2.2.1.1 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>,
<R.GMM.ACSUBOTH.M.020>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>,
<R.GMM.READYTIM.M.021>

(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>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. The LAU attempt counter has to reset.
GMM informs MM, that MM has to reset the LAU attempt counter.
GMM forwards the given TMSI to MM.

<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>,, <R.GMM.ACSUBOTH.M.009>,
<R.GMM.ACSUBOTH.M.010>, <R.GMM.ACSUBOTH.M.021>, <R.GMM.ACSUBOTH.M.009>;
<R.GMM.ACSUBOTH.M.011>, <R.GMM.ACSUBOTH.M.012>, <R.GMM.ACSUBOTH.M.013>, ,
<R.GMM.ACSUBOTH.M.014>, <R.GMM.ACSUBOTH.M.015>, <R.GMM.ACSUBOTH.M.016>

(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.PATTCNF.M.003>, <R.GMM.ACSUBOTH.M.001>

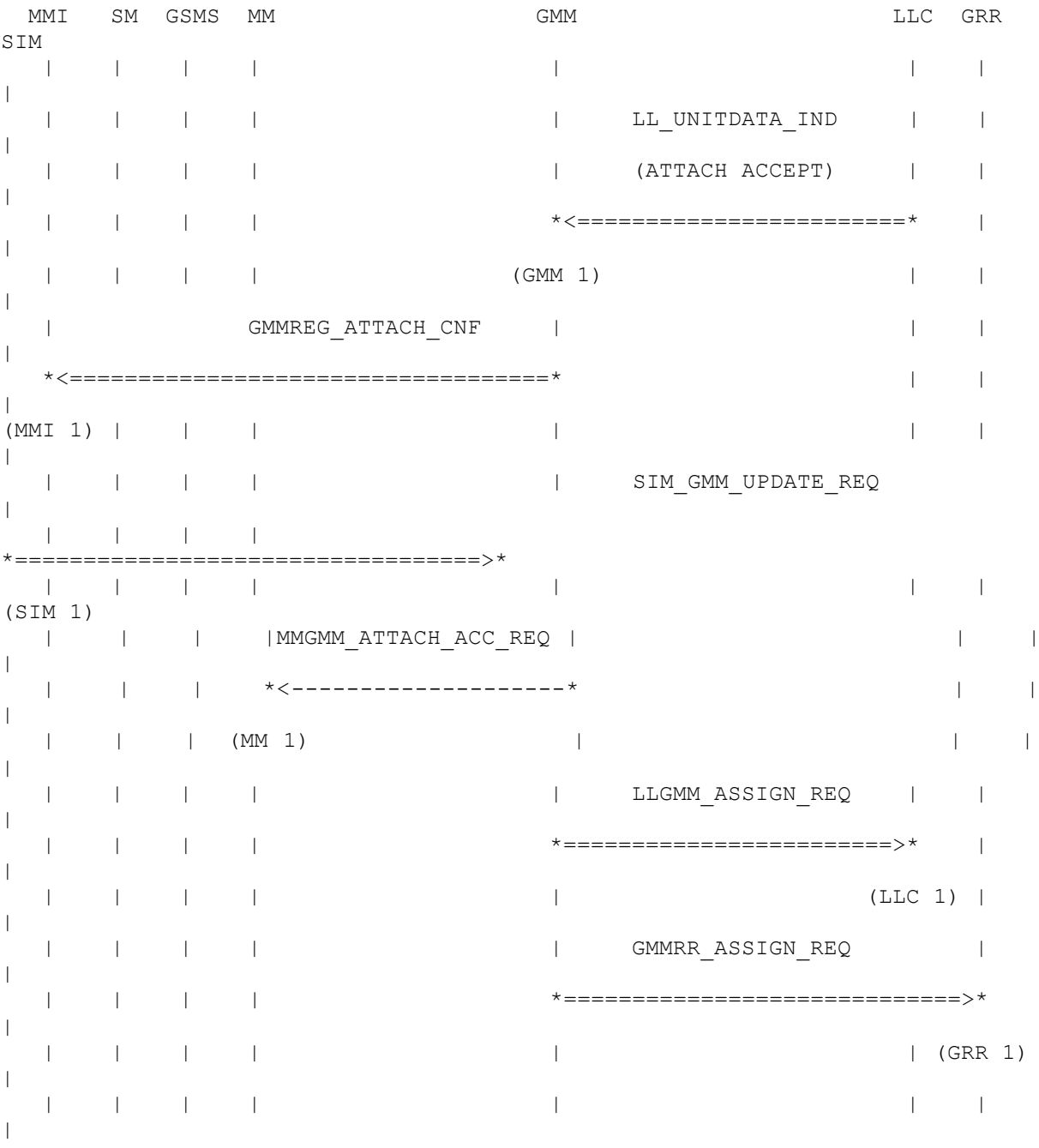
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

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

4.8.2.2.1.2 MMI-initiated attach accepted without implicit P-TMSI and 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>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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 enter 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>

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

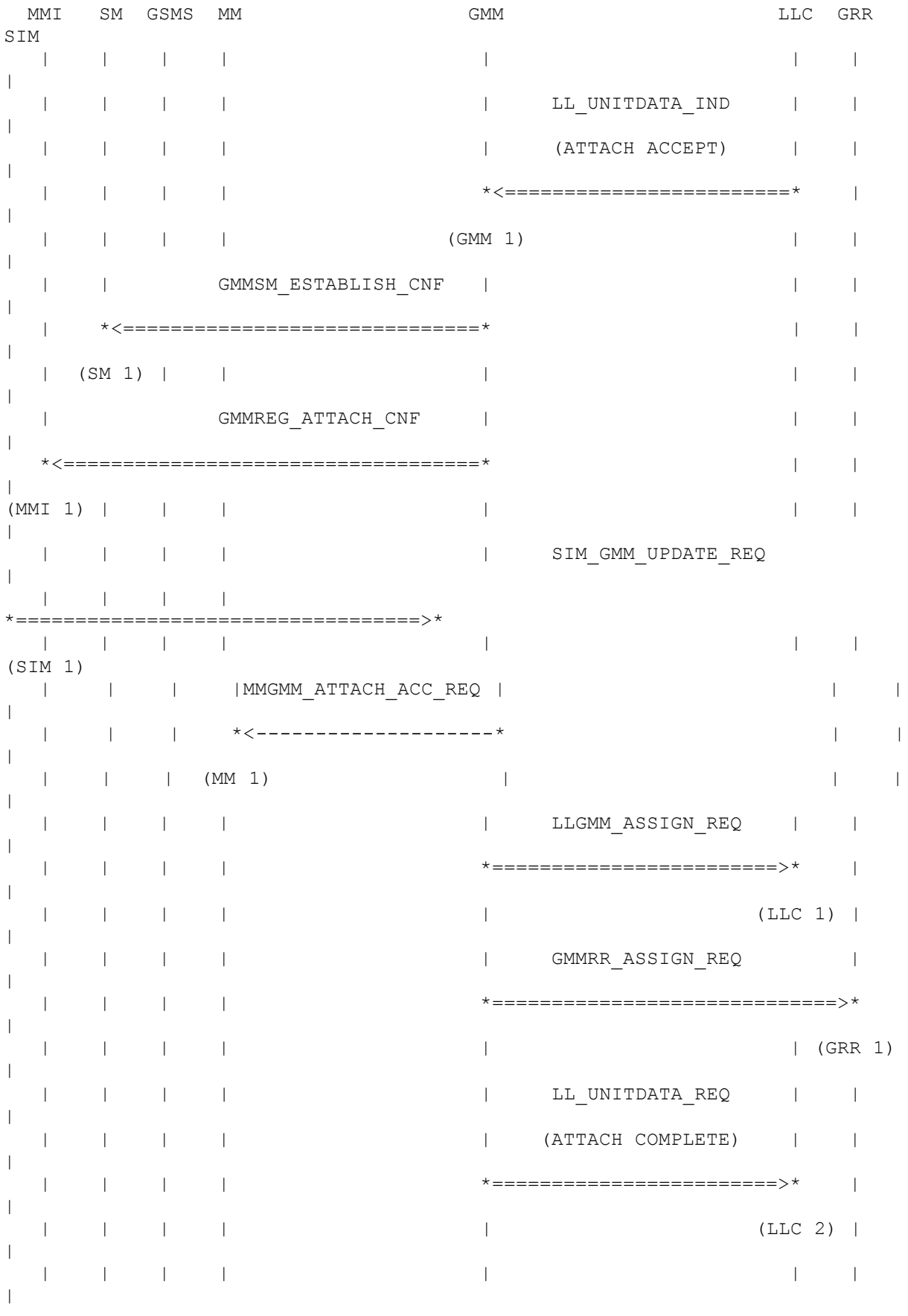
<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.PATTCNF.M.003>, <R.GMM.ACSUBOTH.M.001>

(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.PATTCNF.M.003>, <R.GMM.ACSUBOTH.M.001>

4.8.2.2.2 SM-initiated attach accepted

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


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(ATTACH ACCEPT)
(GMM 1)
GMMSM_ESTABLISH_CNF
(SM 1)
GMMREG_ATTACH_CNF
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
MMGMM_ATTACH_ACC_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>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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 forwards the given TMSI to MM. GMM informs MM, that MM has to enter 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.011>, <R.GMM.ACSUBOTH.M.012>, <R.GMM.ACSUBOTH.M.013>, , <R.GMM.ACSUBOTH.M.014>, <R.GMM.ACSUBOTH.M.015>, <R.GMM.ACSUBOTH.M.016>, <R.GMM.ACSUBOTH.M.009>

(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.PATTCNF.M.003>, <R.GMM.ACSUBOTH.M.001>

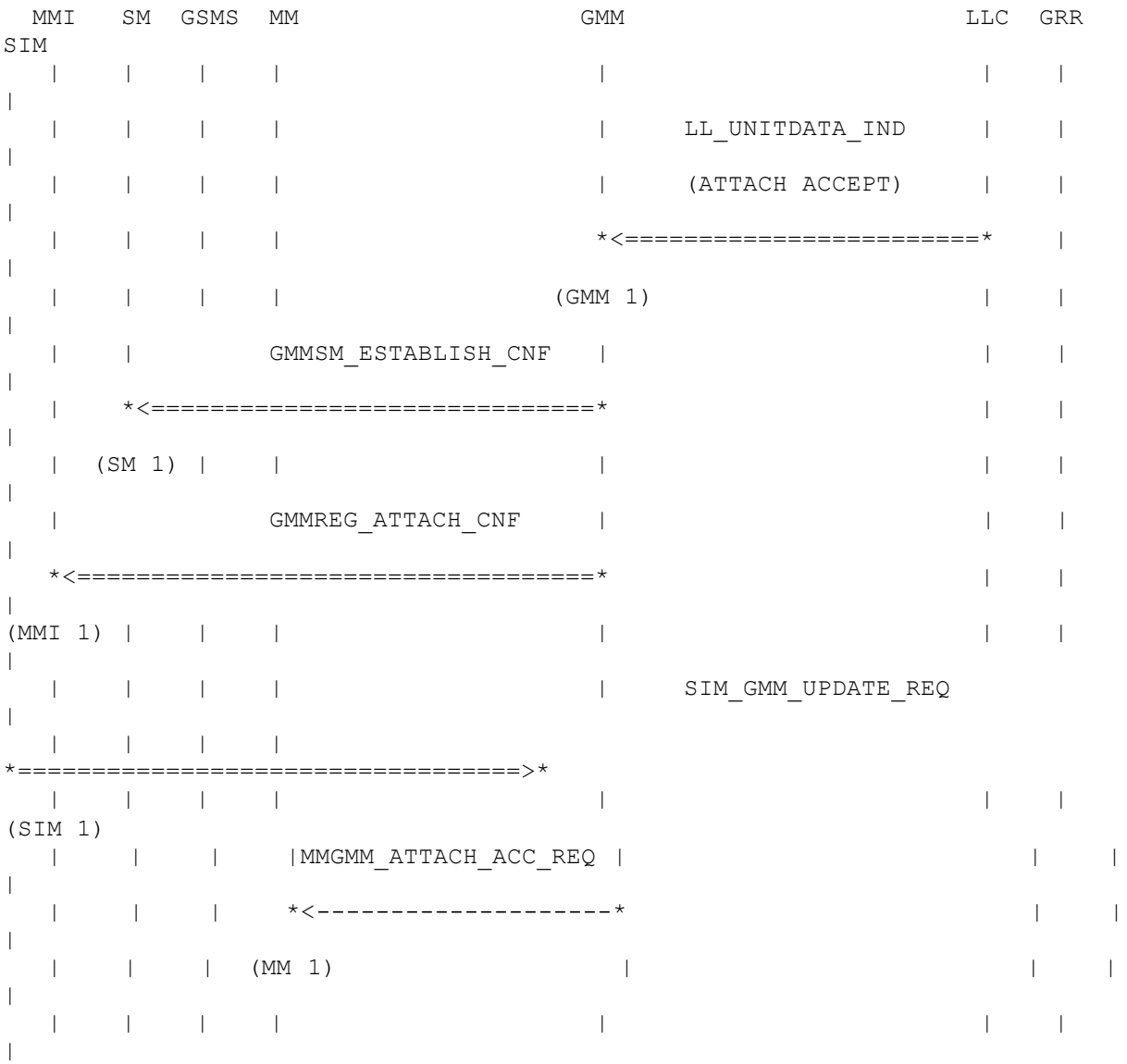
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

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

4.8.2.2.2.2 SM-initiated attach accepted without implicit P-TMSI and 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>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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 enter 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>, <R.GMM.ACSUBOTH.M.009>

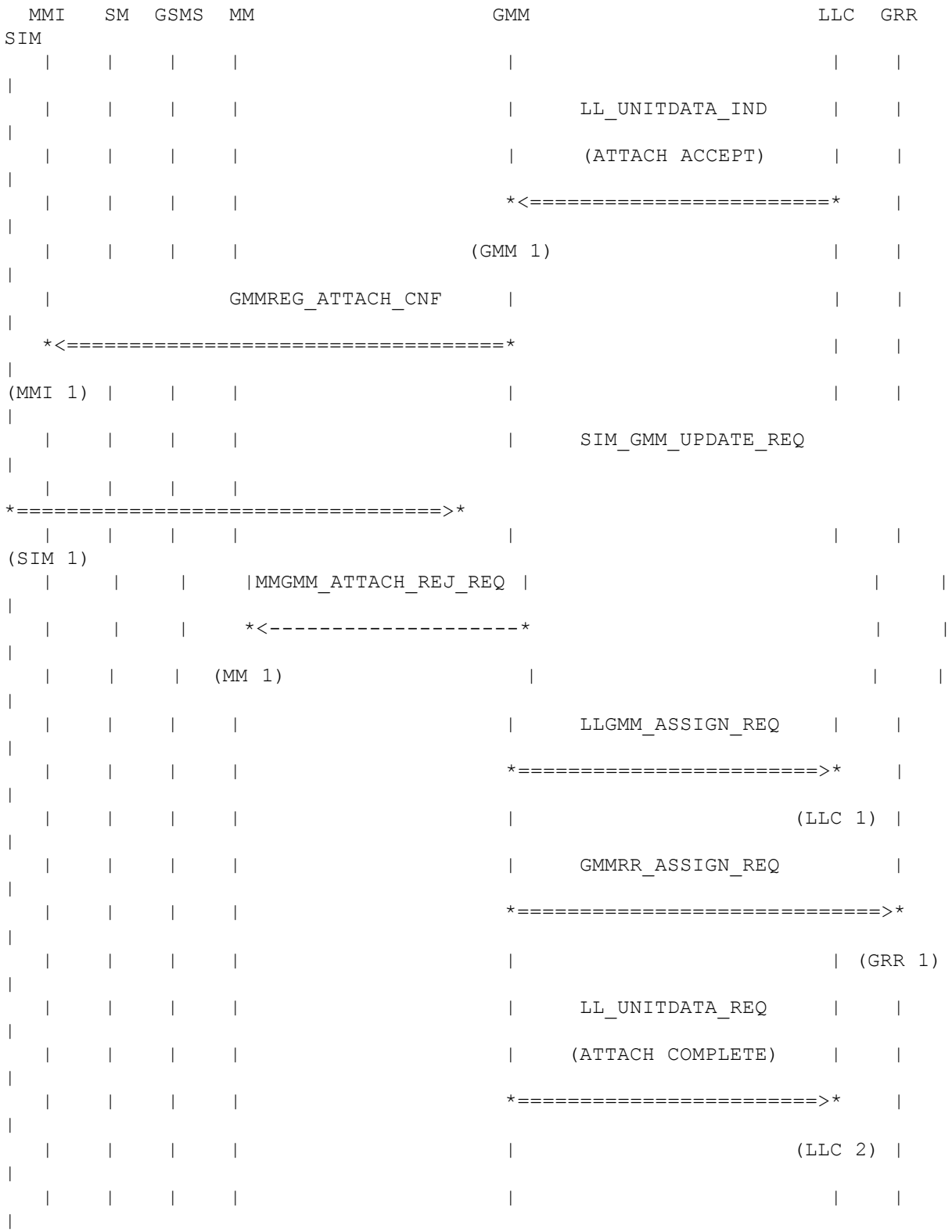
4.8.2.3 Combined GPRS attach accepted by the network for GPRS services only

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

4.8.2.3.1 MMI-initiated attach accepted

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

4.8.2.3.1.1.1 Reject cause #2



(GMM 1)
GMM receives the message ATTACH ACCEPT (Attach result = 'Combined 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.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>,
<R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING-NOT-ALLOWED. GMM informs MM that the TMSI is invalid. GMM informs MM, that MM has to reset the LAU attempt counter.

<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>, <R.GMM.ACSUBOTH.M.003>

(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.PATTCNF.M.003>, <R.GMM.ACSUGPRS.M.001>

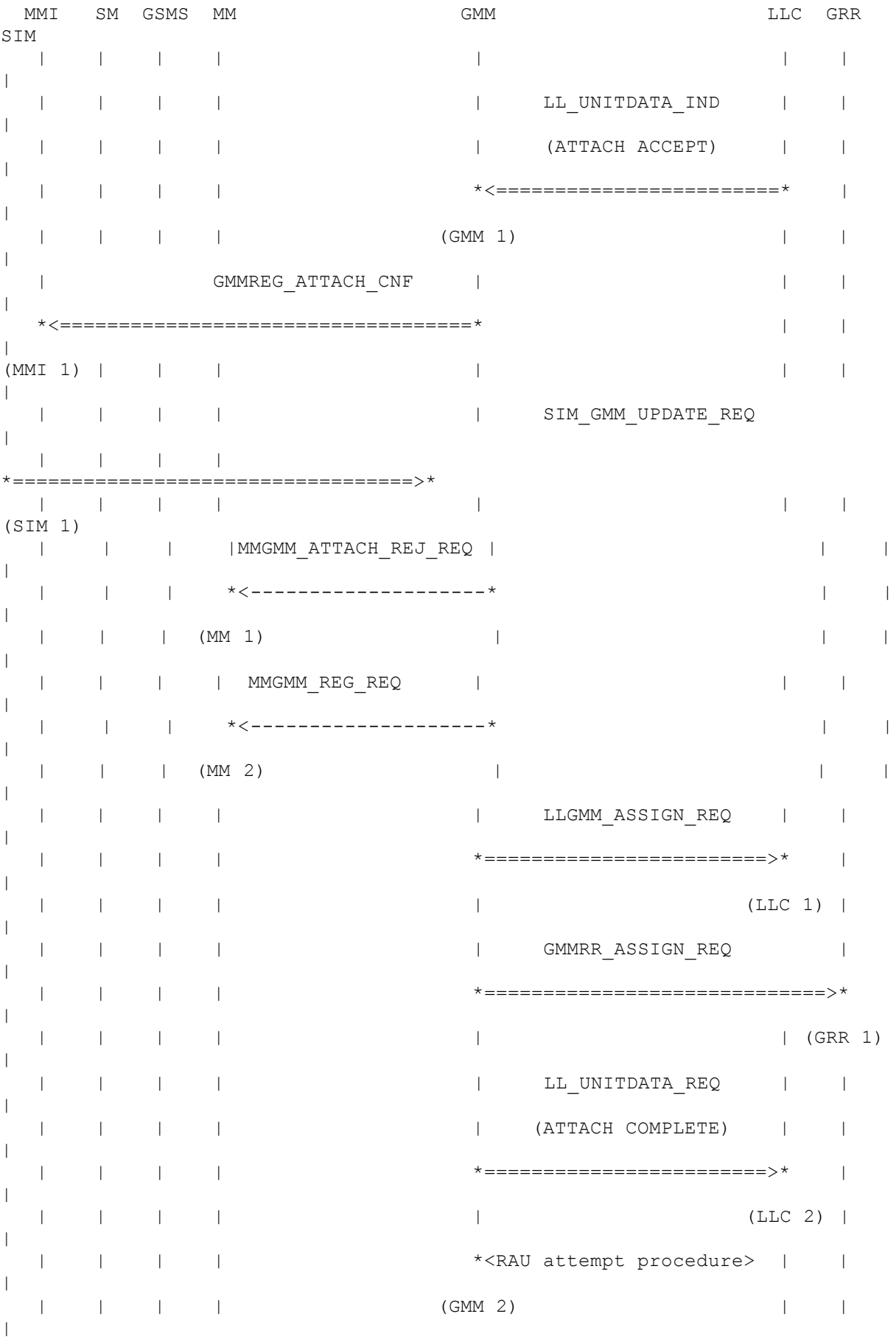
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

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

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


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(ATTACH ACCEPT)
(GMM 1)
GMMREG_ATTACH_CNF
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MMGMM_REG_REQ
(MM 2)
LLGMM_ASSIGN_REQ
(LLC 1)
GMMRR_ASSIGN_REQ
(GRR 1)
LL_UNITDATA_REQ
(ATTACH COMPLETE)
(LLC 2)
<RAU attempt procedure>
(GMM 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 increments the RAU attempt counter. GMM enters state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>, <R.GMM.ACSUGPRS.M.010>, <R.GMM.ACSUGPRS.M.011>, <R.GMM.ACSUGPRS.M.012>

(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>

(SIM 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 indicates MM the attach rejection.

(MM 2)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services, if the MS is a class A mobile.

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

(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.PATTCNF.M.003>, <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.PATTCNF.M.003>, <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.

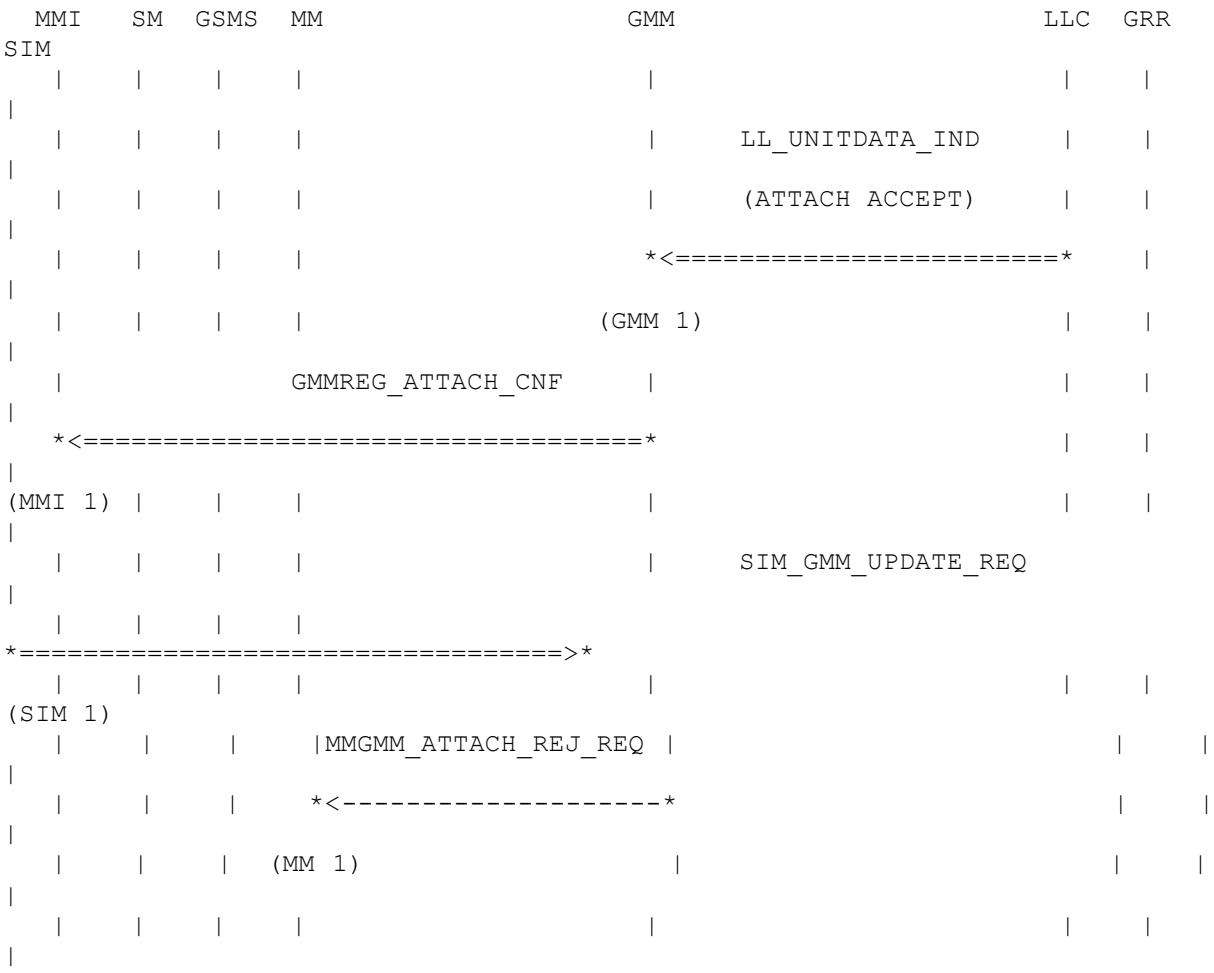
<R.GMM.AGACCEPT.M.018>, <R.GMM.TLLIUSE.M.011>, <R.GMM.ACSUGPRS.M.001>

(GMM 2)
The RAU attempt procedure on chapeter **Error! Reference source not found.** is followed.

<R.GMM.ACSUGPRS.M.013>

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

4.8.2.3.1.2.1 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.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.READYTIM.M.021>

(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>

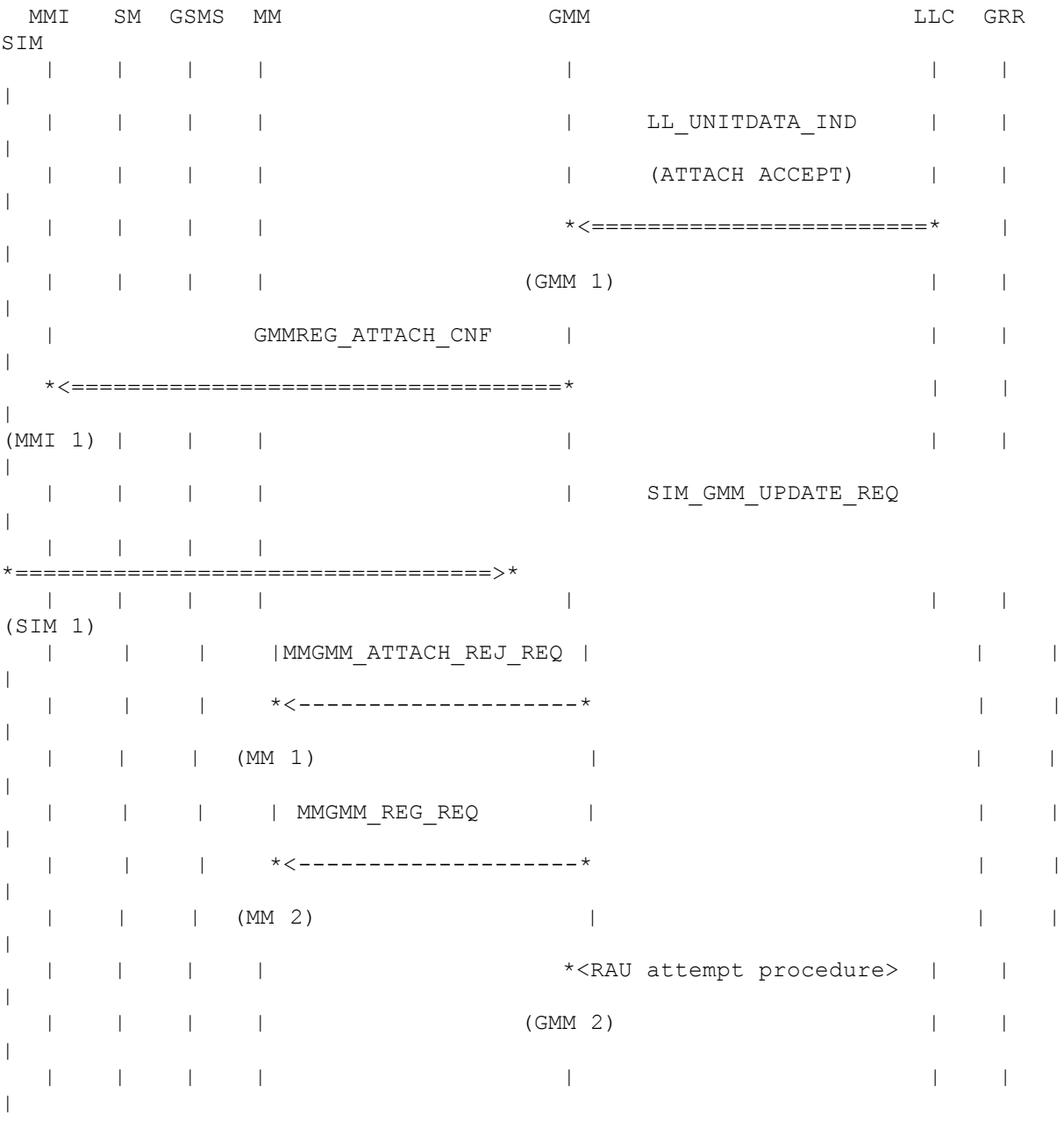
(SIM 1)
GMM enters GPRS update status GU1 UPDATED.

<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 enter 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. GMM informs MM that the TMSI is invalid.

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

4.8.2.3.1.2.2 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.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.READYTIM.M.021>, <R.GMM.ACSUGPRS.M.010>, <R.GMM.ACSUGPRS.M.011>, <R.GMM.ACSUGPRS.M.012>

(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>

(SIM 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 indicates MM the attach rejection.

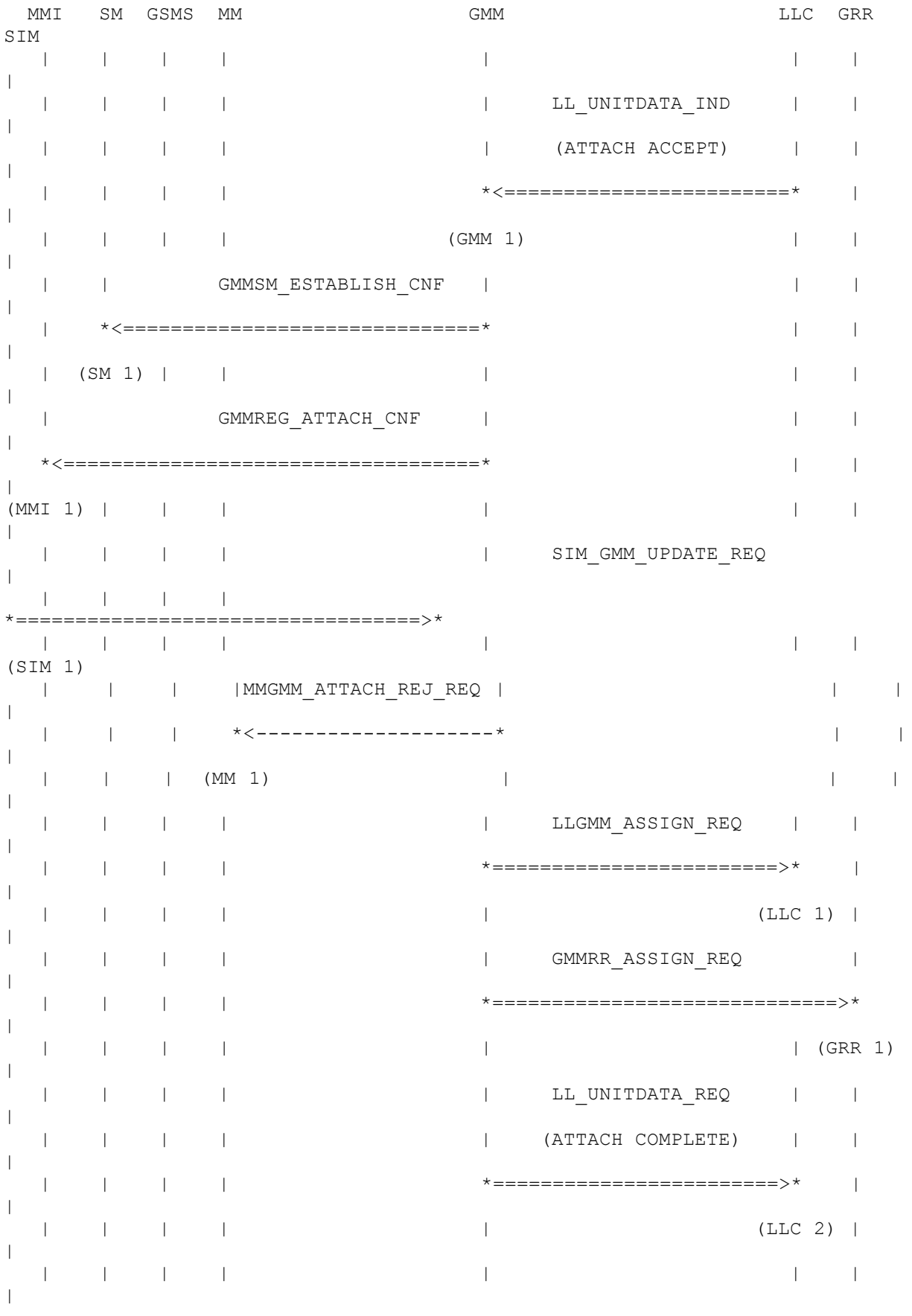
(MM 2)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.
<R.GMM.ACSUGPRS.M.006>, <R.GMM.ACSUGPRS.M.007>

(GMM 2)
The RAU attempt procedure on chapeter **Error! Reference source not found.** is followed.
<R.GMM.ACSUGPRS.M.013>

4.8.2.3.2 SM-initiated attach accepted

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

4.8.2.3.2.1.1 Reject cause #2


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(ATTACH ACCEPT)
(GMM 1)
GMMSM_ESTABLISH_CNF
(SM 1)
GMMREG_ATTACH_CNF
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
MMGMM_ATTACH_REJ_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.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U1 UPDATED. GMM informs MM that the TMSI is invalid.

<R.GMM.ACSUBOTH.M.006>, <R.GMM.ACSUBOTH.M.008>, <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>, <R.GMM.ACSUBOTH.M.003>

(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.PATTCNF.M.003>, <R.GMM.ACSUGPRS.M.001>

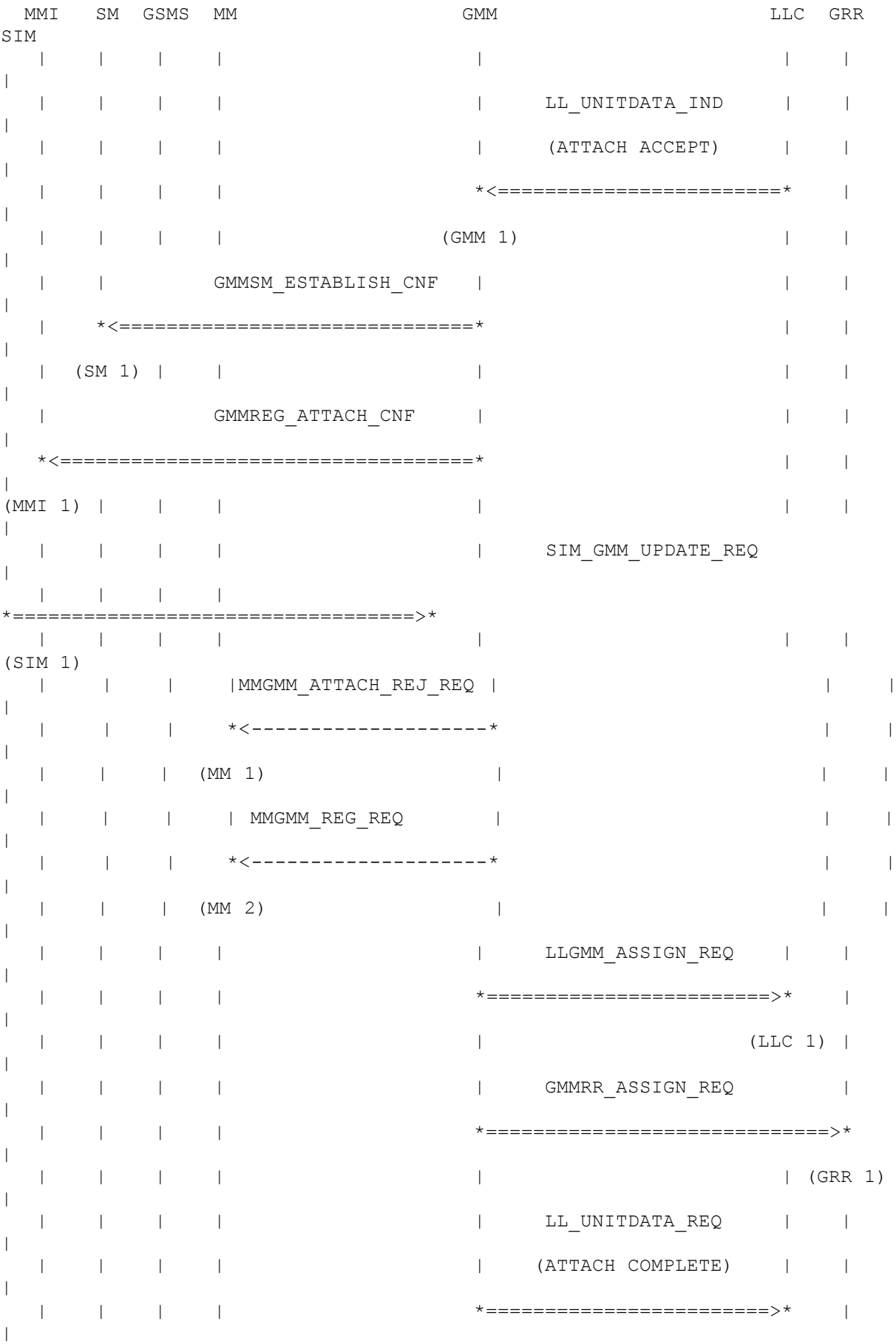
(GRR 1)
GMM assigns the TLLI to GRR with the primitive GMMRR_ASSIGN_REQ.

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

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


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(ATTACH ACCEPT)
(GMM 1)
GMMSM_ESTABLISH_CNF
(SM 1)
GMMREG_ATTACH_CNF
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MMGMM_REG_REQ
(MM 2)
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.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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 indicates MM the attach rejection.

(MM 2)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services, if the MS is a class A mobile.

<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.PATTCNF.M.003>, <R.GMM.ACSUGPRS.M.001>

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

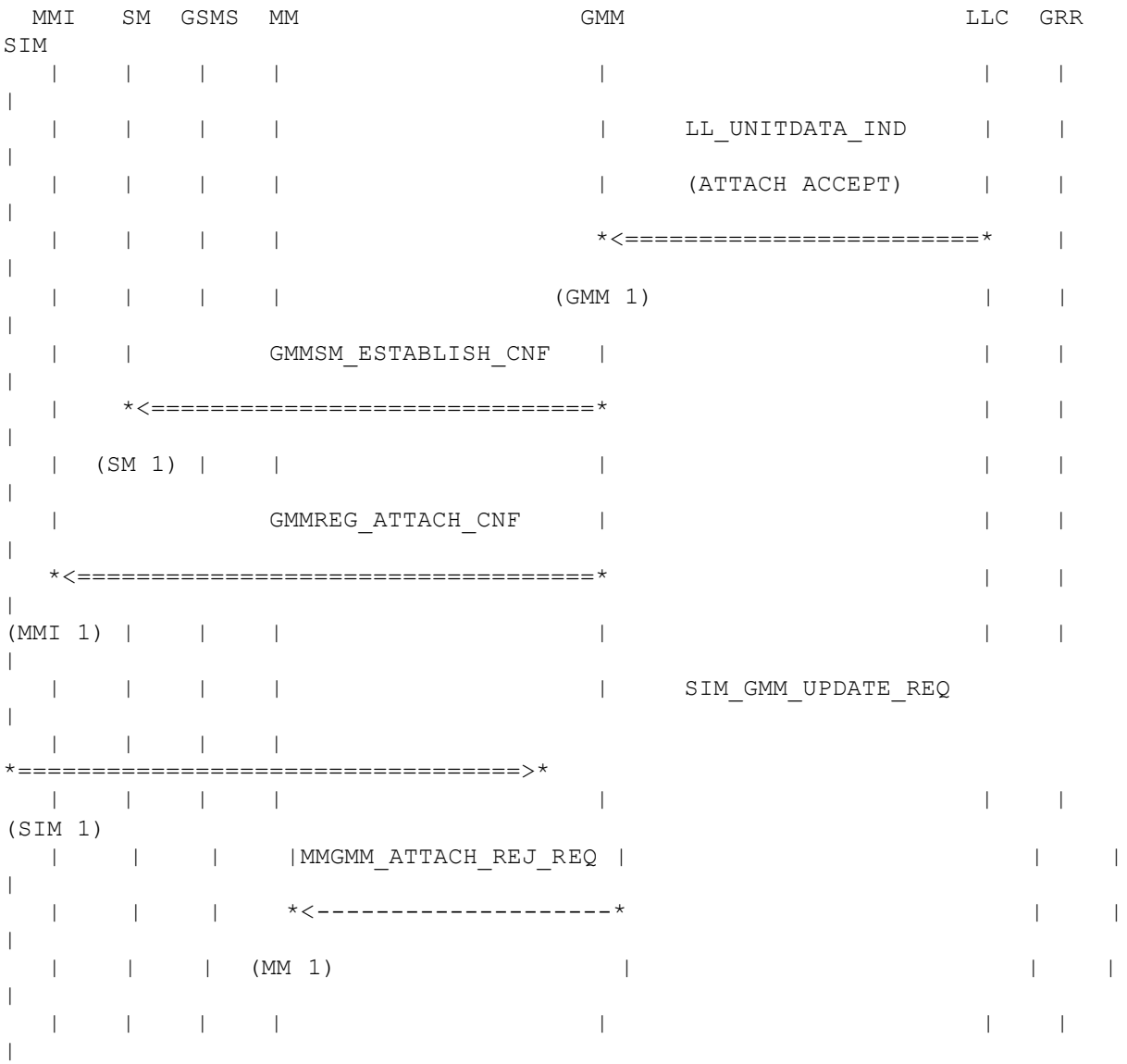
<R.GMM.AGACCEPT.M.015>, <R.GMM.TLLIUSE.M.010>, <R.GMM.PATTCNF.M.003>, <R.GMM.ACSUGPRS.M.001>

(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>

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

4.8.2.3.2.2.1 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.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>

(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>

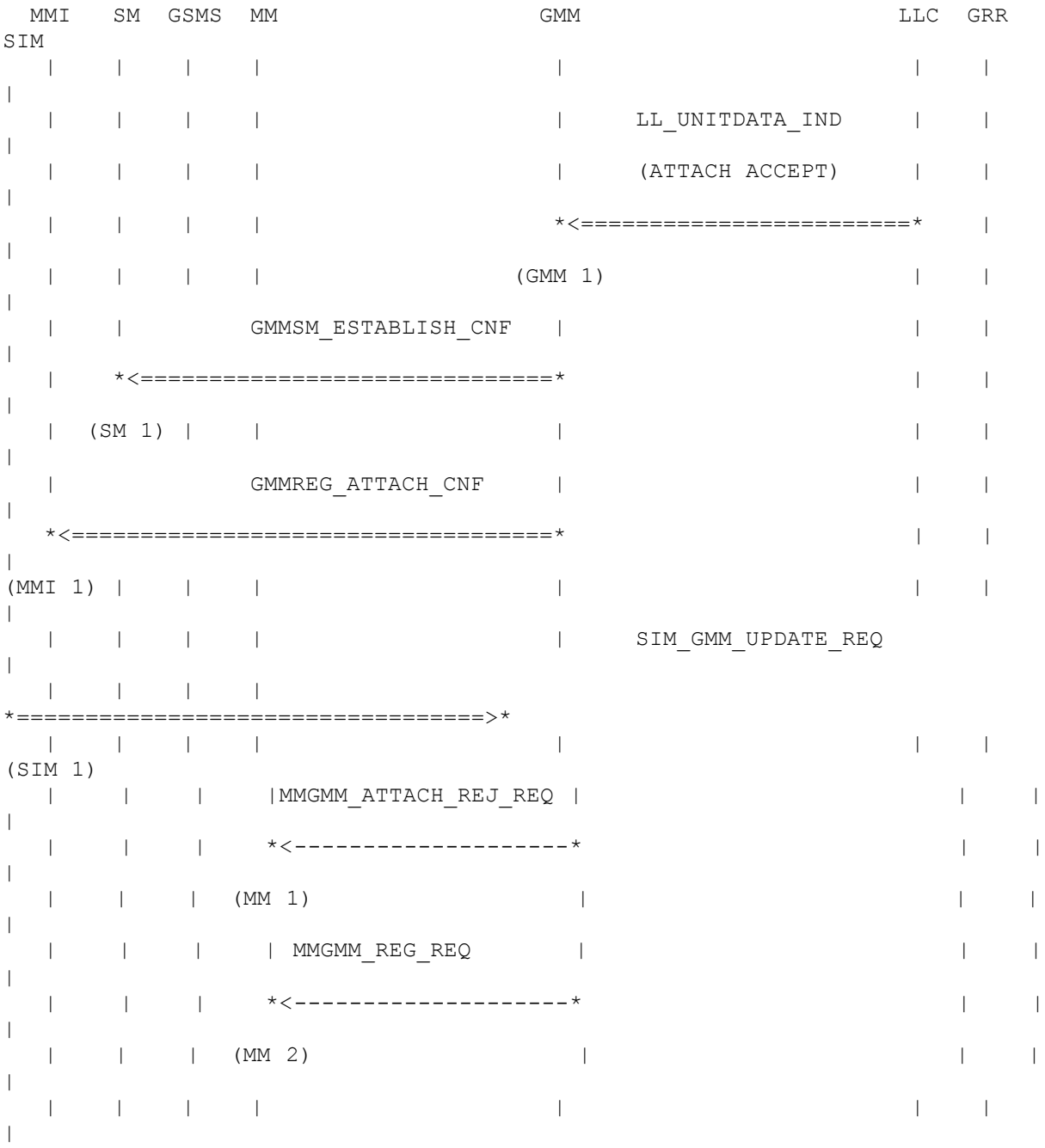
(SIM 1)
GMM enters GPRS update status GU1 UPDATED.

<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 enter 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. GMM informs MM that the TMSI is invalid.

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

4.8.2.3.2.2.2 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.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>

(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>

(SIM 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 indicates MM the attach rejection.

(MM 2)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.

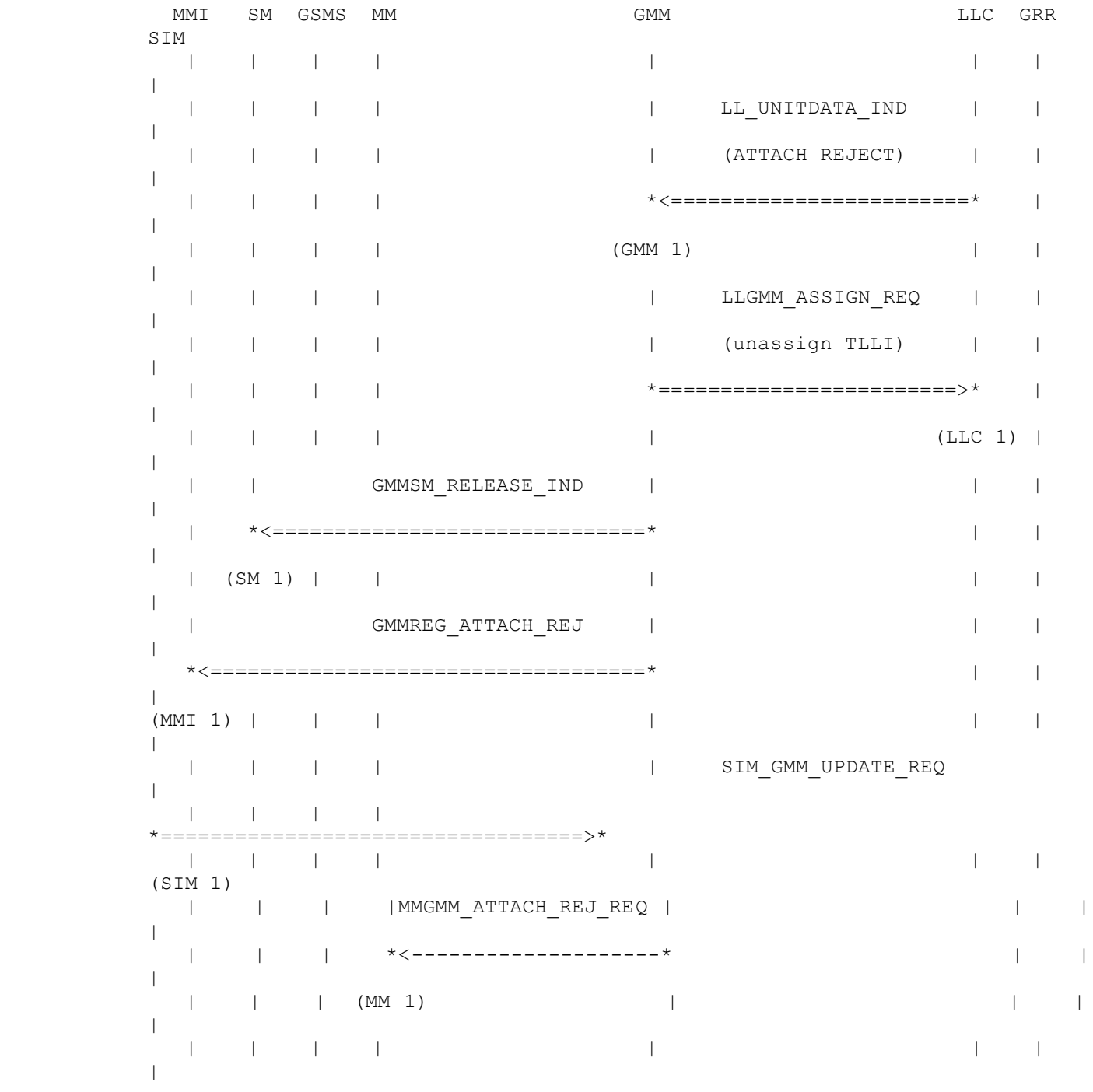
<R.GMM.ACSUGPRS.M.006>, <R.GMM.ACSUGPRS.M.006>

4.8.2.4 Combined GPRS attach not accepted by the network

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

4.8.2.4.1 MMI-initiated attach

4.8.2.4.1.1 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>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.ACREJECT.M.005>, <R.GMM.PRELIND.M.001>

(MMI 1)
GMM informs MMI, that the GPRS attach procedure has failed.
<R.GMM.ACREJECT.M.005>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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 enter 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>

4.8.2.4.1.2 Reject cause #7

MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(ATTACH REJECT)
(GMM 1)
LLGMM_ASSIGN_REQ
(unassign TLLI)
(LLC 1)
GMMSM_RELEASE_IND
(SM 1)
GMMREG_ATTACH_REJ
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MMGMM_REG_REQ
(MM 2)
MM_SELECT_CELL_REQ
(MM 2)

(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>

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

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

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

<R.GMM.ACREJECT.M.013>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.014>

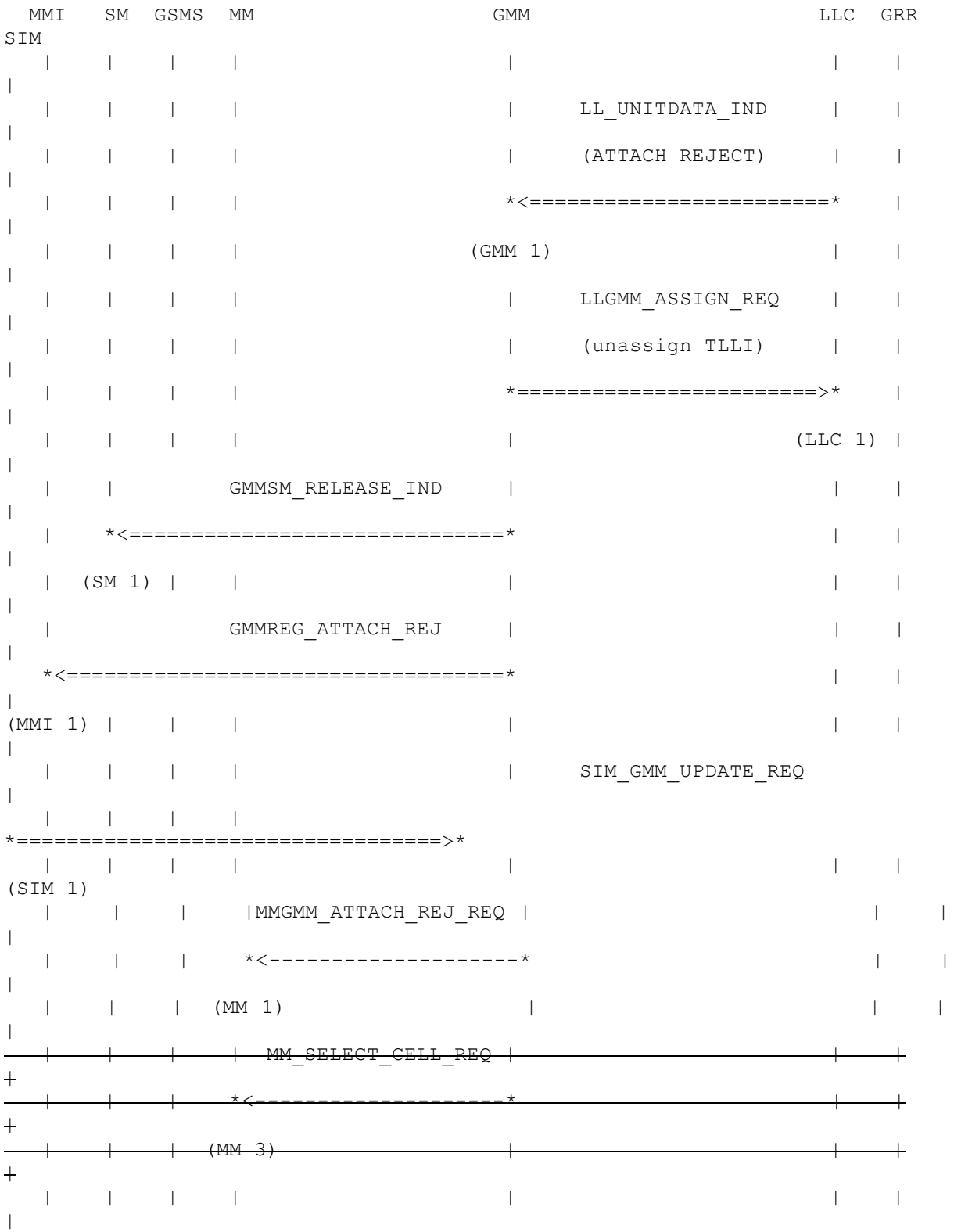
(MM 2)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.

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

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.2.4.1.3 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>

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

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

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

<R.GMM.ACREJECT.M.021>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. GMM informs MM, that MM has to reset the LAU attempt counter. LA, PLMN, or Roaming are not allowed. MM has to select a new cell. On error cause #11 and #13: The MS shall perform a PLMN selection instead of a cell selection.

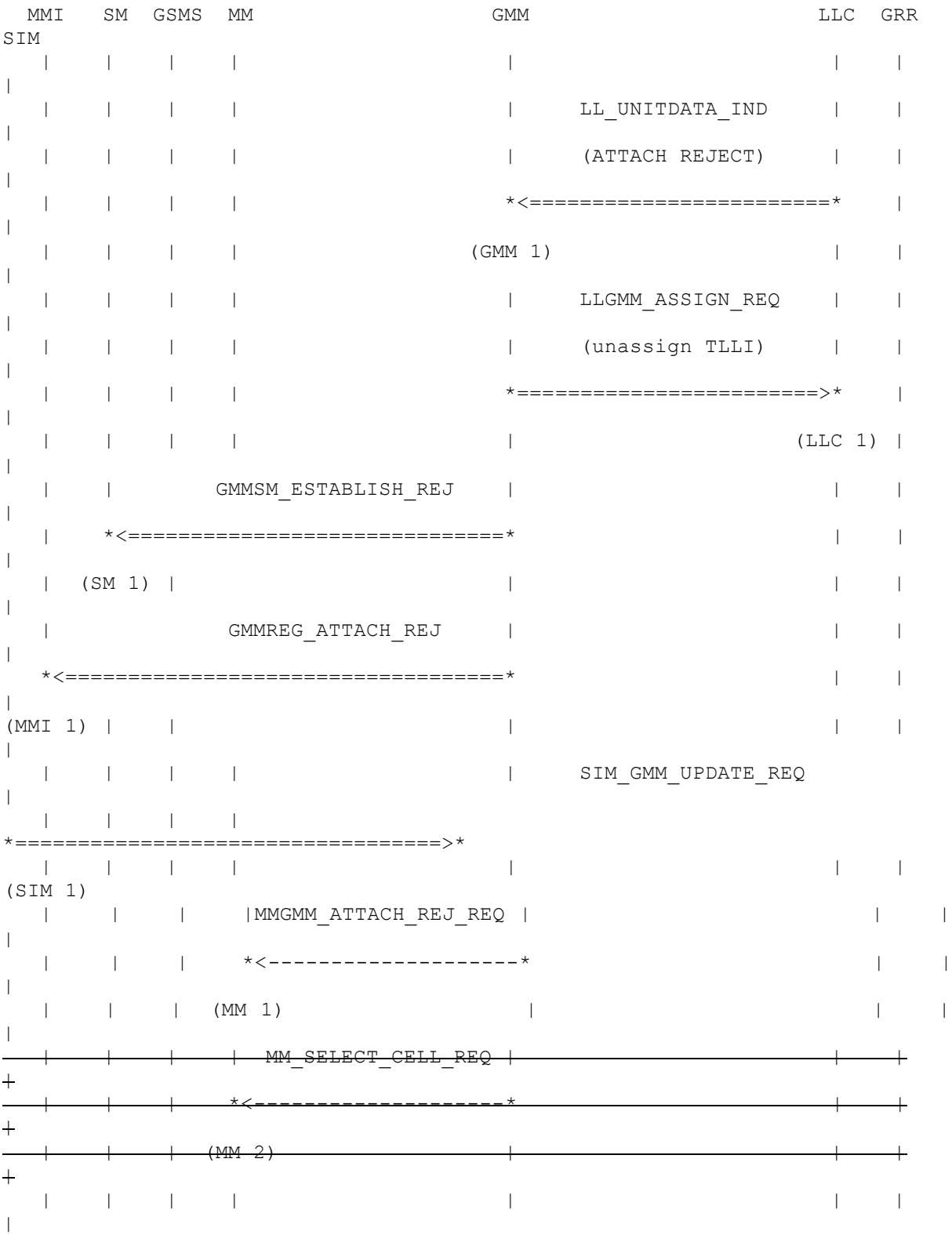
<R.GMM.ACREJECT.M.022>, <R.GMM.ACREJECT.M.024>, <R.GMM.ACREJECT.M.025>, <R.GMM.ACREJECT.M.026>, <R.GMM.ACREJECT.M.027>, <R.GMM.ACREJECT.M.028>, <R.GMM.ACREJECT.M.029>, <R.GMM.ACREJECT.M.030>; <R.GMM.ACREJECT.M.023>; <R.GMM.ACREJECT.M.026>, <R.GMM.ACREJECT.M.028>, <R.GMM.ACREJECT.M.029>; <R.GMM.ACREJECT.M.027>,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

~~(MM 3)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.2.4.2 SM-initiated attach

4.8.2.4.2.1 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>

(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>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 1)

GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

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

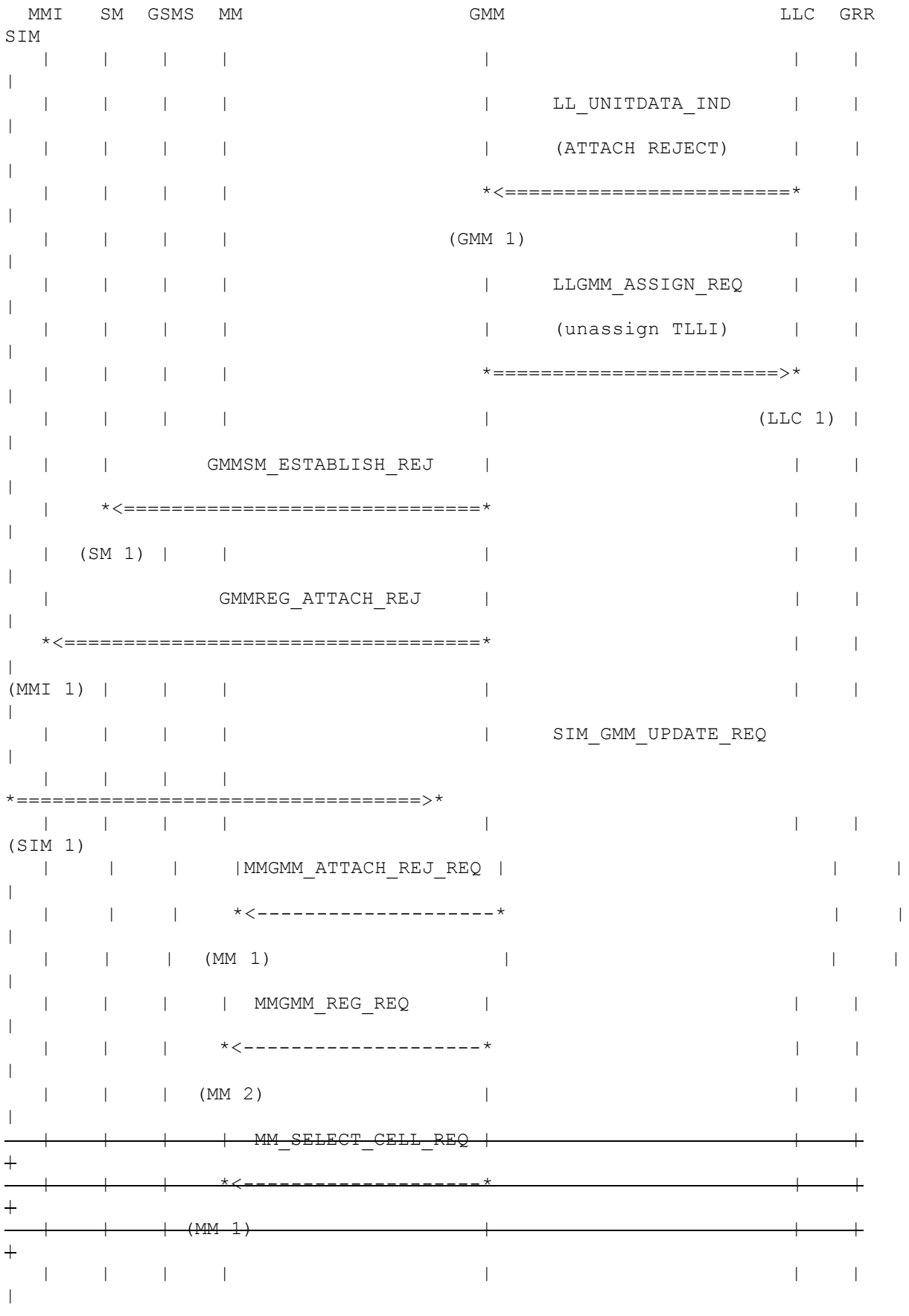
(MM 1)
GMM informs MM, that MM has to enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

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

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.2.4.2.2 Reject cause #7


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(ATTACH REJECT)
(GMM 1)
LLGMM_ASSIGN_REQ
(unassign TLLI)
(LLC 1)
GMMSM_ESTABLISH_REJ
(SM 1)
GMMREG_ATTACH_REJ
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MMGMM_REG_REQ
(MM 2)
MM_SELECT_CELL_REQ
(MM 1)
(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>

(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>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

<R.GMM.ACREJECT.M.014>

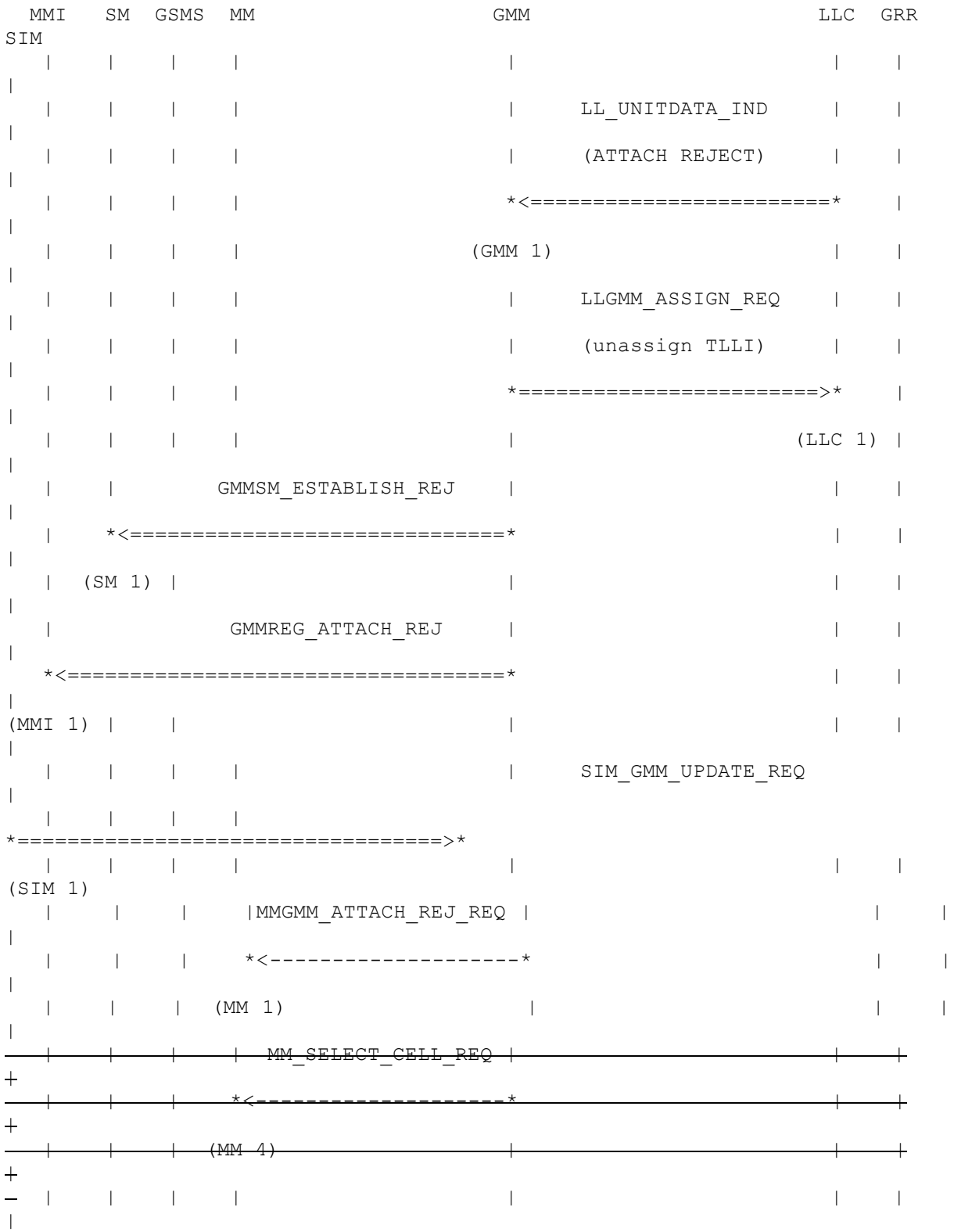
(MM 2)
GMM informs MM, that MM has to perform an IMSI attach for non-GPRS services.

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

~~(MM 3)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.2.4.2.3 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>

(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>, <R.GMM.PATTREJ.M.001>, <R.GMM.PATTREJ.M.002>

(SIM 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 enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. The LAU attempt counter has to reset. PLMN is in forbidden list.

<R.GMM.ACREJECT.M.022>, <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>; <R.GMM.ACREJECT.M.026>, <R.GMM.ACREJECT.M.029>, <R.GMM.ACREJECT.M.023>

~~(MM 4)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.2.5 Abnormal cases

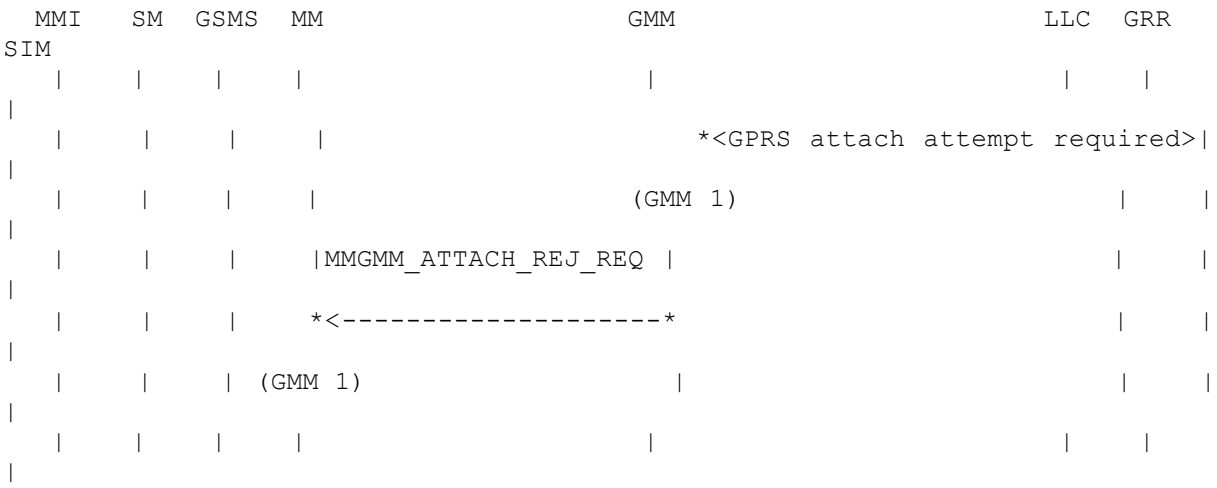
Equivalent to section 4.8.1.4, with additionally informing MM (according to 4.8.2.6.2).

<R.GMM.ACABNORM.M.001>, <R.GMM.ACABNORM.M.009>

4.8.2.6 GPRS attach attempt procedure

4.8.2.6.1 GPRS attach attempt counter less than 5

Equivalent to section 4.8.1.5.1.



(GMM 1)
The GPRS attach attempt counter is incremented and does not reach 5. The timer T3310 is stopped, if still running. GMM starts timer T3311. GMM enters state GMM-DEREGISTERED.ATTEMPTING-TO-ATTACH. The MM remain MM-LOCATION-UPDATING-PENDING.

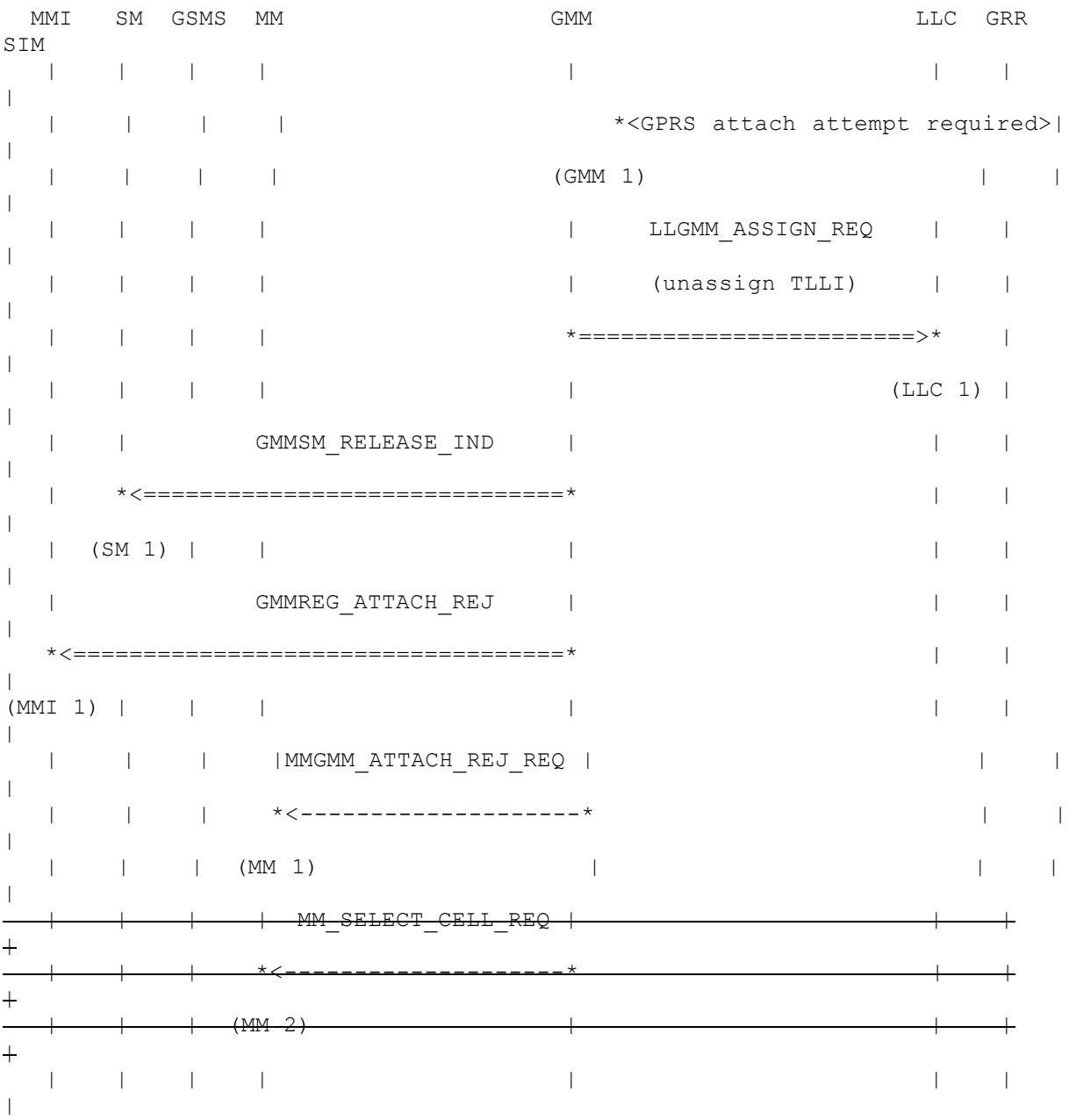
<R.GMM.AGABNORM.M.020>, <R.GMM.AGABNORM.M.021>, <R.GMM.AGABNORM.M.022>, <R.GMM.AGABNORM.M.023>, <R.GMM.ACABNORM.M.001>

(MM 1)
Depending on the LAI and MM update state enters MM a appropriate state.

<R.GMM.ACABNORM.M.006>,<R.GMM.ACABNORM.M.007>,<R.GMM.ACABNORM.M.008>,<R.GMM.ACABNORM.M.009>, <R.GMM.ACABNORM.M.010>, <R.GMM.ACABNORM.M.011>

4.8.2.6.2 GPRS attach attempt counter greater than or equal to 5

4.8.2.6.2.1 GPRS attach attempt counter greater than or equal to 5 with MMI-initiated attach



(GMM 1)
The GPRS attach attempt counter is incremented and is greater than or equal to 5. 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>

(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>, <R.GMM.PATTREJ.M.001>

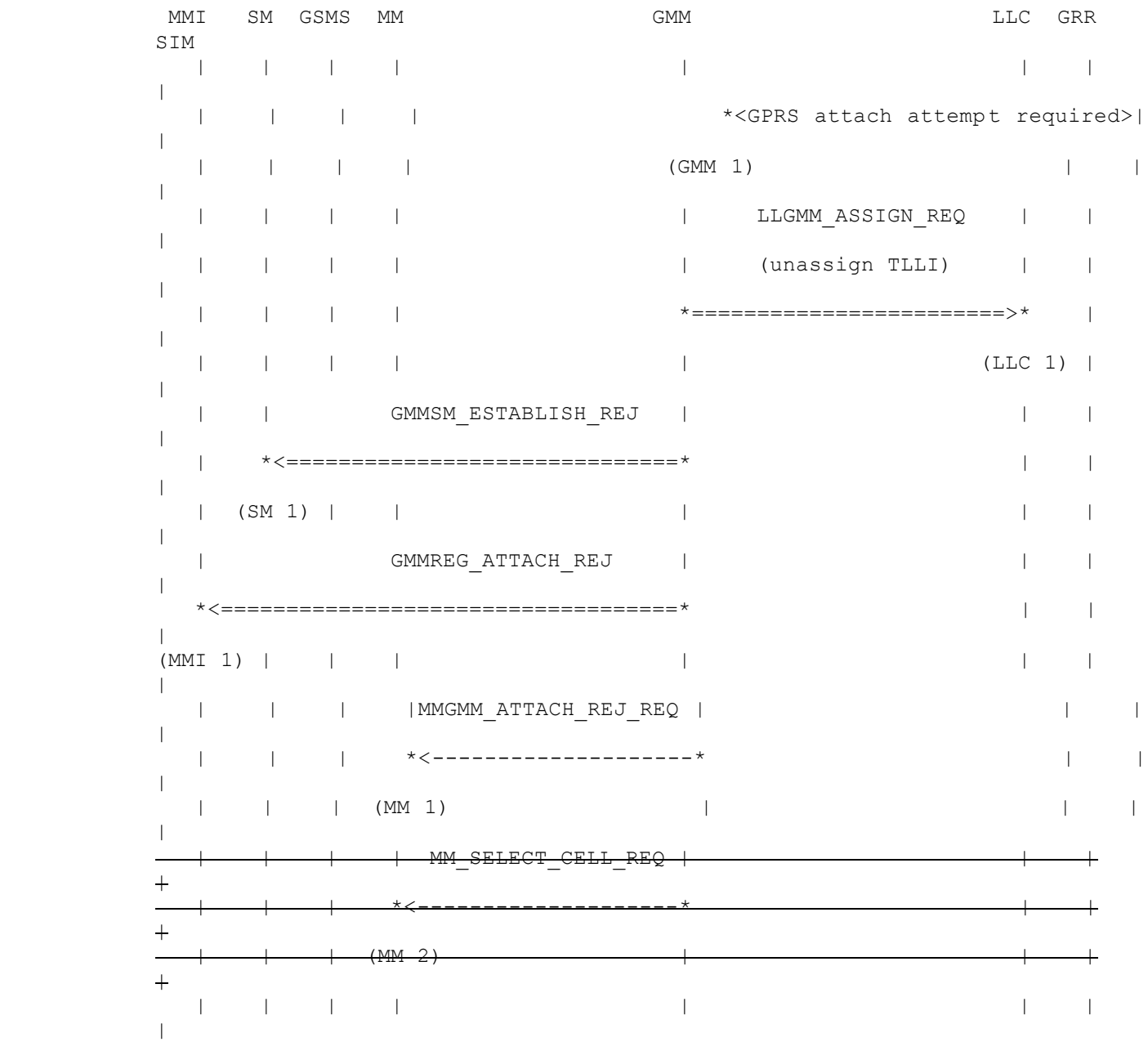
(MM 1)
GMM informs MM, that MM has to enter state MM-IDLE.ATTEMPTING-TO-UPDATE and has to enter update state U2 NOT UPDATED.

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

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.8.2.6.2.2 GPRS attach attempt counter greater than or equal to 5 with SM-initiated attach



(GMM 1)
The GPRS attach attempt counter is incremented and is greater than or equal to 5. 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>

(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>, <R.GMM.PATTREJ.M.001>

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

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

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

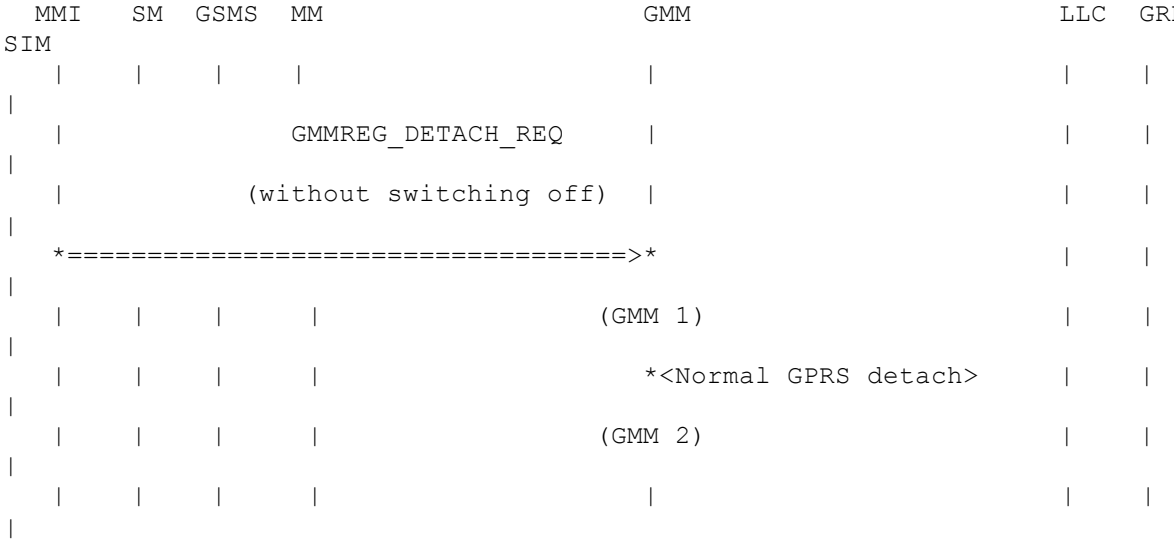
~~<R.GMM.DSUBFANO.M.001>~~

4.9 GPRS detach procedure

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

4.9.1 MS initiated GPRS detach procedure initiation

4.9.1.1 Receipt of GMMREG_DETACH_REQ without switching off



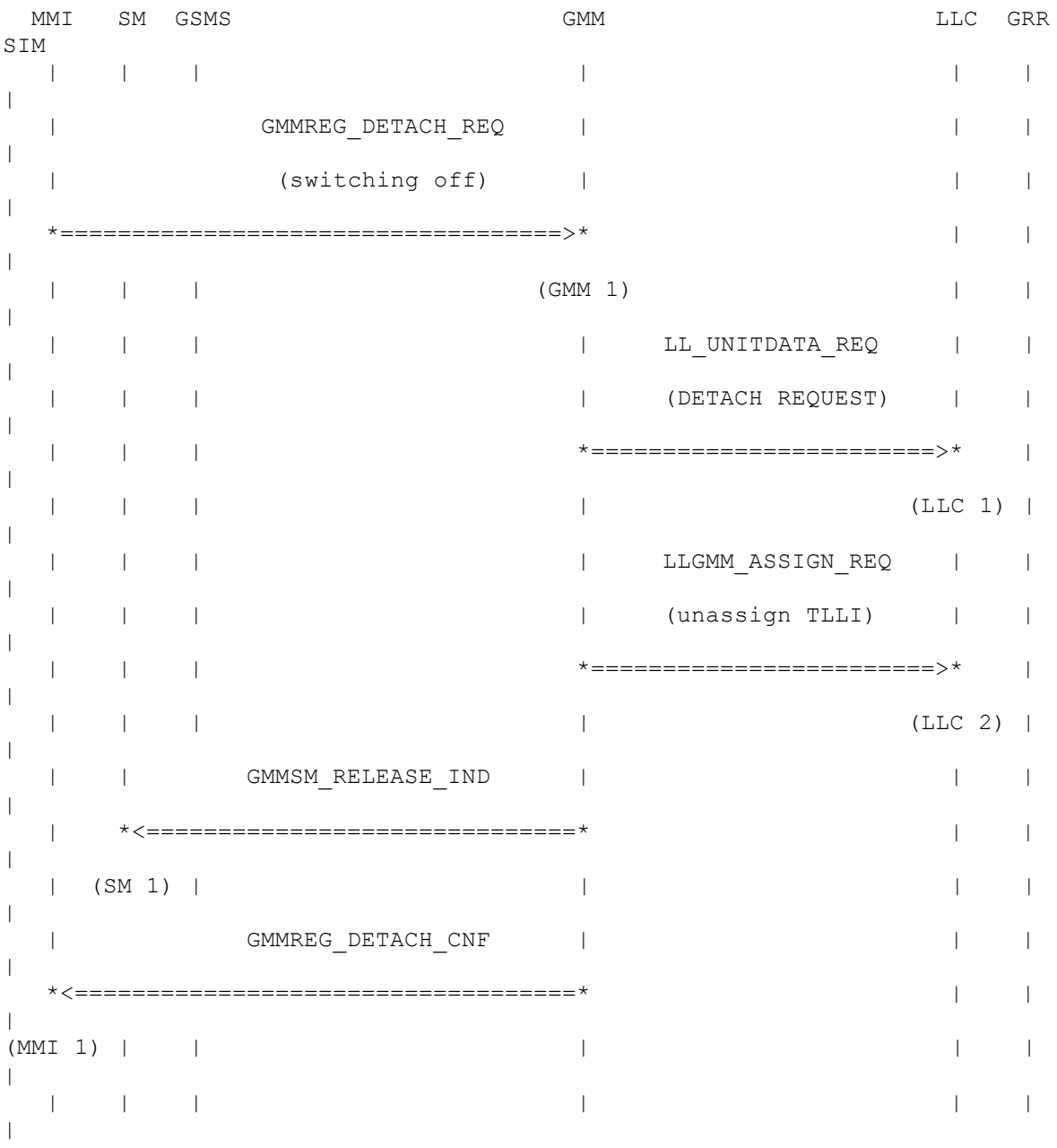
(GMM 1)
MMI initiates the detach procedure by sending the 'GMMREG_DETACH_REQ without switching off' primitive to GMM. GMM enters state GMM-DEREGISTERED-INITIATED.

<R.GMM.PDETREQ.M.001>

(GMM 2)
The normal GPRS detach procedure without switching off for GPRS services (see section 4.9.1.3) is being followed.

4.9.1.2 With switching off (detach completion)

4.9.1.2.1 GPRS detach only



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

<R.GMM.PDETREQ.M.001>, <R.GMM.PDETREQ.M.002>, <R.GMM.DMACGPRS.M.008>, <R.GMM.DSUBFANO.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.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>

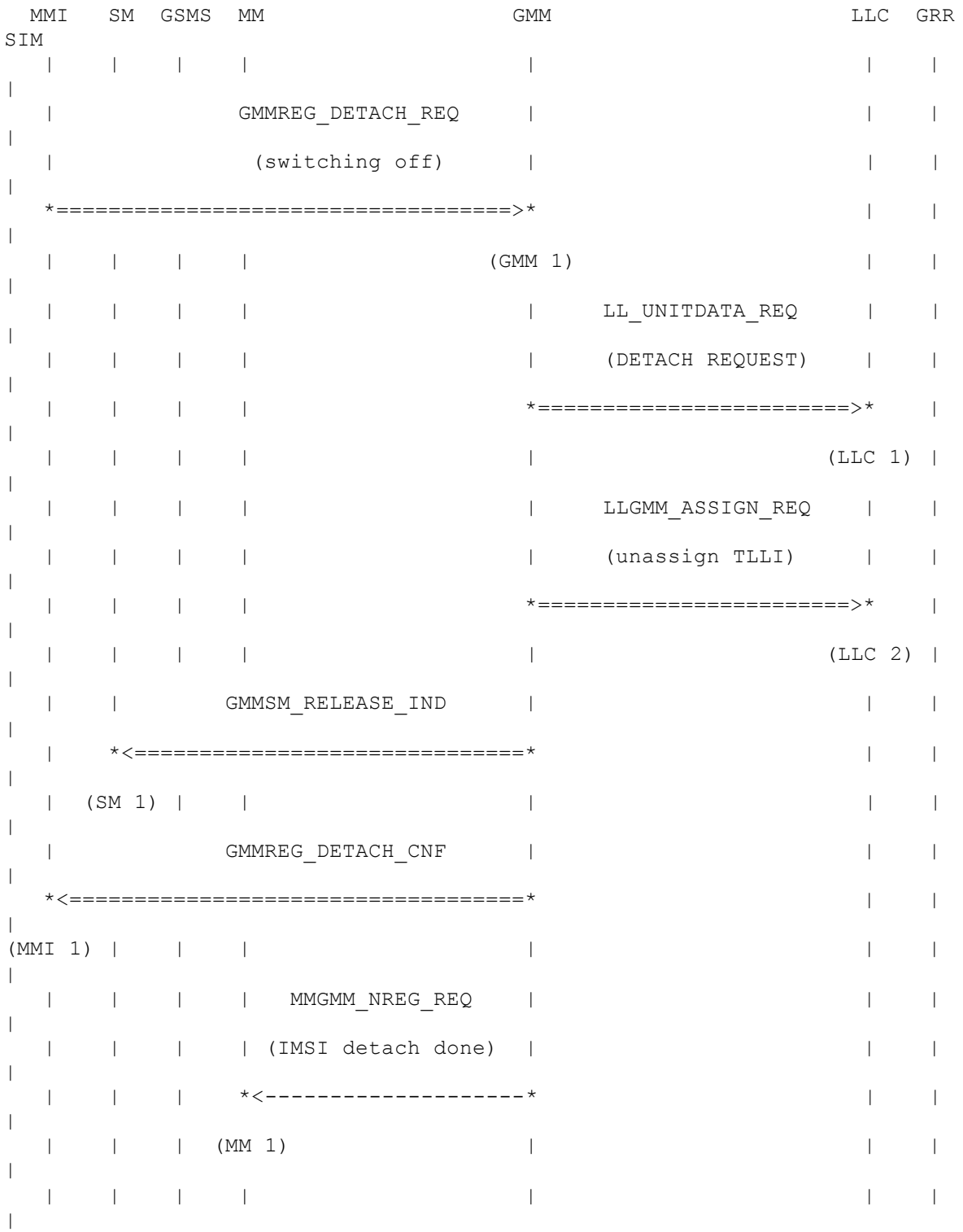
(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETCNF.M.004>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DMACGPRS.M.008>, <R.GMM.PDETCNF.M.001>

4.9.1.2.2 GPRS/IMSI detach

4.9.1.2.2.1 Network mode I



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

<R.GMM.PDETREQ.M.001>, <R.GMM.PDETREQ.M.002>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DSUBFANO.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>

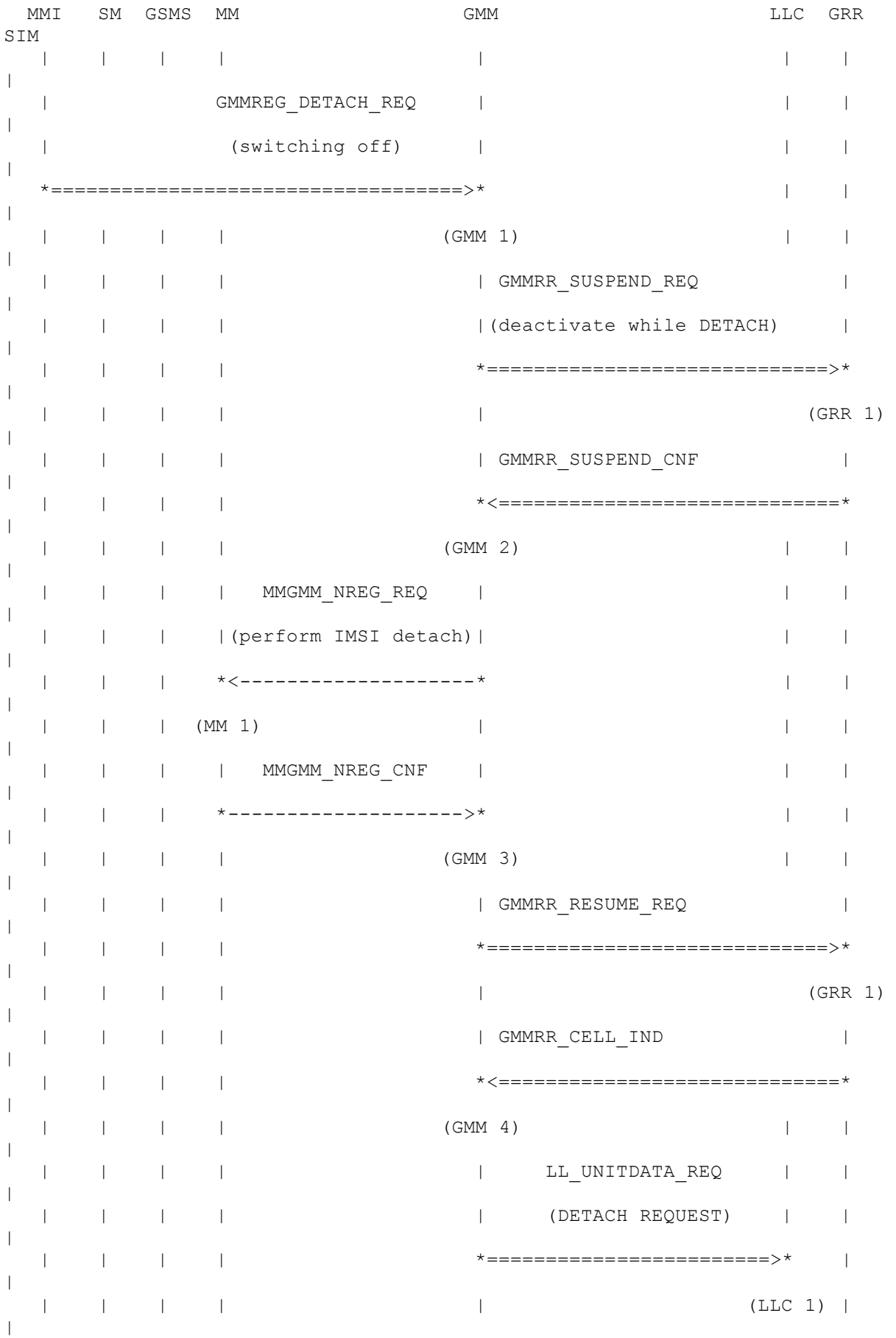
(LLC 2)
GMM informs LLC, that the GMM context is released.
<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETCNF.M.004>

(MMI 1)
GMM informs MMI, that the GMM context is released. MM has to enter state MM NULL.
<R.GMM.DMACGPRS.M.008>, <R.GMM.PDETCNF.M.001>, <R.GMM.DMACBOTH.M.008>

(MM 1)
MM has to enter state MM NULL.
<R.GMM.DMACBOTH.M.009>, <R.GMM.MMONE.M.004>

4.9.1.2.2.2 Network mode II and III


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
GMMREG_DETACH_REQ
(switching off)
(GMM 1)
GMMRR_SUSPEND_REQ
(deactivate while DETACH)
(GRR 1)
GMMRR_SUSPEND_CNF
(GMM 2)
MMGMM_NREG_REQ
(perform IMSI detach)
(MM 1)
MMGMM_NREG_CNF
(GMM 3)
GMMRR_RESUME_REQ
(GRR 1)
GMMRR_CELL_IND
(GMM 4)
LL_UNITDATA_REQ
(DETACH REQUEST)
(LLC 1)

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

<R.GMM.PDETREQ.M.001>, <R.GMM.PDETREQ.M.002>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DSUBFANO.M.001>

(GRR 1)
GMM suspends GRR.

(GRR 2)
GRR confirms the successful suspendion.

(MM 1)
GMM requests MM to start IMSI detach procedure by its own procedures

<R.GMM.DMACBOTH.M.009>, <R.GMM.MMONE.M.004>

(GMM 3)
MM confirms that the detach procedure was successful.

(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>

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

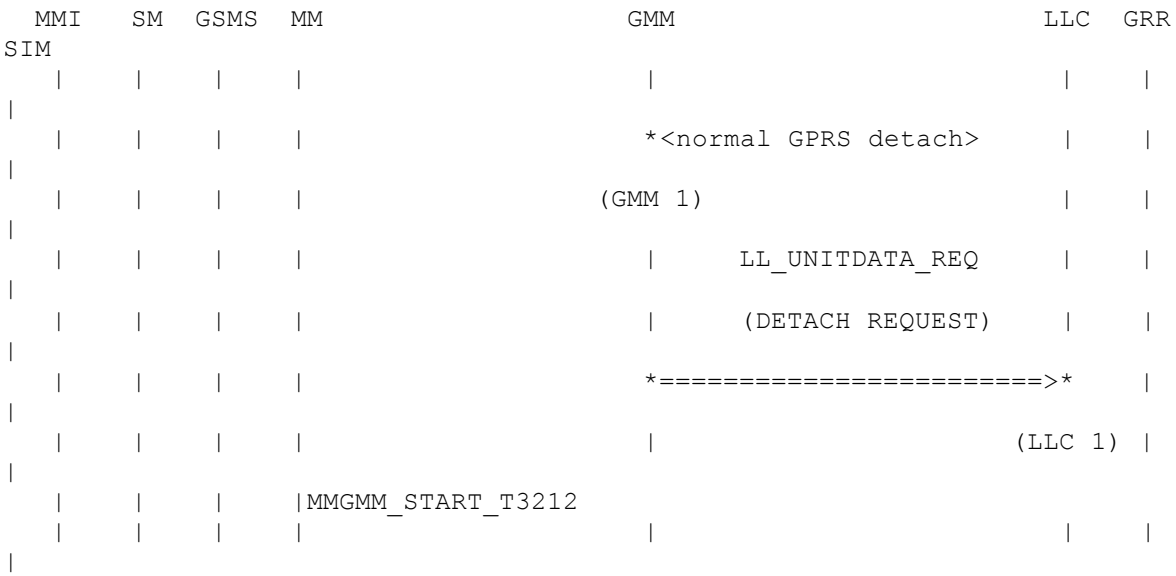
<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETCNF.M.004>

(MMI 1)
GMM informs MMI, that the GMM context is released. MM has to enter state MM NULL.

<R.GMM.DMACGPRS.M.008>, <R.GMM.PDETCNF.M.001>, <R.GMM.DMACBOTH.M.008>

4.9.1.3 Without switching off

4.9.1.3.1 GPRS detach only



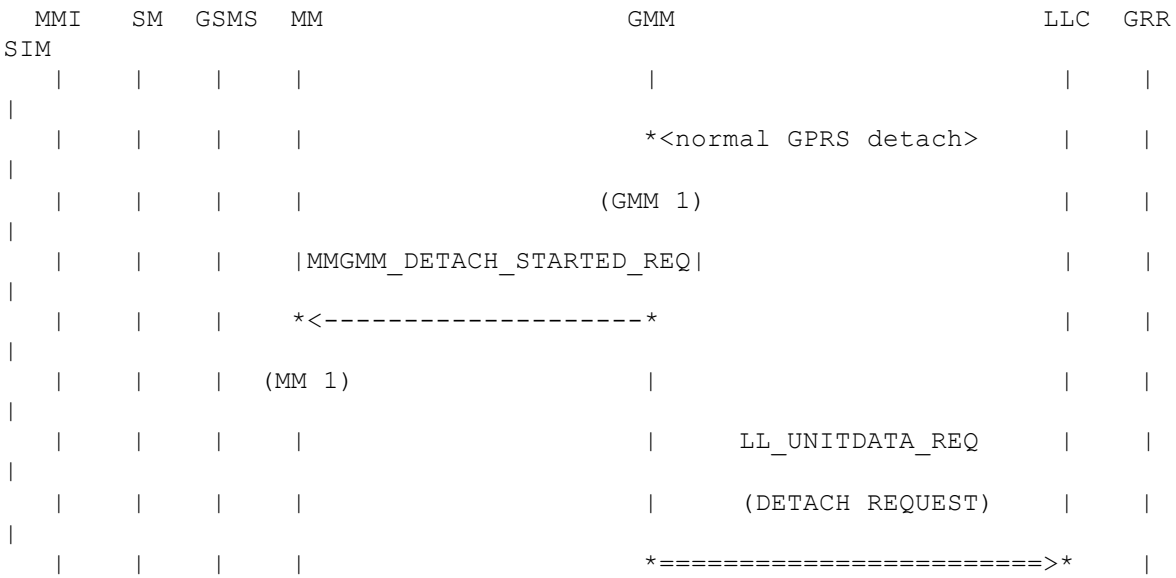
(GMM 1)
GMM starts the GPRS detach procedure due to one of the following reasons:
- Receipt of the primitive GMMREQ_DETACH_REQ from the MMI.
- SIM card is removed from the MS.
- GPRS capability is disabled.

<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>

4.9.1.3.2 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>

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

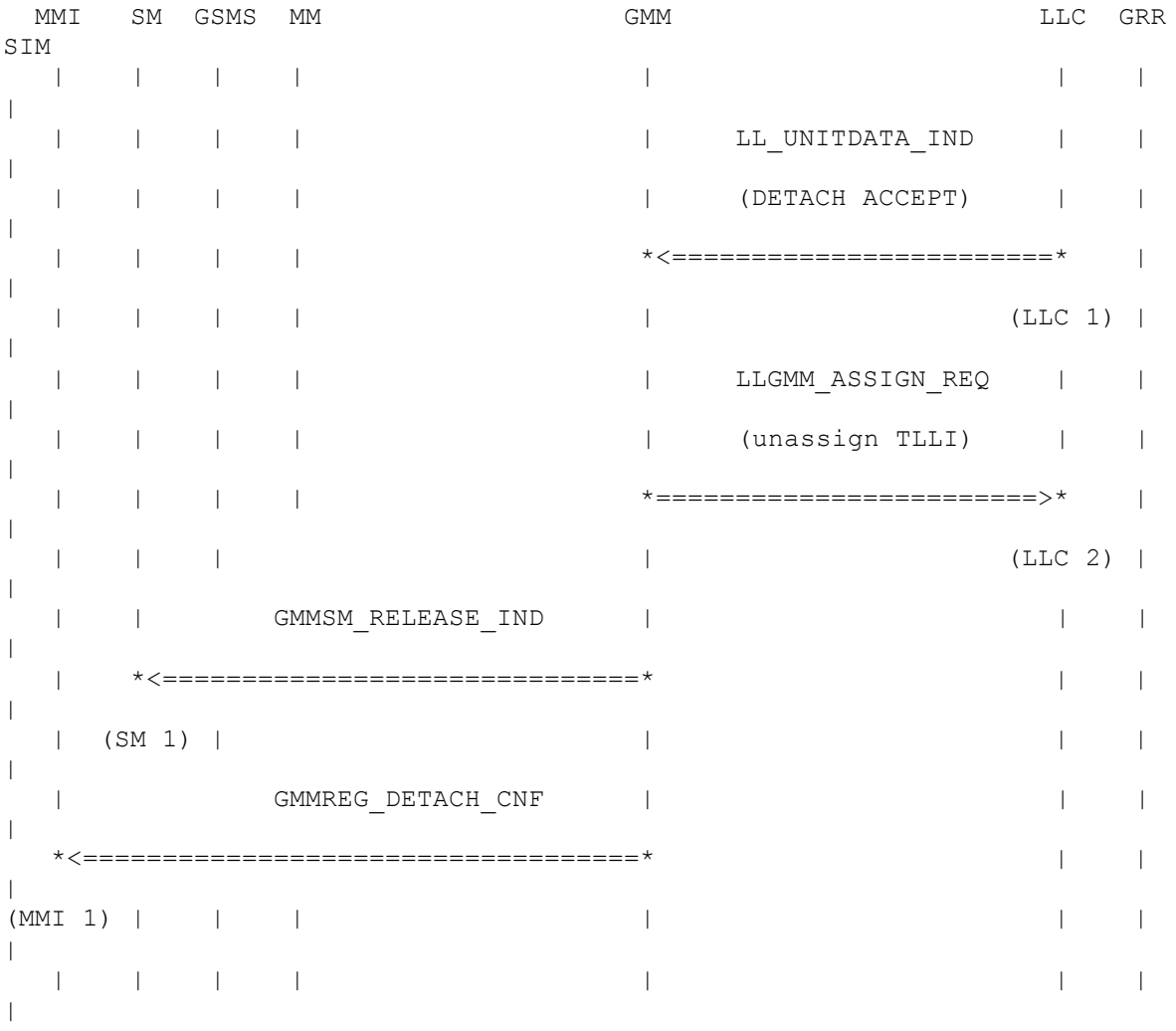
<R.GMM.DINITM.M.005>, <R.GMM.MMONE.M.004>

(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>

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

4.9.2.1 GPRS detach only



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

<R.GMM.DMACBOTH.I.001>, <R.GMM.DMACGPRS.M.008>, <R.GMM.DSUBFANO.M.001>

(LLC 2)
GMM informs LLC, 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.

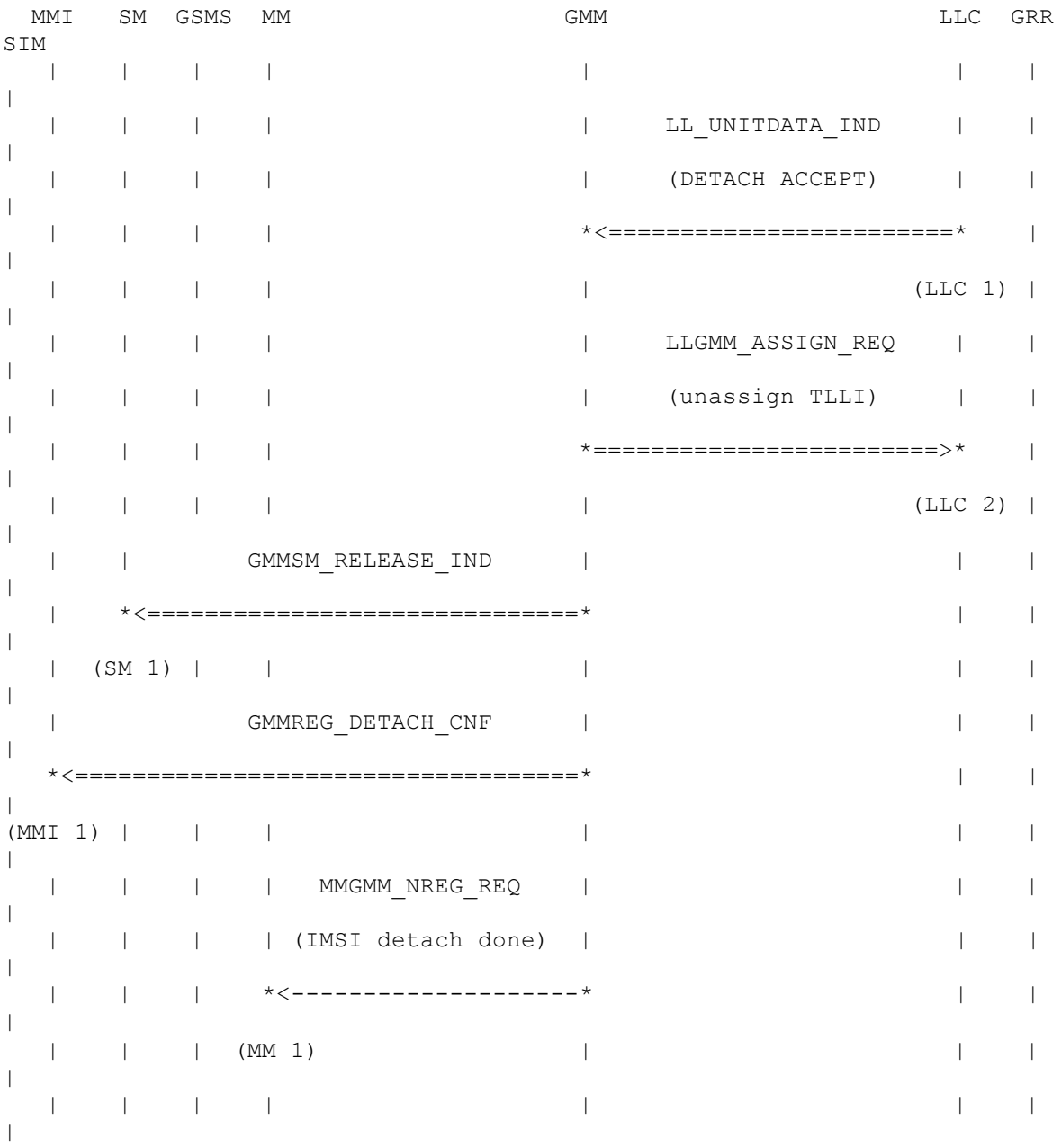
<R.GMM.DMACGPRS.M.007>, <R.GMM.DMACGPRS.M.008>, <R.GMM.DETACH.A.004>, <R.GMM.DETACH.A.007>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETCNF.M.004>

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

<R.GMM.DMACGPRS.M.008>, <R.GMM.DETACH.A.004>, <R.GMM.PDETCNF.M.001>, <R.GMM.PDETCNF.M.002>, <R.GMM.PDETCNF.M.003>

<R.GMM.DETACH.M.005>

4.9.2.2 GPRS/IMSI detach



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

<R.GMM.DMACBOTH.I.001>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DSUBFANO.M.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>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.DMACBOTH.M.007>, <R.GMM.DMACBOTH.M.008>, <R.GMM.DETACH.A.004>, <R.GMM.DETACH.A.007>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETCNF.M.004>

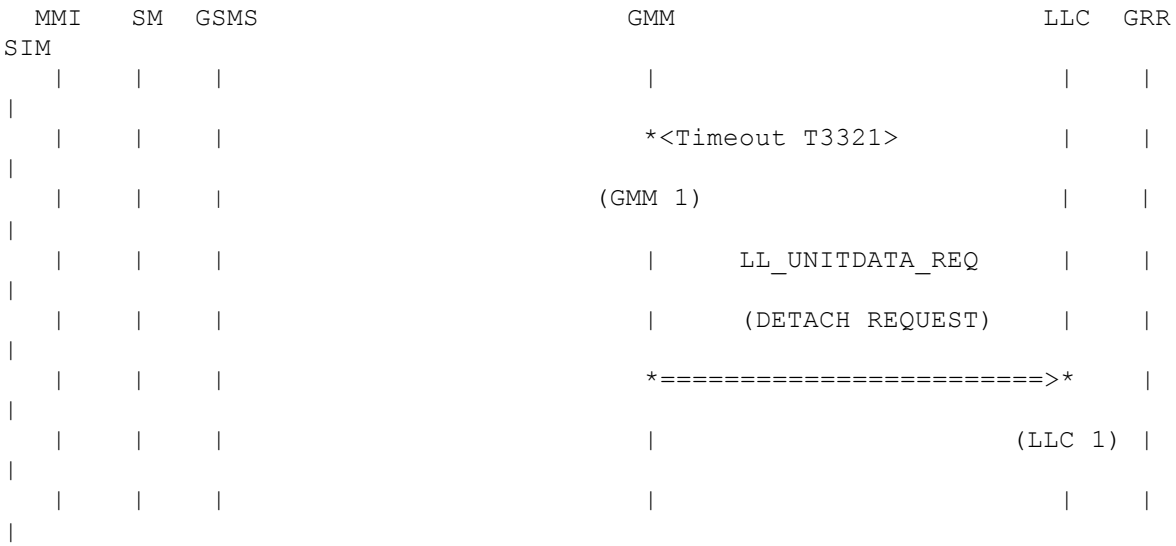
(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DMACBOTH.M.008>, <R.GMM.DETACH.A.004>, <R.GMM.PDETCNF.M.001>, <R.GMM.PDETCNF.M.002>, <R.GMM.PDETCNF.M.003>

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

4.9.3 Abnormal cases

4.9.3.1 a) Timeout of timer T3321

4.9.3.1.1 Maximum retransmissions not reached

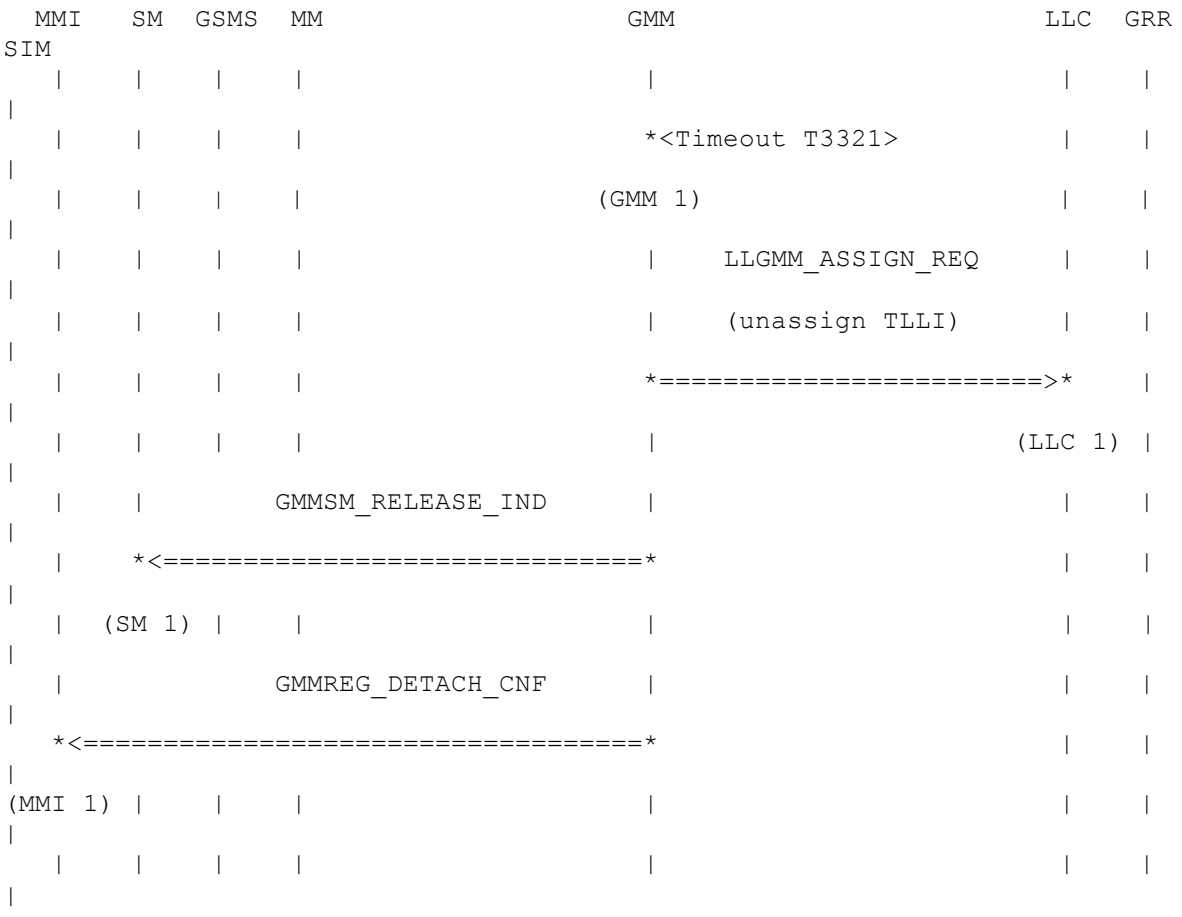


(GMM 1)
Timeout of timer T3321 first, second, third or fourth time. The timer T3321 is restarted.
<R.GMM.DMABNORM.M.001>

(LLC 1)
The MS retransmit the DETACH REQUEST message.
<R.GMM.DMABNORM.M.002>

4.9.3.1.2 Maximum retransmissions reached

4.9.3.1.2.1 GPRS only detach



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

<R.GMM.DMABNORM.M.003>, <R.GMM.DMABNORM.M.005>, <R.GMM.DSUBFANO.M.001>

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

<R.GMM.DMABNORM.M.005>

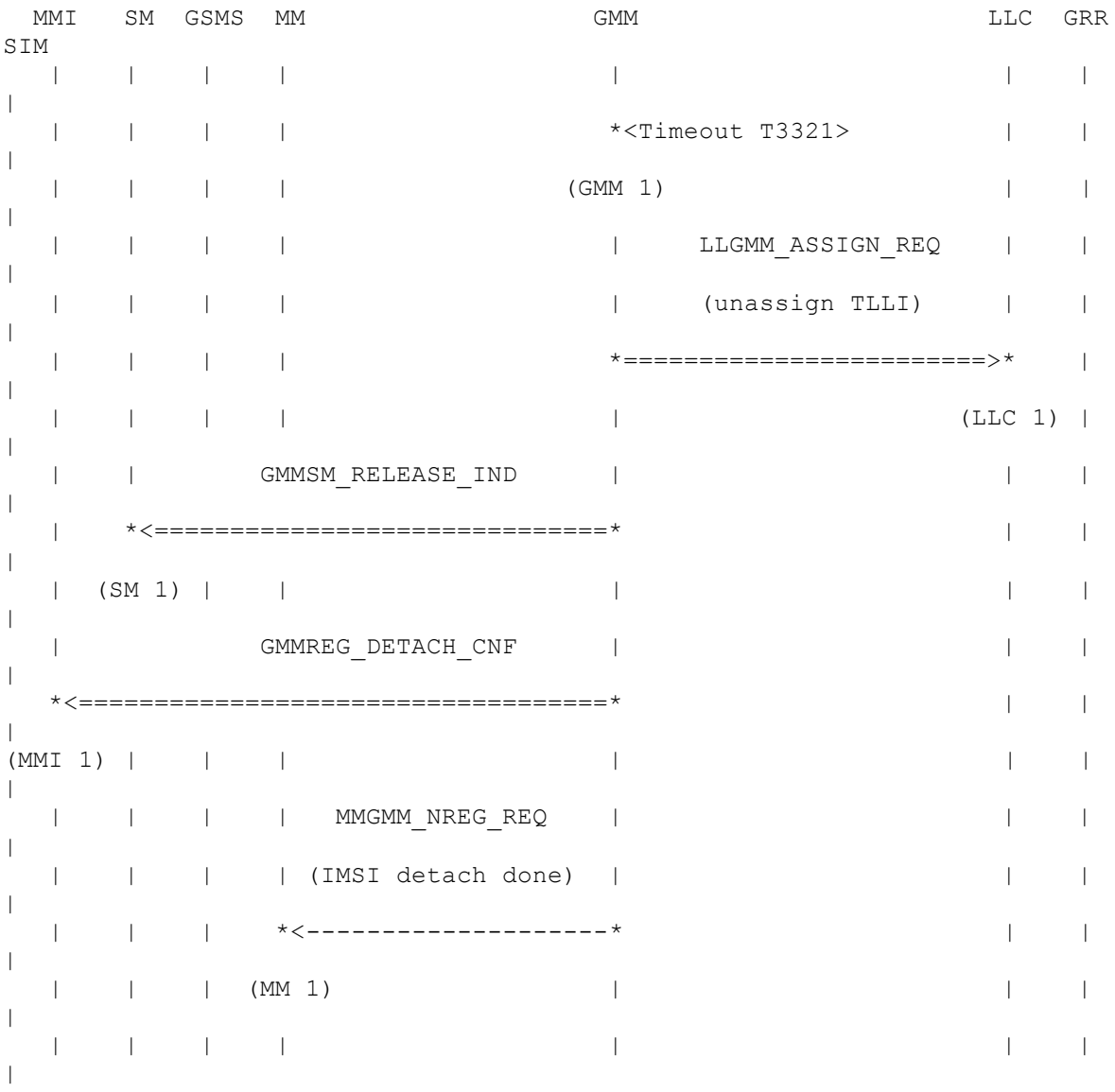
(SM 1)
GMM informs SM, that the GMM context is released.

<R.GMM.DMABNORM.M.005>, <R.GMM.PDETCNF.M.004>, <R.GMM.PRELIND.M.001>, <R.GMM.DETACH.A.007>

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

<R.GMM.DMABNORM.M.005>, <R.GMM.PDETCNF.M.001>, <R.GMM.PDETCNF.M.003>

4.9.3.1.2.2 Combined 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>, <R.GMM.DSUBFANO.M.001>

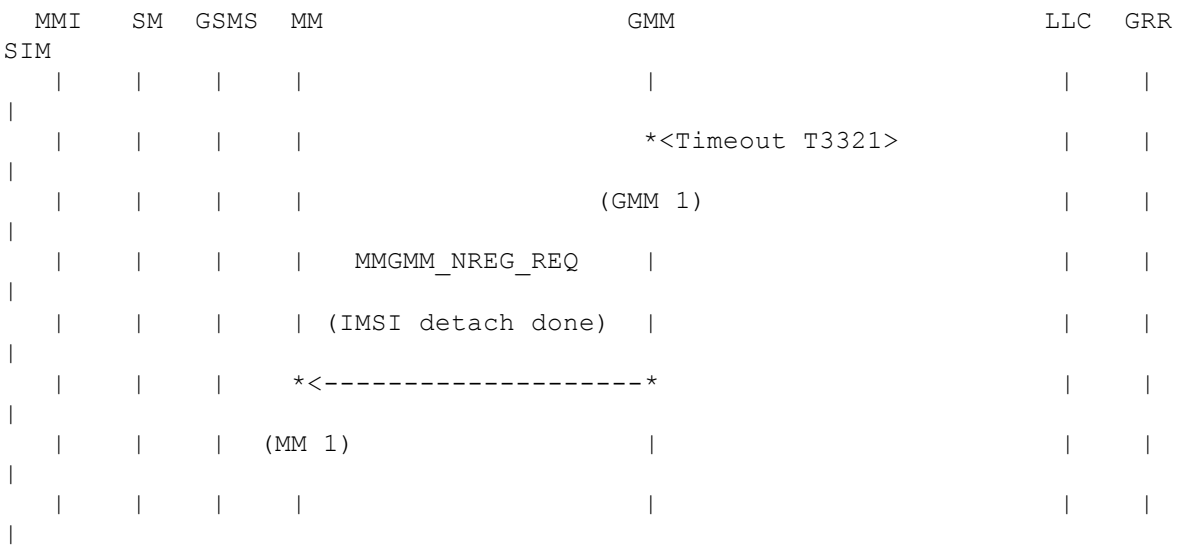
(LLC 1)
GMM informs LLC, that the GMM context is released.
<R.GMM.DMABNORM.M.006>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.DMABNORM.M.006>, <R.GMM.PDETCNF.M.004>, <R.GMM.PRELIND.M.001>, <R.GMM.DETACH.A.007>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DMABNORM.M.006>, <R.GMM.PDETCNF.M.001>, <R.GMM.PDETCNF.M.003>

(MM 1)
MM has to enter state MM NULL.
<R.GMM.DMABNORM.M.006>

4.9.3.1.2.3 IMSI detach

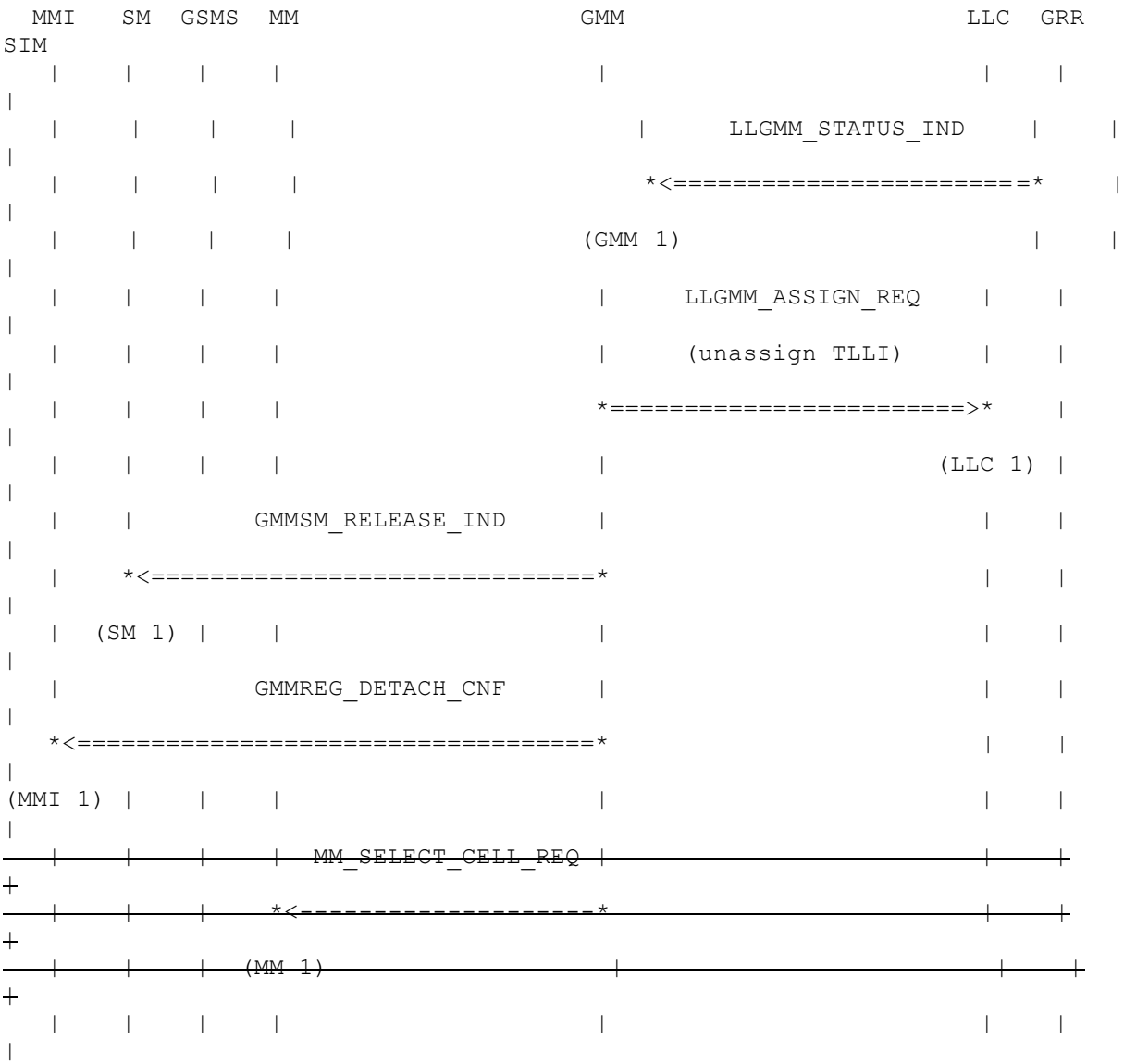


(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted.
<R.GMM.DMABNORM.M.003>, <R.GMM.DSUBFANO.M.001>

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

4.9.3.2 b) Lower layer failure

4.9.3.2.1 GPRS only detach



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

<R.GMM.DMABNORM.M.007>, <R.GMM.DMABNORM.M.009>, <R.GMM.LOWERFAIL.M.001>

(LLC 1)
GMM informs LLC, 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>, <R.GMM.PDETCNF.M.004>, <R.GMM.PRELIND.M.001>, <R.GMM.DETACH.A.007>

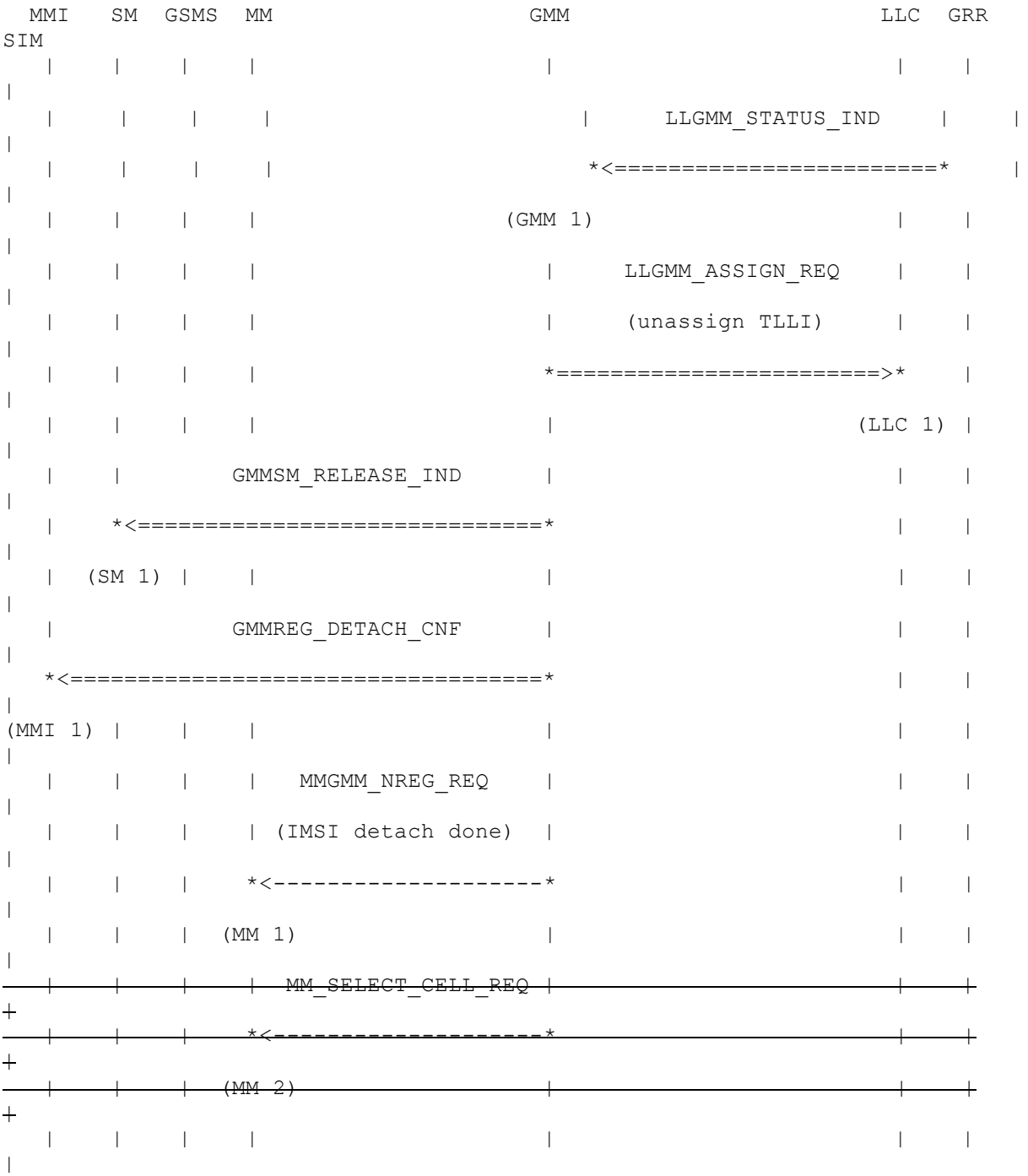
(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DMABNORM.M.009>, <R.GMM.PDETCNF.M.001>, <R.GMM.PDETCNF.M.003>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.9.3.2.2 Combined 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>, <R.GMM.LOWERFAIL.M.001>

(LLC 1)
GMM informs LLC, 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>, <R.GMM.PDETCNF.M.004>, <R.GMM.PRELIND.M.001>, <R.GMM.DETACH.A.007>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DMABNORM.M.010>, <R.GMM.PDETCNF.M.001>, <R.GMM.PDETCNF.M.003>

(MM 1)
MM has to enter state MM NULL.
<R.GMM.DMABNORM.M.010>

~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

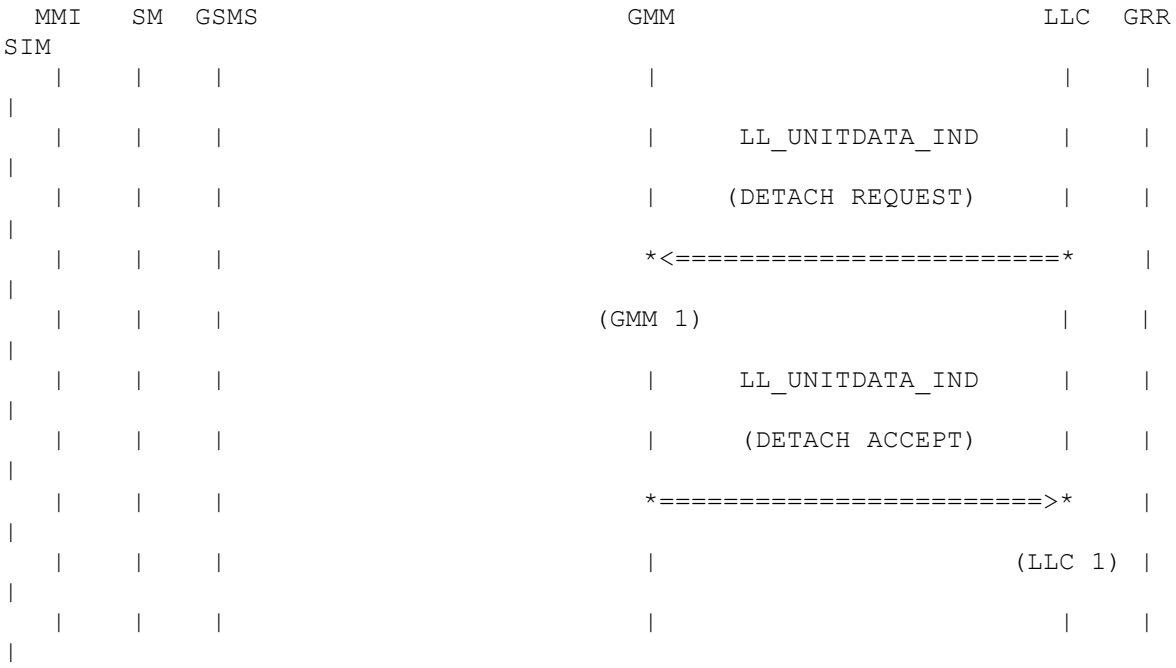
~~<R.GMM.DSUBFANO.M.001>~~

4.9.3.2.3 IMSI detach

(GMM 1)
Timeout of timer T3321 fifth time or lower layer failure. The detach procedure is aborted.
<R.GMM.DMABNORM.M.007>, <R.GMM.LOWERFAIL.M.001>

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

4.9.3.3 c) Detach procedure collision

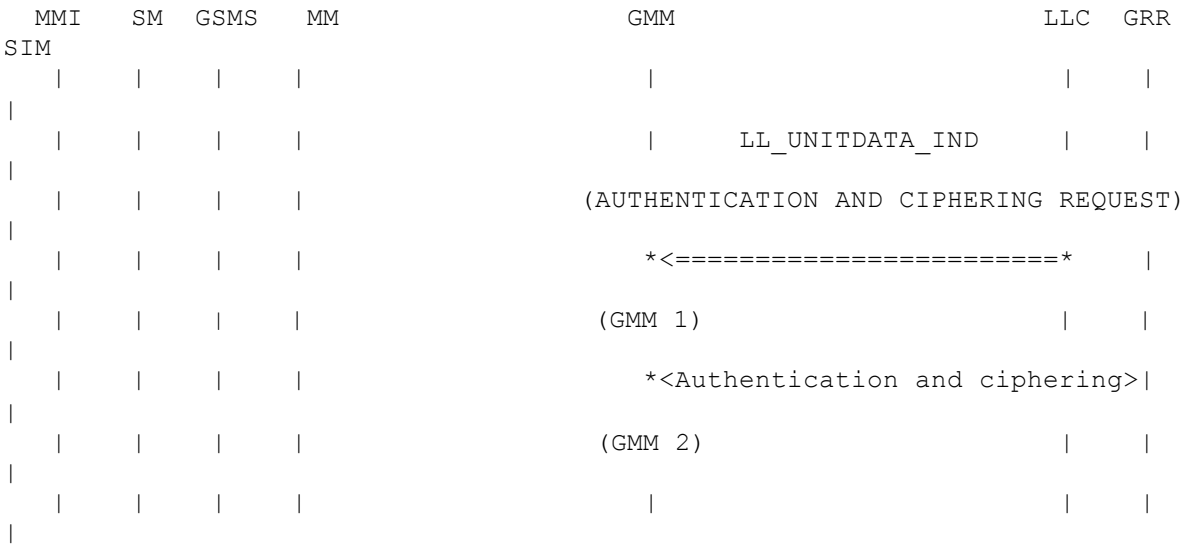


(GMM 1)
GMM is in state GMM-DEREGISTERED-INITIATED. GMM receives the DETACH REQUEST message before the MS initiated GPRS detach procedure has been completed.
<R.GMM.STDERINI.M.001>, <R.GMM.DMABNORM.M.011>

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

4.9.3.4 d) Detach and common procedure collision

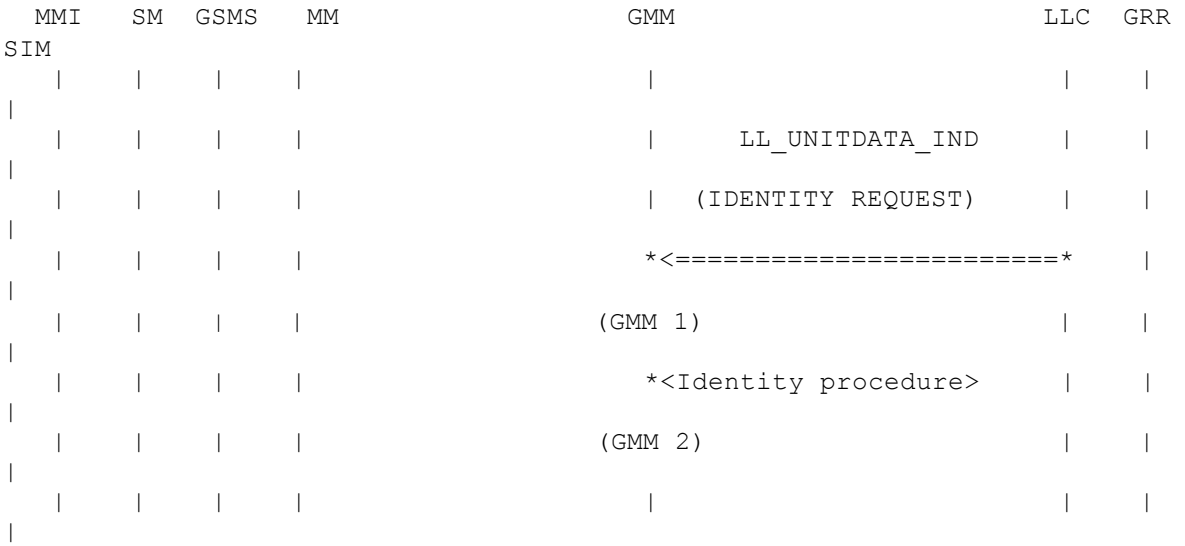
4.9.3.4.1 Receipt of AUTHENTICATION AND CIPHERING REQUEST whilst in procedure Detach without switching off



(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.<R.GMM.DMABNORM.M.016>

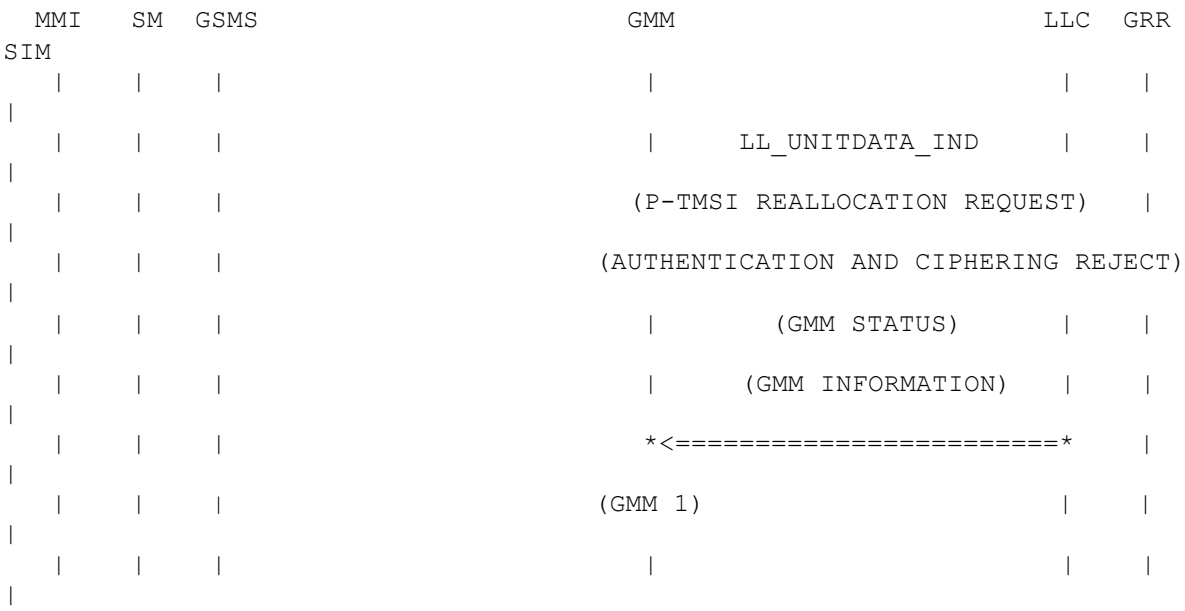
4.9.3.4.2 Receipt of IDENTITY REQUEST whilst in procedure Detach without switching off



(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.

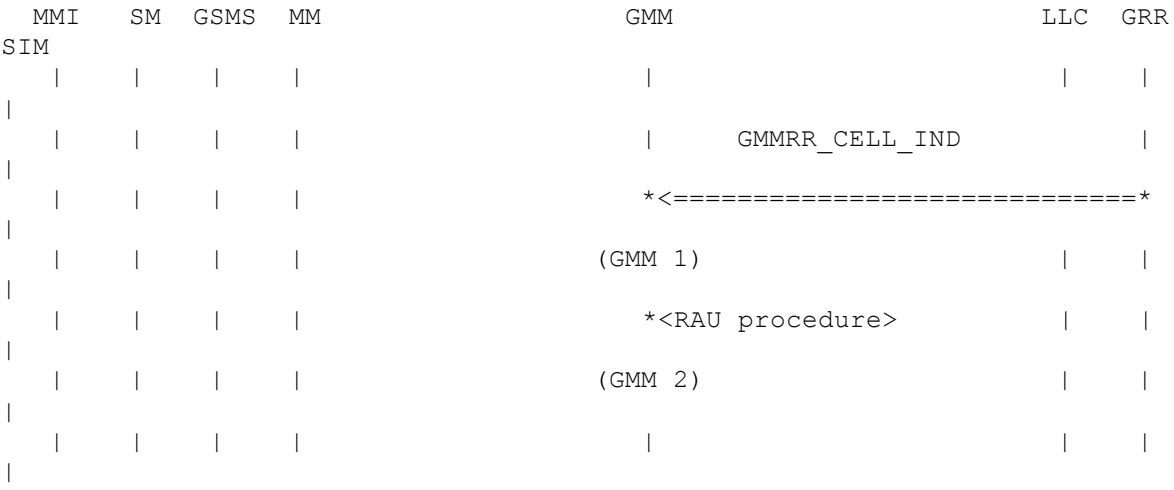
(GMM 2)
The MS responds to it as described in procedure IDENT.
<R.GMM.DMABNORM.M.016>

4.9.3.4.3 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>

4.9.3.5 e) Change of cell into a new RA (before a DETACH ACCEPT message has been received)



(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.

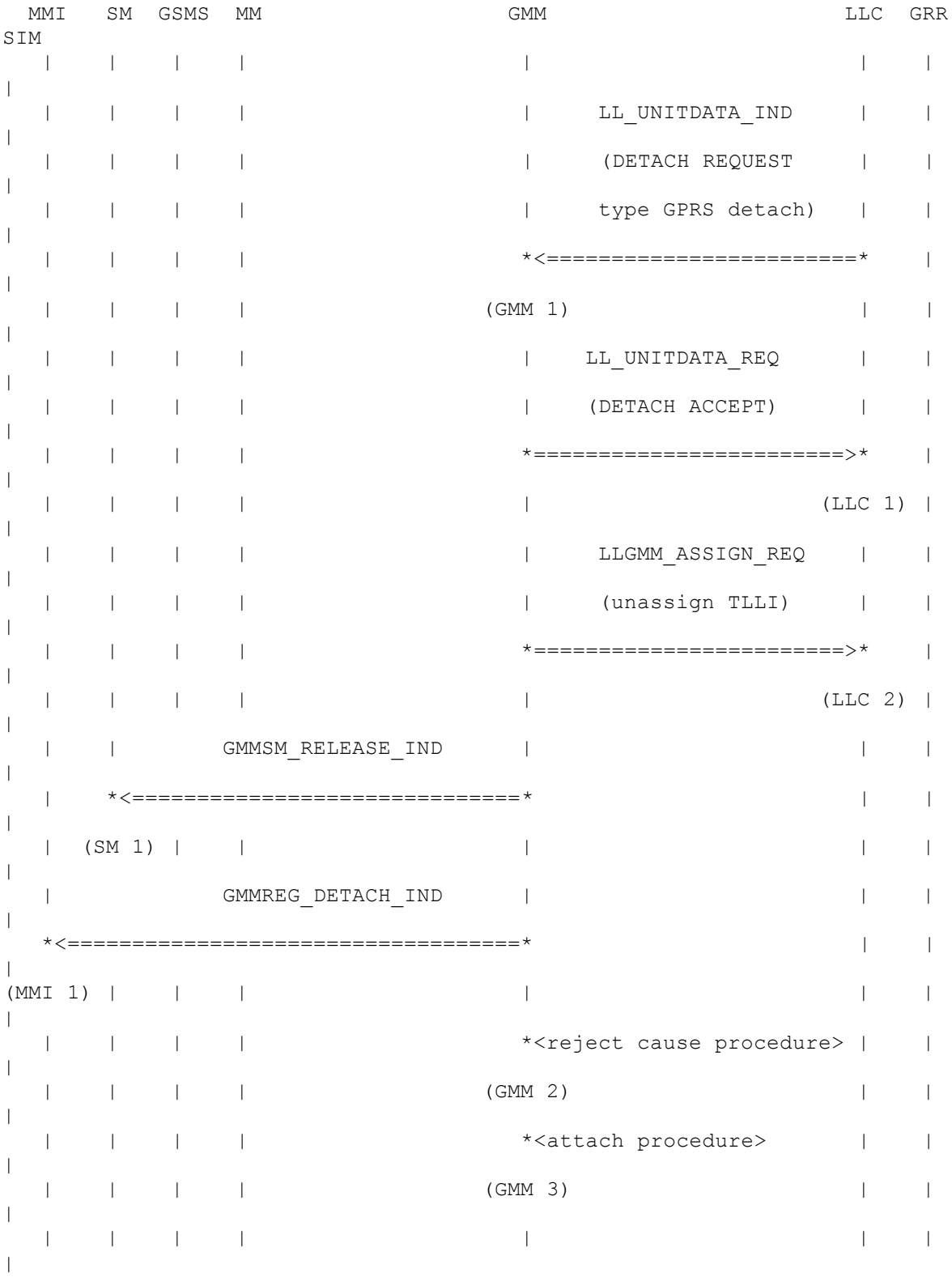
<R.GMM.DMABNORM.M.017>

(GMM 2)
The normal or combined RAU procedure (see section 4.10) is started. The rau_whilst_detach variable is set.

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

4.9.4 Network initiated GPRS detach procedure (completion)

4.9.4.1 re-attach (not) required



(GMM 1)
GMM receives a DETACH REQUEST message with detach type 'rer-attach required' from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM enters state GMM-DEREGISTERED-INITIATED.

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

(LLC 1)
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>

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

<R.GMM.DNACM.M.038>, <R.GMM.DETACH.A.004>

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

<R.GMM.DNACM.M.001>, <R.GMM.DETACH.A.004>, <R.GMM.DETACH.A.007>, <R.GMM.PRELIND.M.001>

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

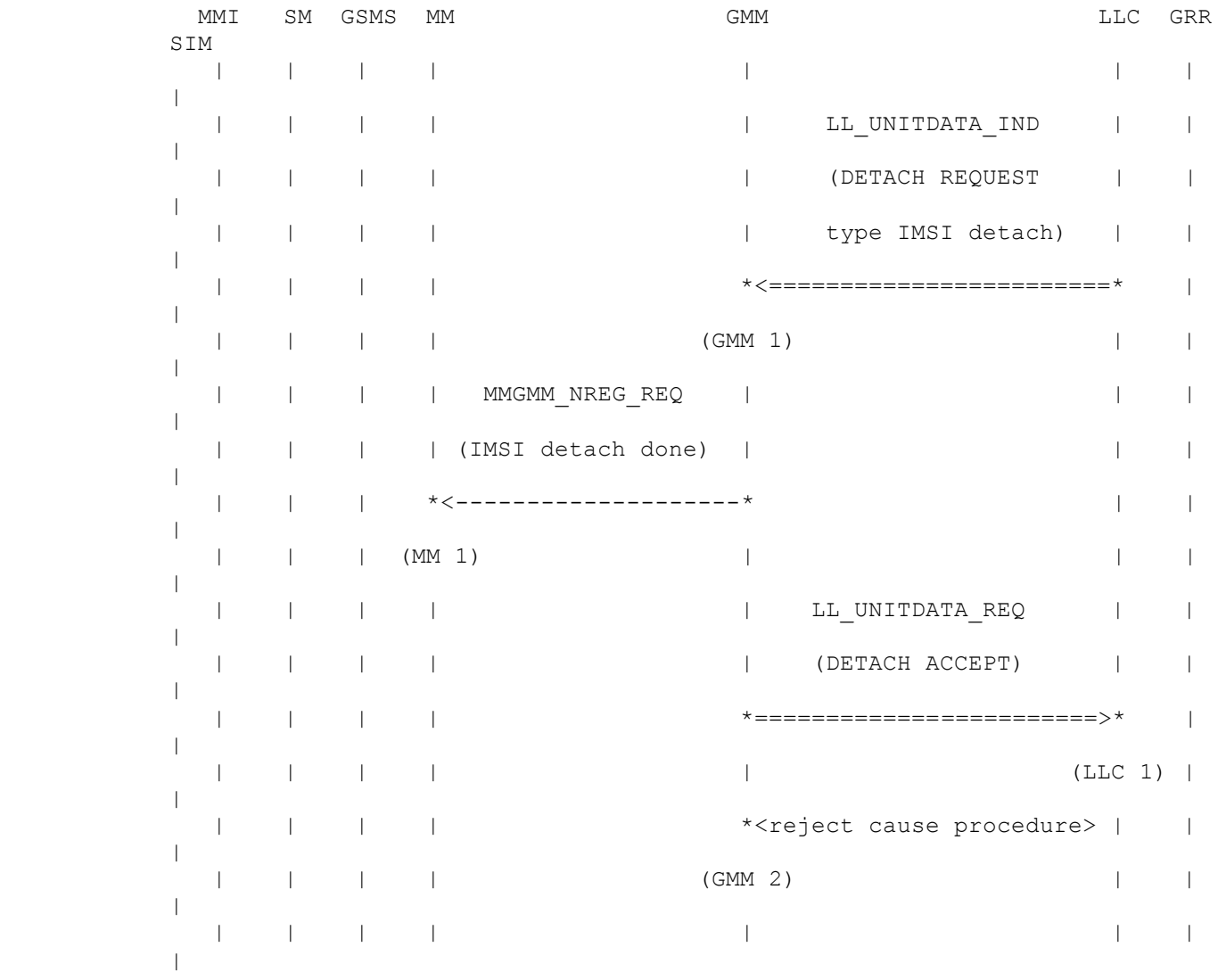
<R.GMM.DNACM.M.003>, <R.GMM.DETACH.A.004>

(GMM 2)
Depending on the received cause, GMM has to act corresponding.

(GMM 3)
If re-attach was not required no further action are taken. Otherwise if re-attach is reuired, than GMM initiates a GPRS attach procedure.

<R.GMM.DNACM.M.004>

4.9.4.2 IMSI detach



(GMM 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. GMM enters state GMM-REGISTERED.IMSI-DETACH-INITIATED

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

(MM 1)
MM is detached.

(LLC 1)
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>

(GMM 2)
Depending on the received cause, GMM has to act corresponding.

4.9.4.3 Receipt of special causes

4.9.4.3.1 GMM cause #2 (IMSI UNKNOWN)

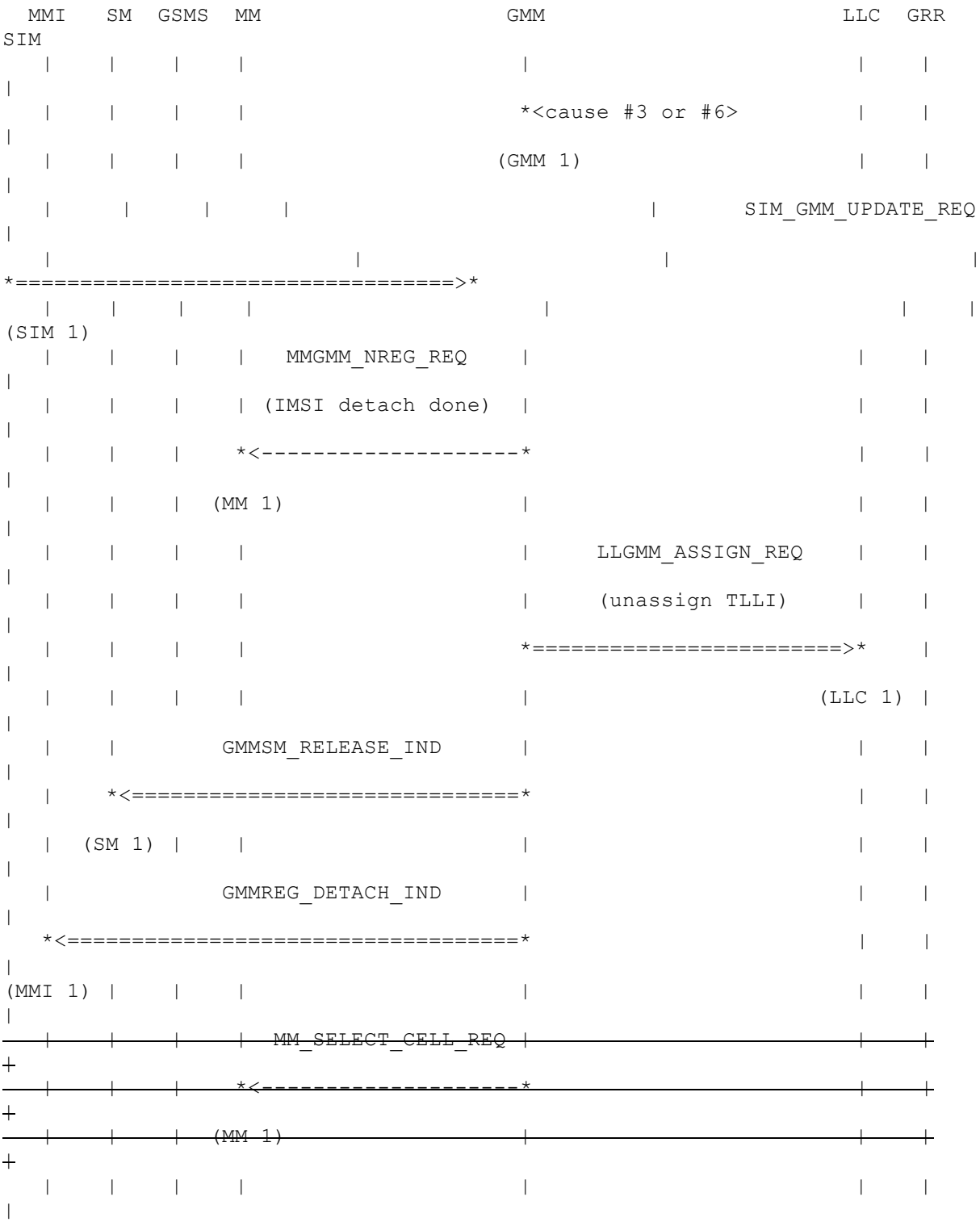
(GMM 1)
GMM receives a DETACH REQUEST message indicating cause #2 from the network by getting a LL_UNITDATA_REQ primitive from LLC.

<R.GMM.DETACH.A.004>

(MM 1)
MM has to enter 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.DNACM.A.006>, <R.GMM.DNACM.A.007>, <R.GMM.DNACM.A.008>, <R.GMM.DNACM.A.009>

4.9.4.3.2 GMM cause #3 or #6 (ILLEGAL MS or ILLEGAL ME)



(GMM 1)
GMM receives a DETACH REQUEST message indicating cause #3 or #6 from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM enters state GMM-DREGISTERED.

<R.GMM.DNACM.M.012>

(SIM 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.DNACM.M.010>, <R.GMM.DNACM.M.011>, <R.GMM.DNACM.M.013>

(MM 1)
MM has to enter 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.DNACM.M.014>, <R.GMM.DNACM.M.015>, <R.GMM.DNACM.M.016>, <R.GMM.DNACM.M.017>

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

<R.GMM.DNACM.M.012>

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

<R.GMM.DNACM.M.012>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>, <R.GMM.DETACH.A.007>

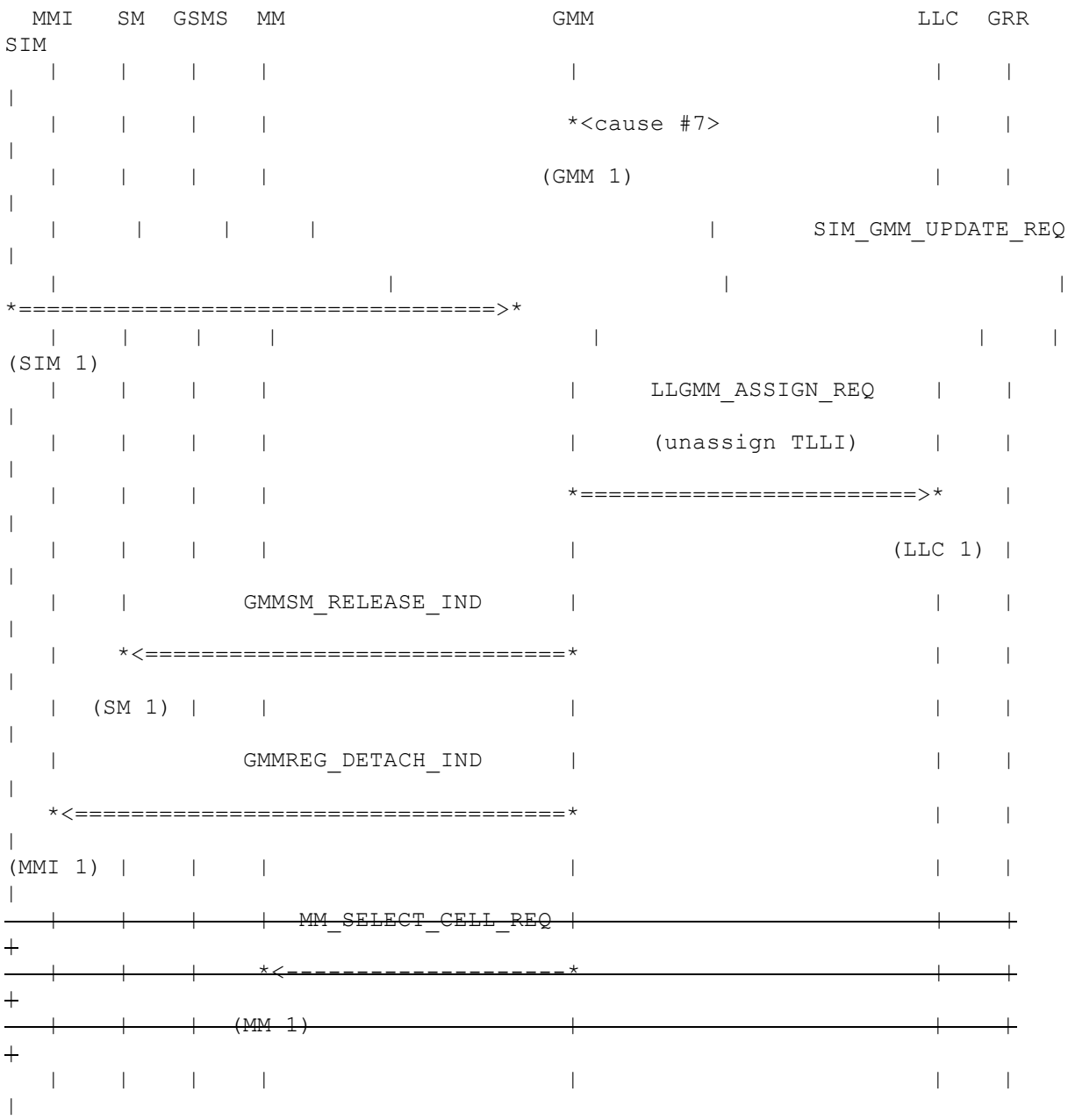
(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DNACM.M.012>, <R.GMM.PDETIND.M.001>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.9.4.3.3 GMM cause #7 (GPRS NOT ALLOWED)



(GMM 1)
GMM receives a DETACH REQUEST message indicating cause #7 from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM enters state GMM-DEREGISTERED.
<R.GMM.DNACM.M.021>

(SIM 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.DNACM.M.019>, <R.GMM.DNACM.M.020>

(LLC 1)
GMM informs LLC, that the GMM context is released.
<R.GMM.DNACM.M.021>

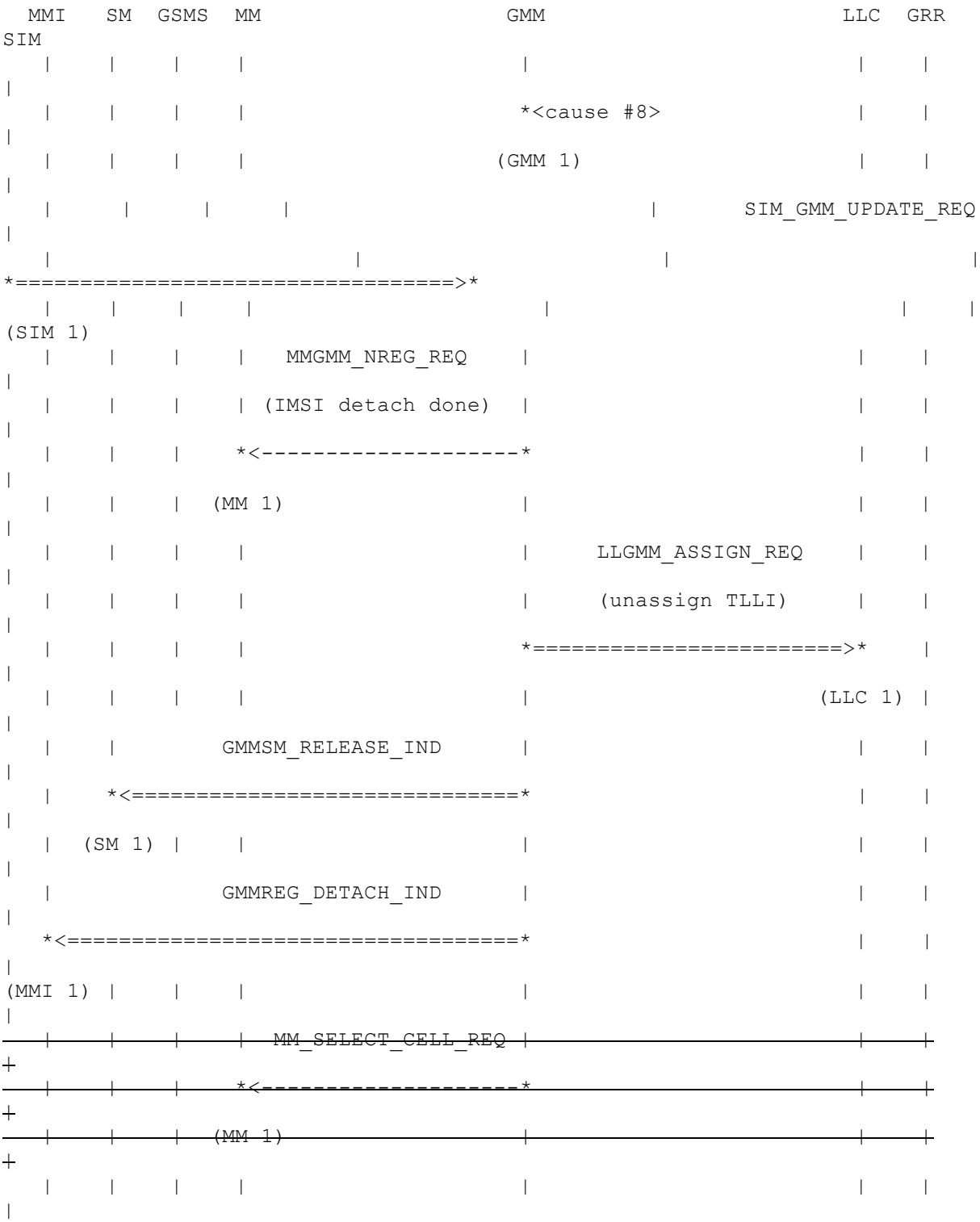
(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.DNACM.M.021>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>, <R.GMM.DETACH.A.007>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.DNACM.M.021>, <R.GMM.PDETIND.M.001>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.9.4.3.4 GMM cause #8 (GSM GPRS NOT ALLOWED)



(GMM 1)
GMM receives a DETACH REQUEST message indicating cause #8 from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM enters state GMM-DREGISTERED.

<R.GMM.DNACM.M.022>

(SIM 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.DNACM.M.022>, <R.GMM.DNACM.M.024>, <R.GMM.DNACM.M.025>

(MM 1)
MM has to enter 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.DNACM.M.023>, <R.GMM.DNACM.M.024>, <R.GMM.DNACM.M.025>

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

<R.GMM.DNACM.M.022>

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

<R.GMM.DNACM.M.022>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>, <R.GMM.DETACH.A.007>

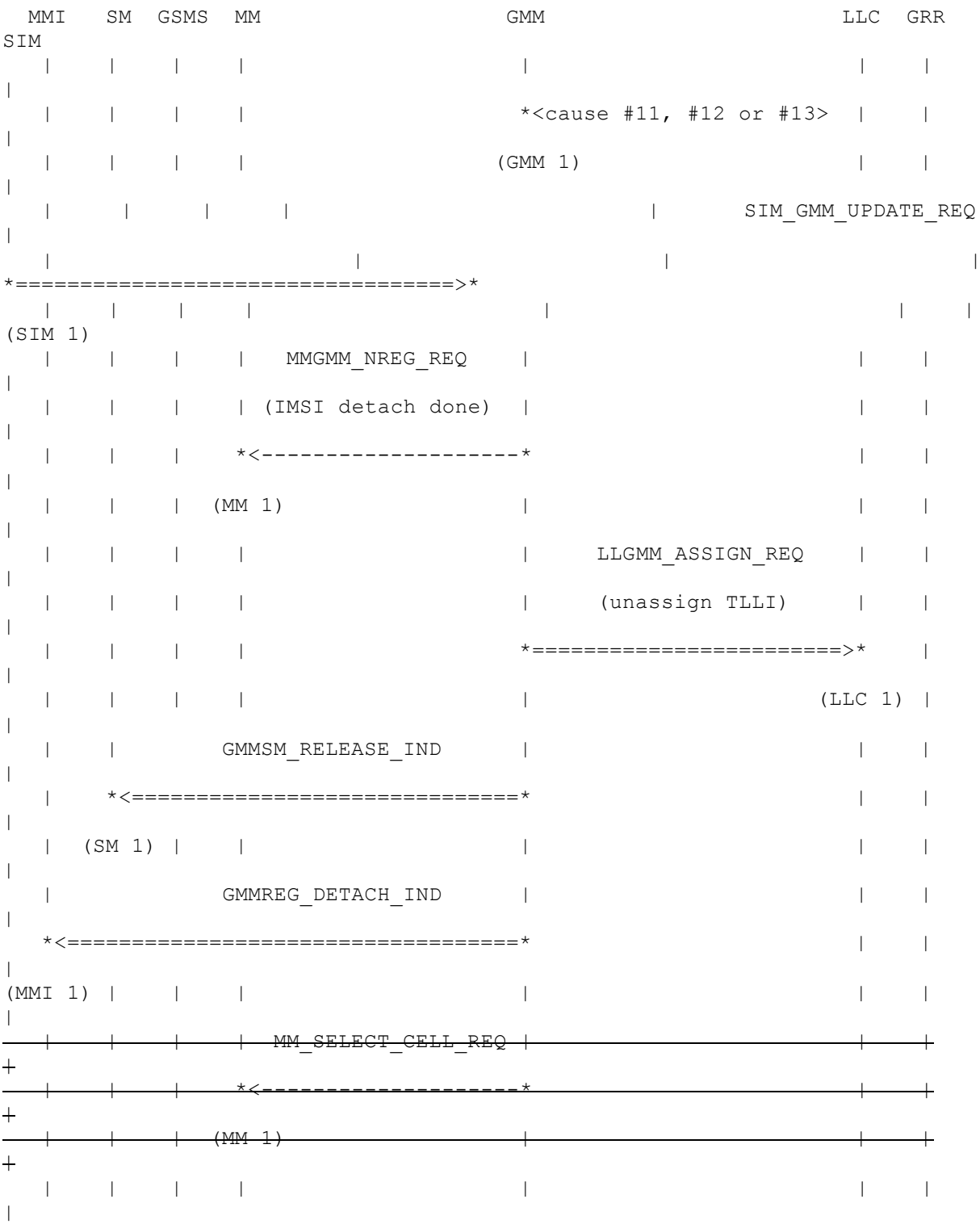
(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.DNACM.M.022>, <R.GMM.PDETIND.M.001>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.9.4.3.5 GMM cause #11, #12, or #13



(LLC 1)
GMM receives a DETACH REQUEST message indicating cause #11, #12 or #13 from the network by getting a LL_UNITDATA_REQ primitive from LLC. GMM enters state GMM-DREGISTERED.

<R.GMM.DNACM.M.012>

(SIM 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.DNACM.M.026>, <R.GMM.DNACM.M.027>

(MM 1)
MM has to enter 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.
LA , PLMN, or Roaming are not allowed. MM has to select a new cell.
On error cause #11 and #13: The MS shall perform a PLMN selection instead of a cell selection.
<R.GMM.DNACM.M.026>, <R.GMM.DNACM.M.028>, <R.GMM.DNACM.M.031>, <R.GMM.DNACM.M.033>, <R.GMM.DNACM.M.034>, <R.GMM.DNACM.M.032>, <R.GMM.DNACM.M.035>

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

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.DETACH.A.007>

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

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~
~~<R.GMM.DSUBFANO.M.001>~~

4.10 RAU procedure

```
  MMI    SM   GSMS                          GMM                          LLC   GRR
SIM
   |     |     |                             |                           |     |
|
   |     |     |                             *<RAU procedure>            |     |
|
   |     |     |                           (GMM 1)                       |     |
|
   |     |     |                             |                           |     |
|
```

(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 (see section **Error! Reference source not found.** and **Error! Reference source not found.**).
- 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 (see section 4.19.5).
- If GMM is in state GMM-REGISTERED and the RA has changed (see section **Error! Reference source not found.** and **Error! Reference source not found.**).

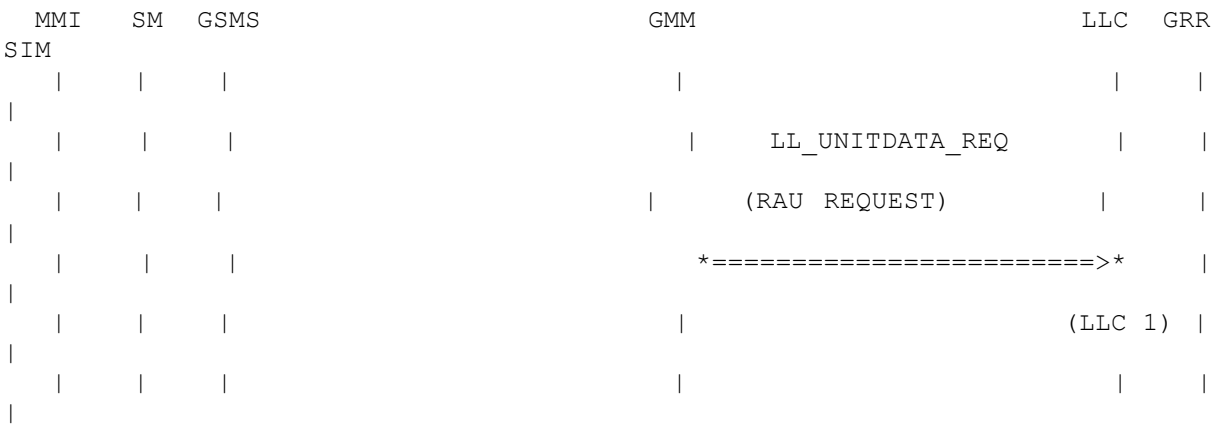
The combined RAU procedure is started due to one of the following reasons:
- If the network operates in mode I, GMM is in state GMM-REGISTERED, MM is in state IDLE, and the RA and LA has changed (see section **Error! Reference source not found.** and **Error! Reference source not found.**).
- If the network operates in mode I, GMM is in state GMM-REGISTERED, MM is not in state IDLE, and the RA and LA has changed (see section **Error! Reference source not found.** and **Error! Reference source not found.**).
- 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 (see section 4.19.5).
- 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 (see section 4.19.5).
- If the network operates in mode I, GMM is in state GMM-REGISTERED, and an IMSI attach is requested (see section 4.4.3).
- 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 (see section 4.19.4.2).
- If the LA has changed during a non-GPRS service transaction, and the non-GPRS service transaction has ended (see section 4.19.4.2).

<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>

4.10.1 Normal and periodic RAU procedure

4.10.1.1 Normal and periodic RAU initiation

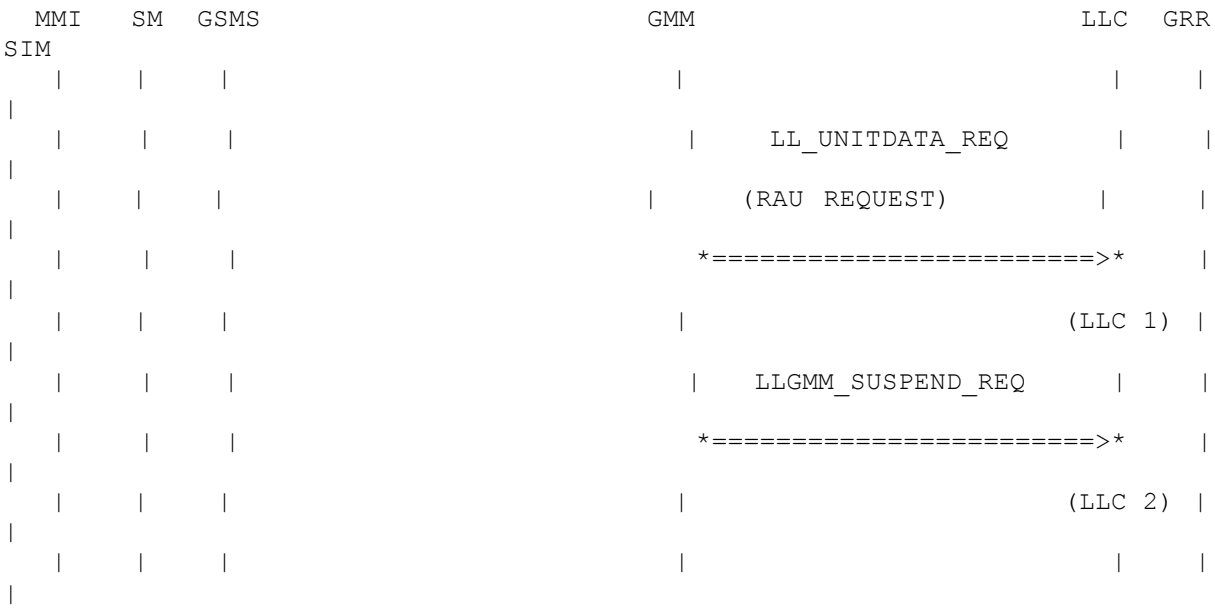
4.10.1.1.1 State GMM_REGISTERED.UPDATE-NEEDED



(LLC 1)
GMM is in state GMM_REGISTERED. 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-INITIATED. The normal RAU procedure aborts any ongoing GMM procedure.

<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>, <R.GMM.RAUTIMER.M.021>

4.10.1.1.2 State GMM_REGISTERED, except substate UPDATE-NEEDED



(LLC 1)
GMM is in state GMM-REGISTERED. 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-INITIATED. The normal RAU procedure aborts any ongoing GMM procedure.

<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>, <R.GMM.RAUTIMER.M.021>

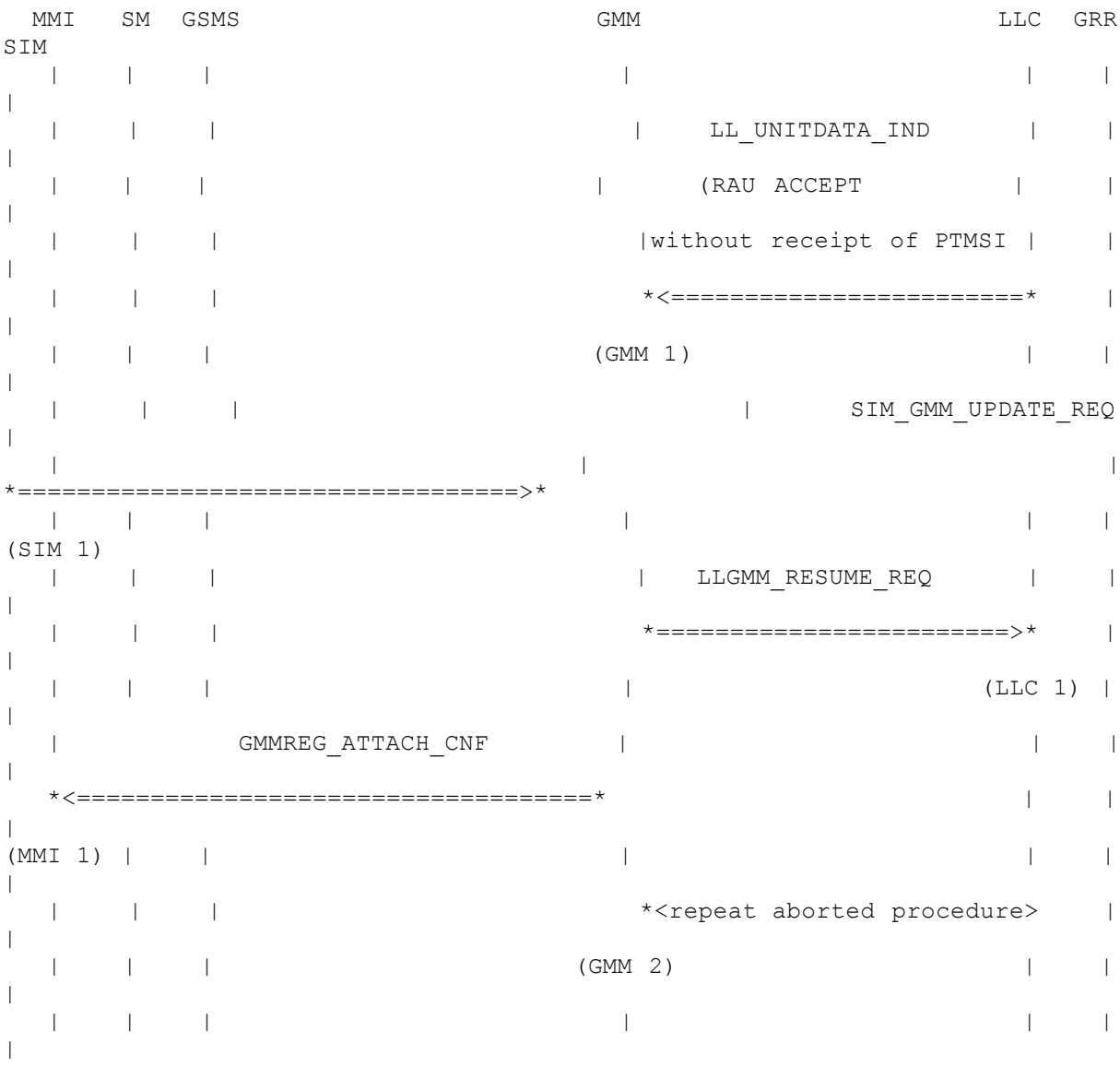
(LLC 2)
User data transmission in LLC is suspended during RAU procedure.

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

4.10.1.2 Normal and periodic RAU accepted by the network

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

4.10.1.2.1 P-TMSI not included



(GMM 1)
GMM receives a RAU ACCEPT message not containing a P-TMSI or NPDU number list 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.RNACCEPT.M.009>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RAU.M.009>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>, <R.GMM.READYTIM.M.021>, <R.GMM.CIPSEQNR.A.016>

(SIM 1)
GMM enters GPRS update status 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.

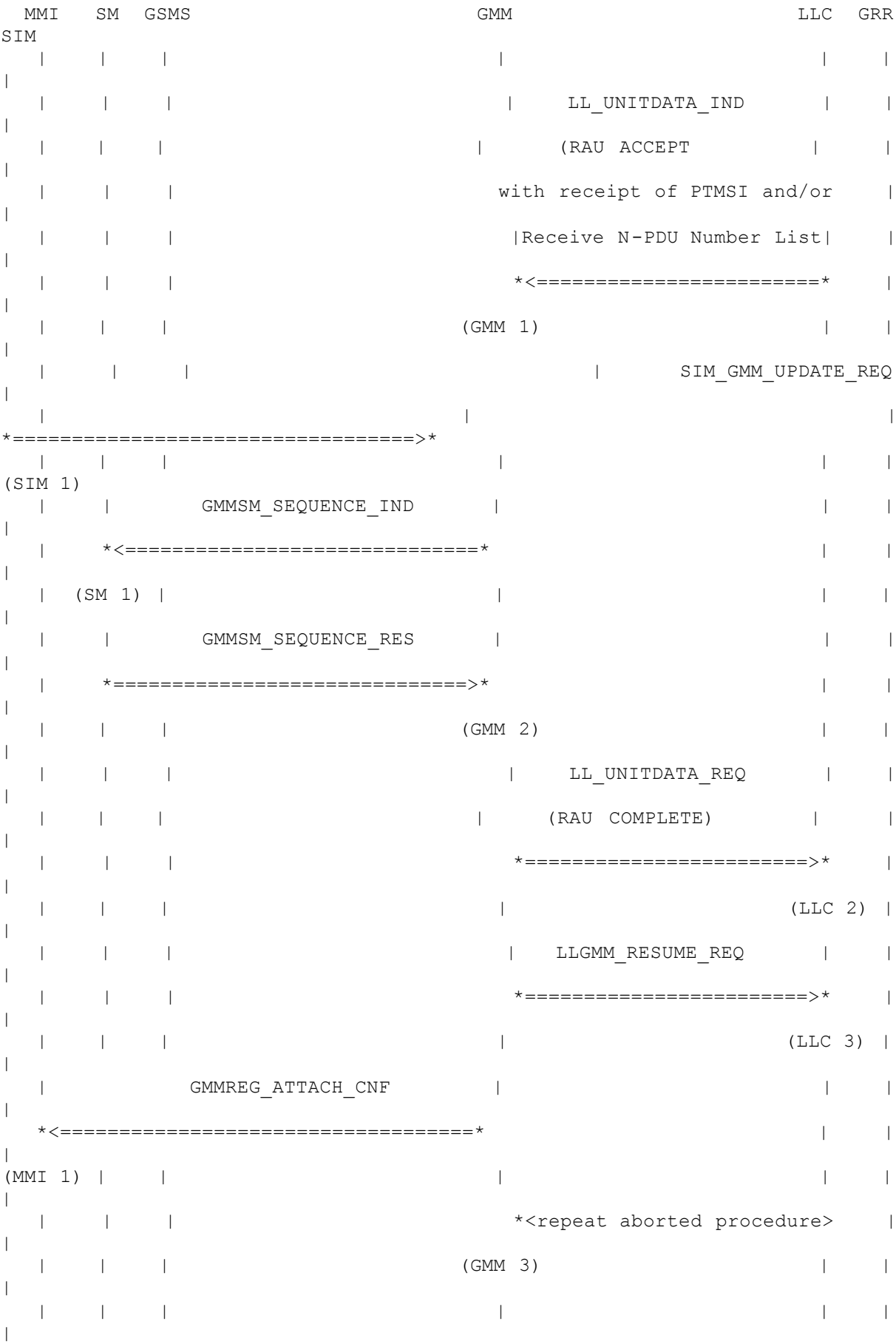
<R.GMM.RAU.M.015>

(MMI 1)
If the PLMN was changed, MMI will be informed.

(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>

4.10.1.2.2 P-TMSI and/or Receive N-PDU Number List included


MMI
SM
GSMS
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(RAU ACCEPT
with receipt of PTMSI and/or
Receive N-PDU Number List
(GMM 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
GMMSM_SEQUENCE_IND
(SM 1)
GMMSM_SEQUENCE_RES
(GMM 2)
LL_UNITDATA_REQ
(RAU COMPLETE)
(LLC 2)
LLGMM_RESUME_REQ
(LLC 3)
GMMREG_ATTACH_CNF
(MMI 1)
<repeat aborted procedure>
(GMM 3)

(GMM 1)
GMM receives a RAU ACCEPT message containing a P-TMSI and/or NPDU number list 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>, <R.GMM.READYTIM.M.021>, <R.GMM.CIPSEQNR.A.016>

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

<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>

(SM 1)
The Receive N-PDU Number List is passed to SM.

<>

(SM 2)
GMM gets the new Receive N-PDU Number List from SM and put into the RAU COMPLETE message.

<>

~~(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.016>, <R.GMM.RNACCEPT.M.017>

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

<R.GMM.RAU.M.015>

(MMI 1)
If the PLMN was changed, MMI will be informed.

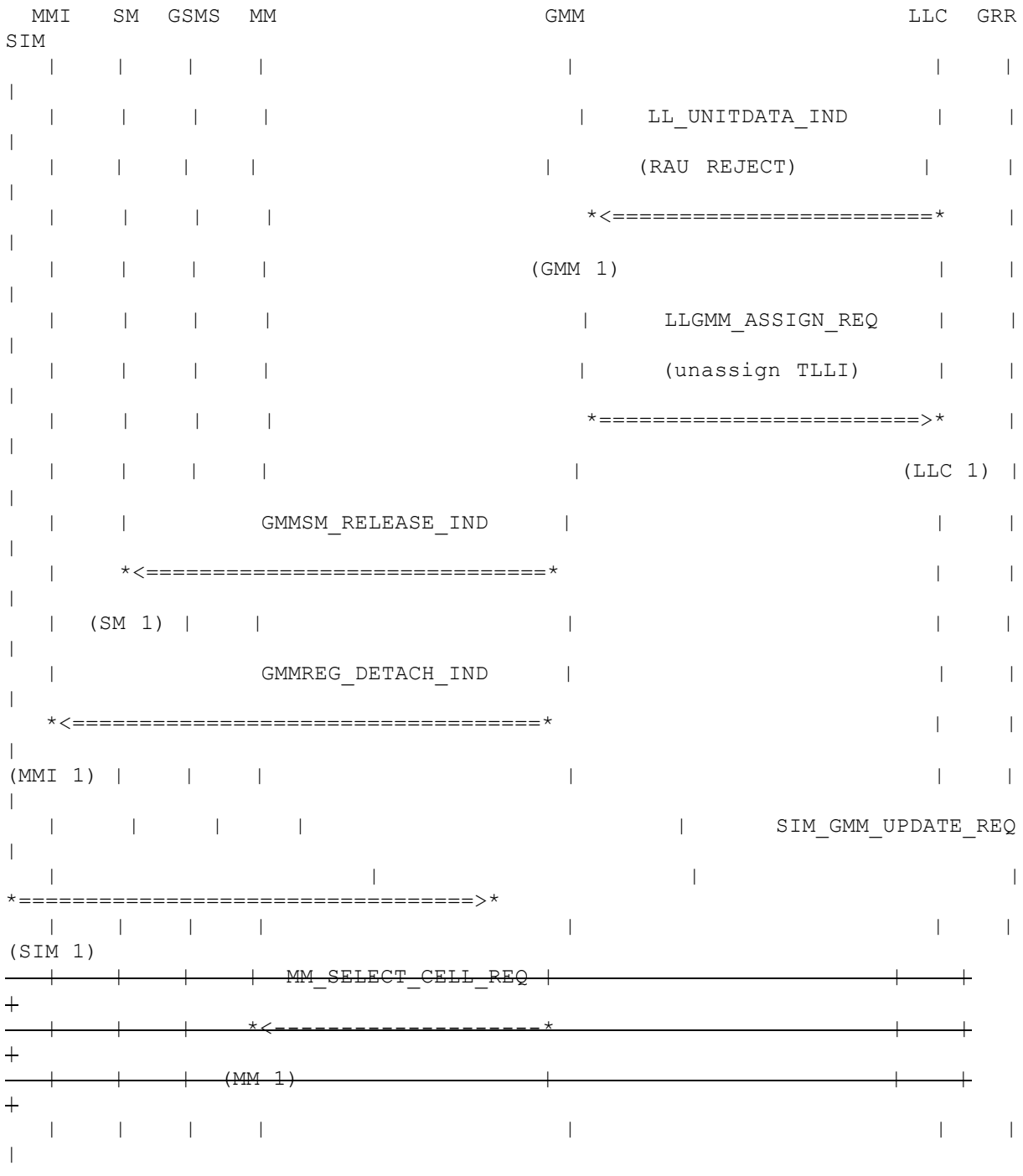
(GMM 3)
Aborted GMM procedures are repeated and the variable (s) rau_whilst_<procedure> is set to false.

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

4.10.1.3 Normal and periodic RAU not accepted by the network

4.10.1.3.1 Reject cause #3 or #6

4.10.1.3.1.1 MS is not IMSI attached via MM procedures



(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>

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

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>, <R.GMM.PDETIND.M.002>

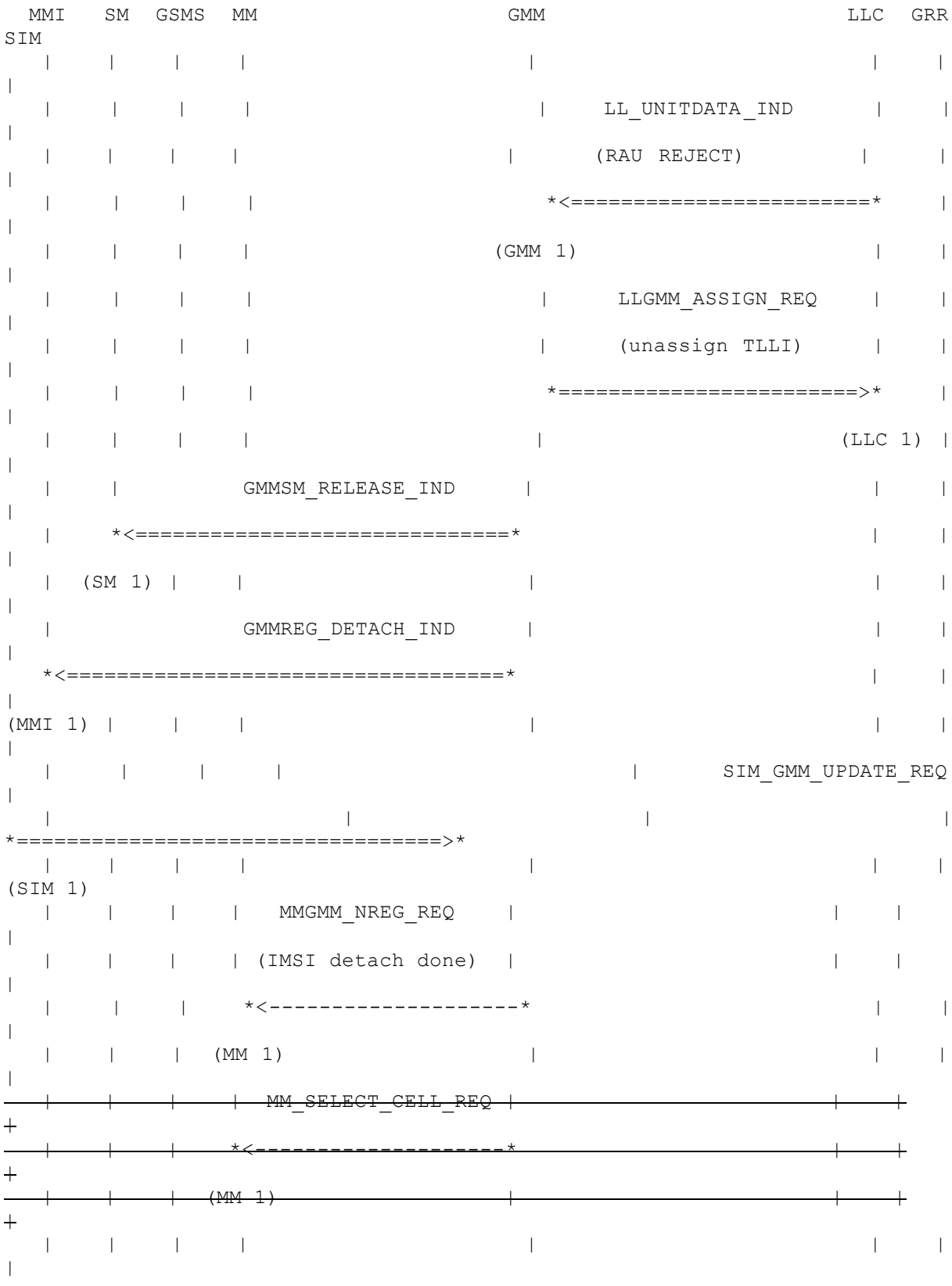
(SIM 1)
GMM sets the GPRS update status to GU3 ROAMING NOT ALLOWED. The SIM is considered as invalid for GPRS services until switching off or the SIM is removed.

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

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.10.1.3.1.2 MS is IMSI attached via MM procedures



(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>

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

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

<R.GMM.RNREJECT.M.004>, <R.GMM.RNREJECT.M.005>, <R.GMM.PDETIND.M.002>

(SIM 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>

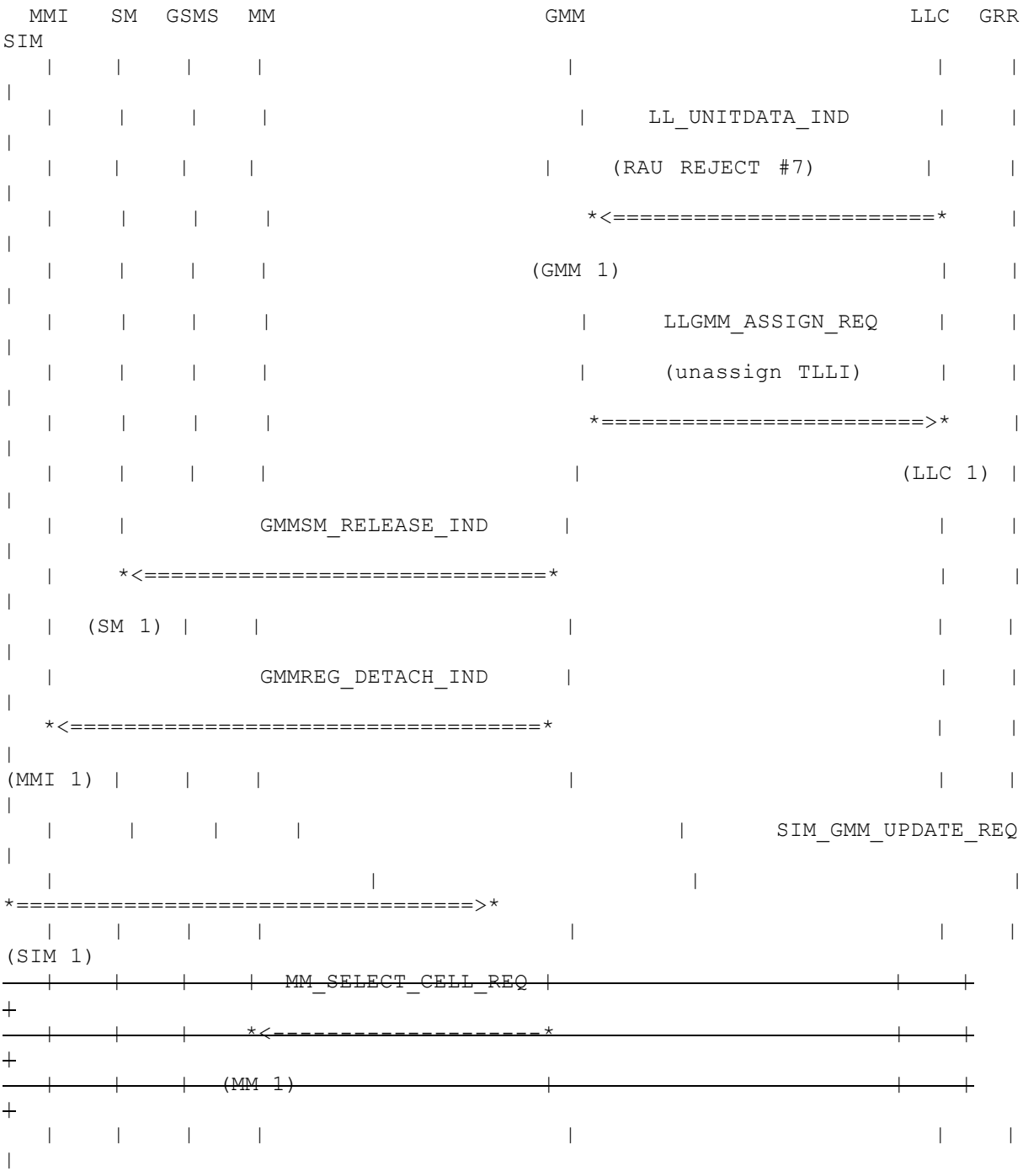
(MM 1)
GMM informs MM, that MM has to go in state MM IDLE. The SIM is considered as invalid. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED.

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

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.10.1.3.2 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.RNREJECT.M.002>, <R.GMM.RNREJECT.M.033>

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

<R.GMM.RNREJECT.M.033>

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

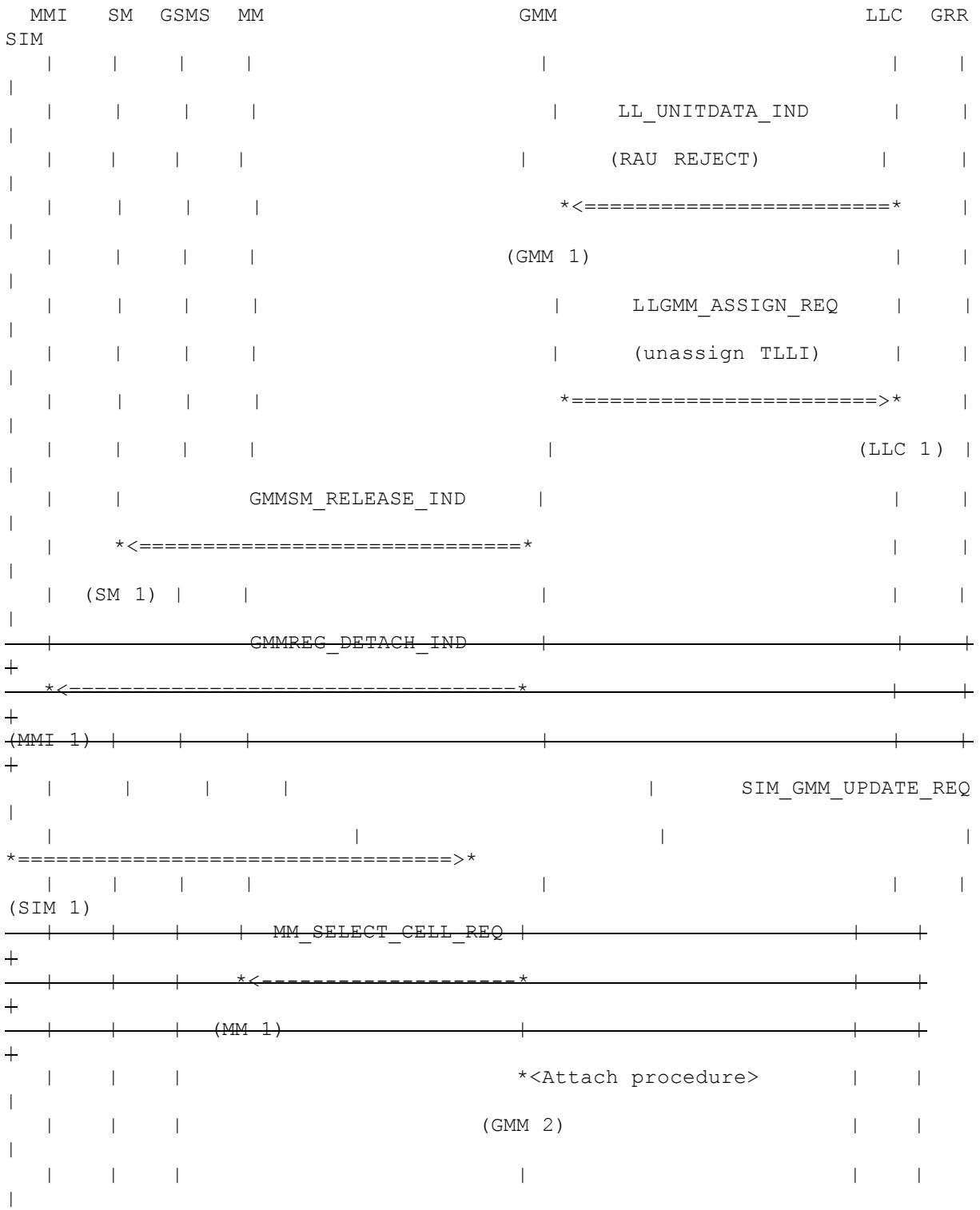
<R.GMM.RNREJECT.M.033>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

(MMI 1)
GMM informs MMI, that GMM context is released.
<R.GMM.RNREJECT.M.033>, <R.GMM.PDETIND.M.002>

(SIM 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.030>, <R.GMM.RNREJECT.M.031>, <R.GMM.RNREJECT.M.032>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~
~~<R.GMM.DSUBFANO.M.001>~~

4.10.1.3.3 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>

(SM 1)

GMM informs SM, that the GMM context is released.

<R.GMM.RNREJECT.M.011>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

~~<R.GMM.RNREJECT.M.011>, <R.GMM.PDETIND.M.002>~~

(SIM 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>

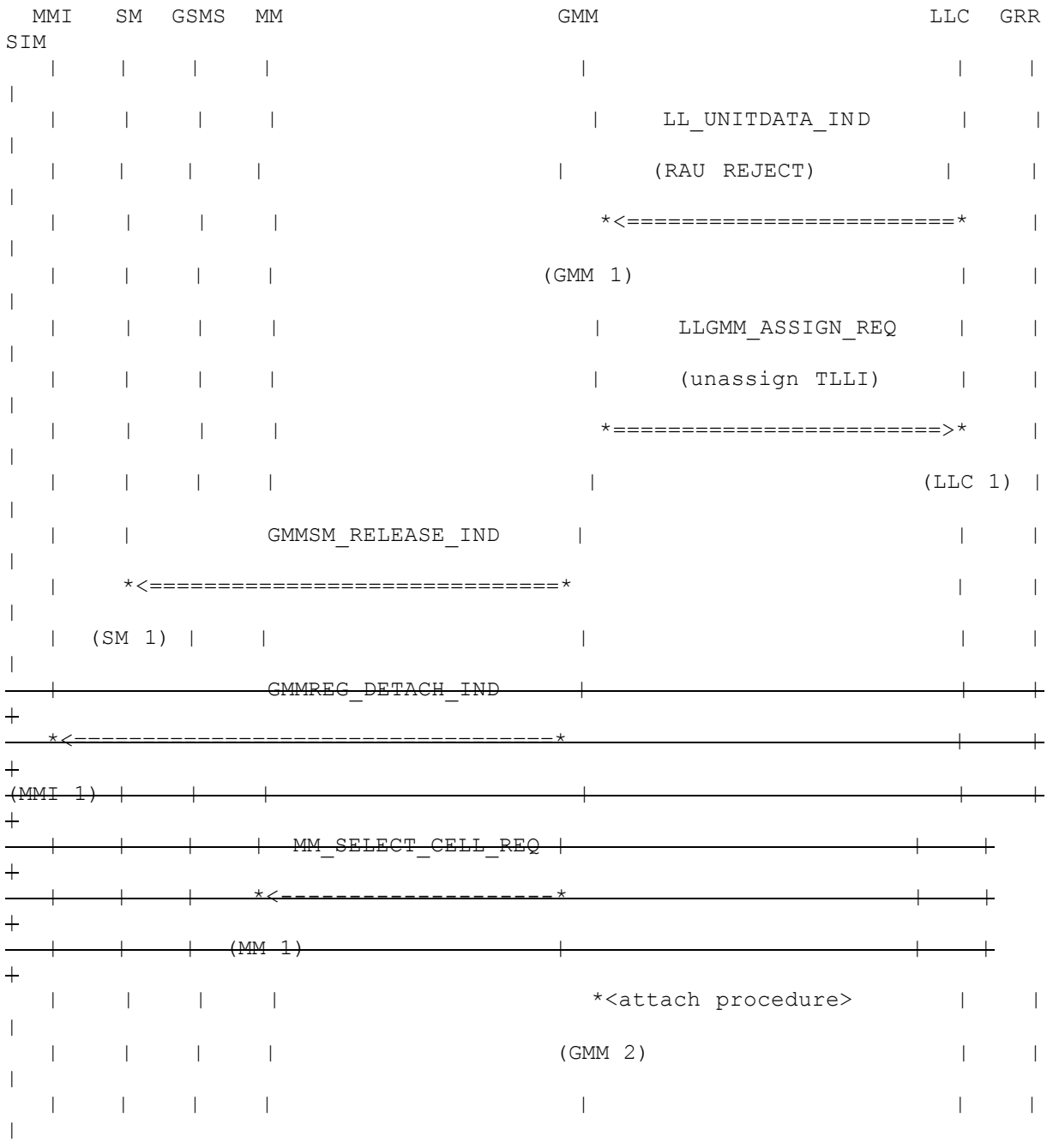
~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

<R.GMM.~~DSUBFANO~~.M.001>

(GMM 2)
The Attach procedure is reinitilized.

<R.GMM.RNREJECT.M.003>

4.10.1.3.4 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>

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

<R.GMM.RNREJECT.M.015>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>, <R.GMM.RNREJECT.M.034>

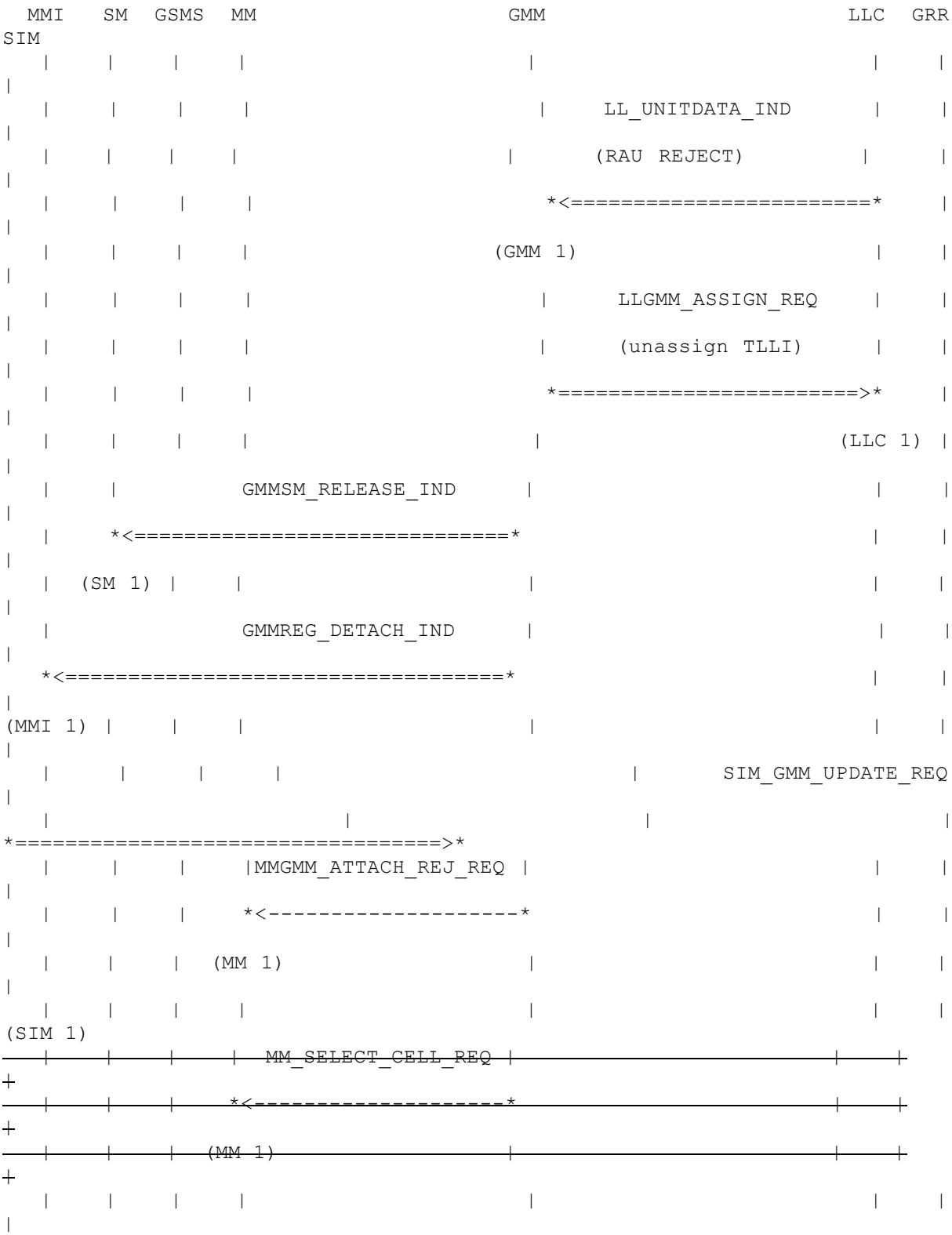
(MMI 1)
GMM informs MMI, that GMM context is released.

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

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~
~~<R.GMM.DSUBFANO.M.001>~~

(GMM 2)
GMM perform a new attach procedure.
<R.GMM.RNREJECT.M.016>

4.10.1.3.5 Reject cause #11, #12 or #13



(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>

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

<R.GMM.RNREJECT.M.019>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

<R.GMM.RNREJECT.M.019>, <R.GMM.PDETIND.M.002>

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

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

(MM 1)
If MM is not IMSI attached via MM procedure no further actions are taken. GMM informs MM, that MM has to enter state MM IDLE. GMM informs MM, that MM has to enter update state U3 ROAMING NOT ALLOWED. PLMN and LA are stored in the forbidden list. MM has to perform a PLMN selection instead of a cell cellection.

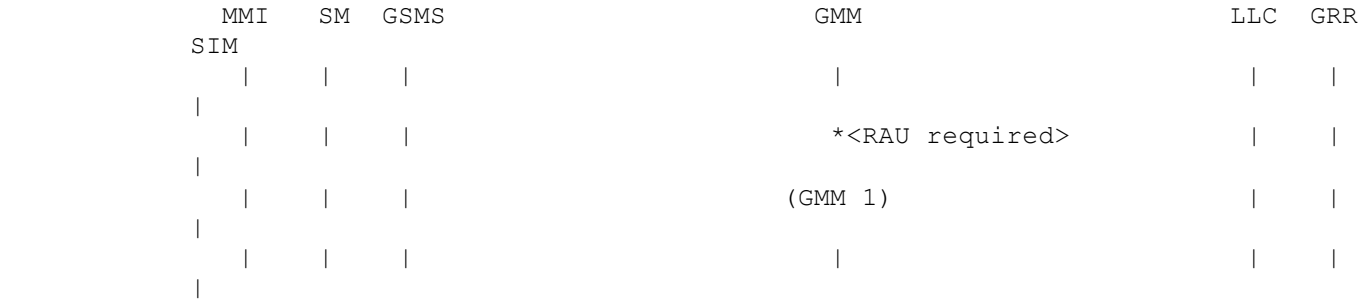
<R.GMM.RNREJECT.M.018>, <R.GMM.RNREJECT.M.019>, <R.GMM.RNREJECT.M.21>, <R.GMM.RNREJECT.M.024>, <R.GMM.RNREJECT.M.022>, <R.GMM.RNREJECT.M.025>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.10.1.4 Abnormal cases

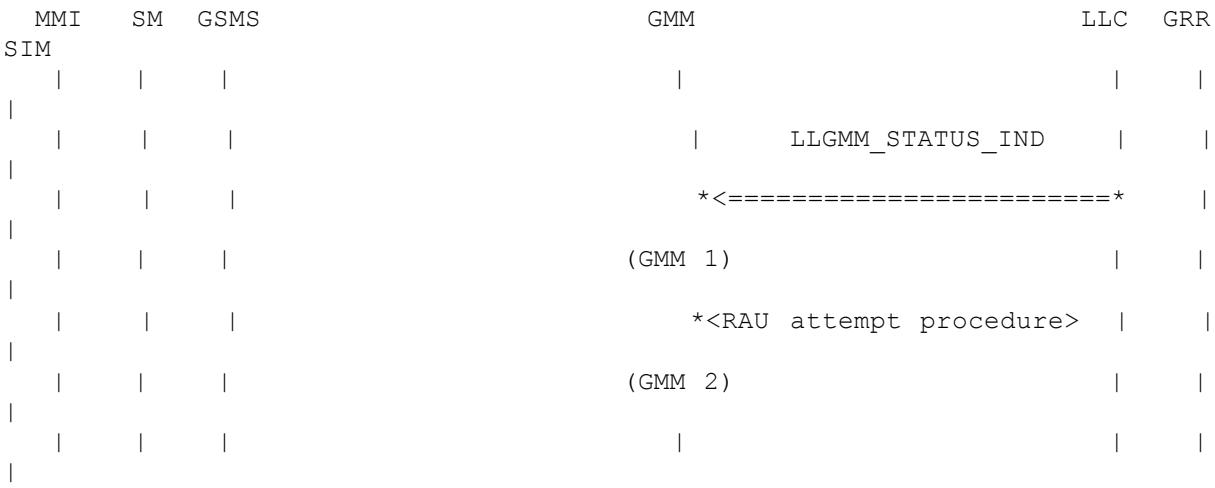
4.10.1.4.1 a) Access barred because of access class control



(GMM 1)
GMM is in state GMM-REGISTERED.UPDATE-NEEEDED, .i.e access to the cell is barred because of access class control. The normal RAU procedure is required (see section 4.10).

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

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



(GMM 1)
The RAU procedure is aborted.

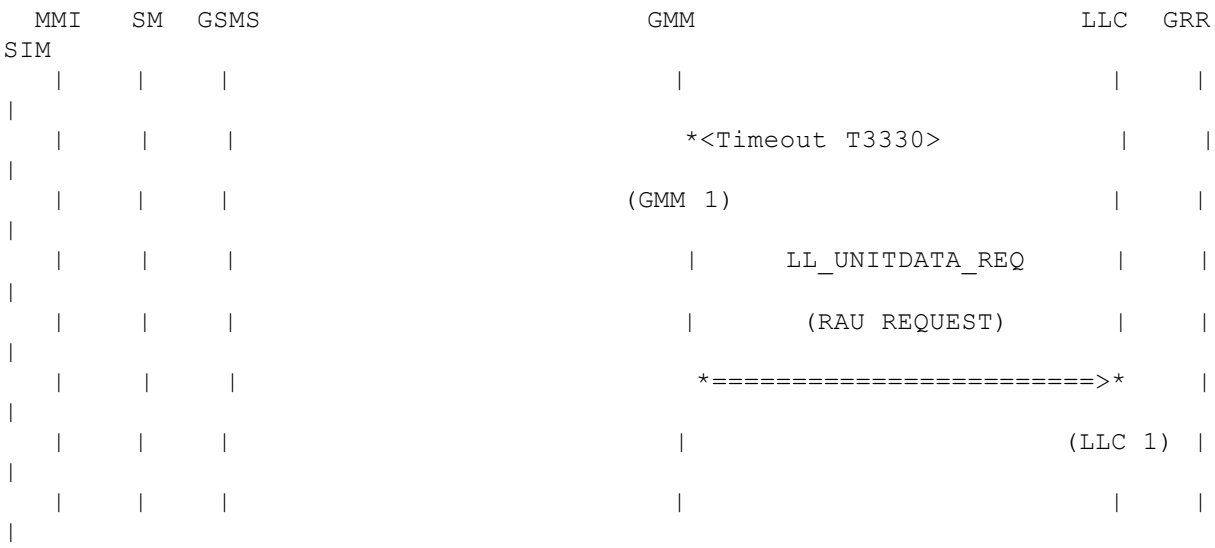
<R.GMM.RNABNORM.M.004>, <R.GMM.LOWERFAIL.M.001>

(GMM 2)
The RAU attempt procedure is started (see section 4.10.1.5).

<R.GMM.RNABNORM.M.005>

4.10.1.4.3 c) T3330 time-out

4.10.1.4.3.1 Maximum retransmissions not reached



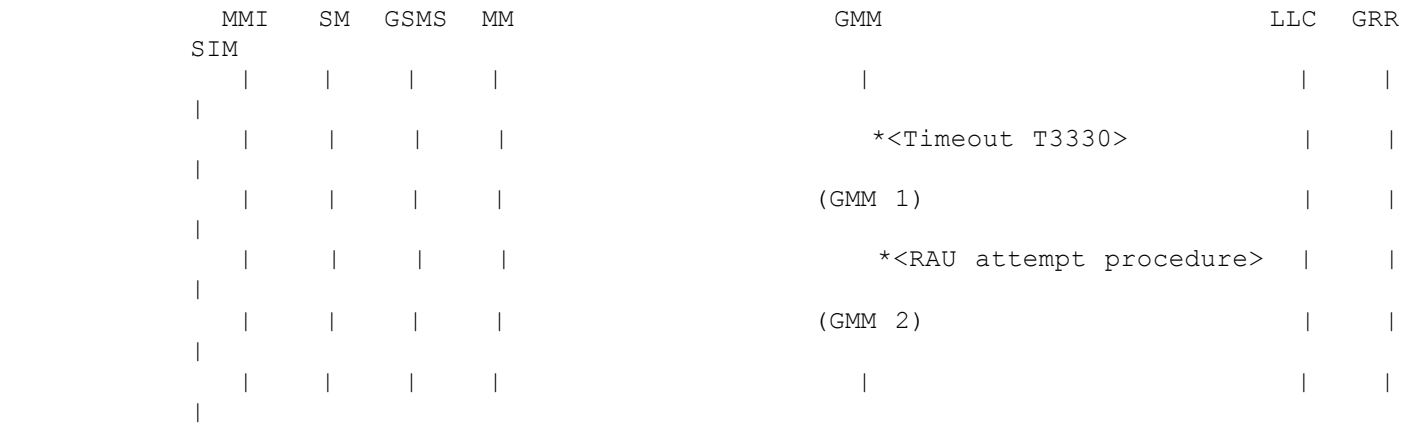
(GMM 1)
Timeout of timer T3330 for the first, second, third or fourth time. GMM restarts timer T3330.

<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>

4.10.1.4.3.2 Maximum retransmissions reached



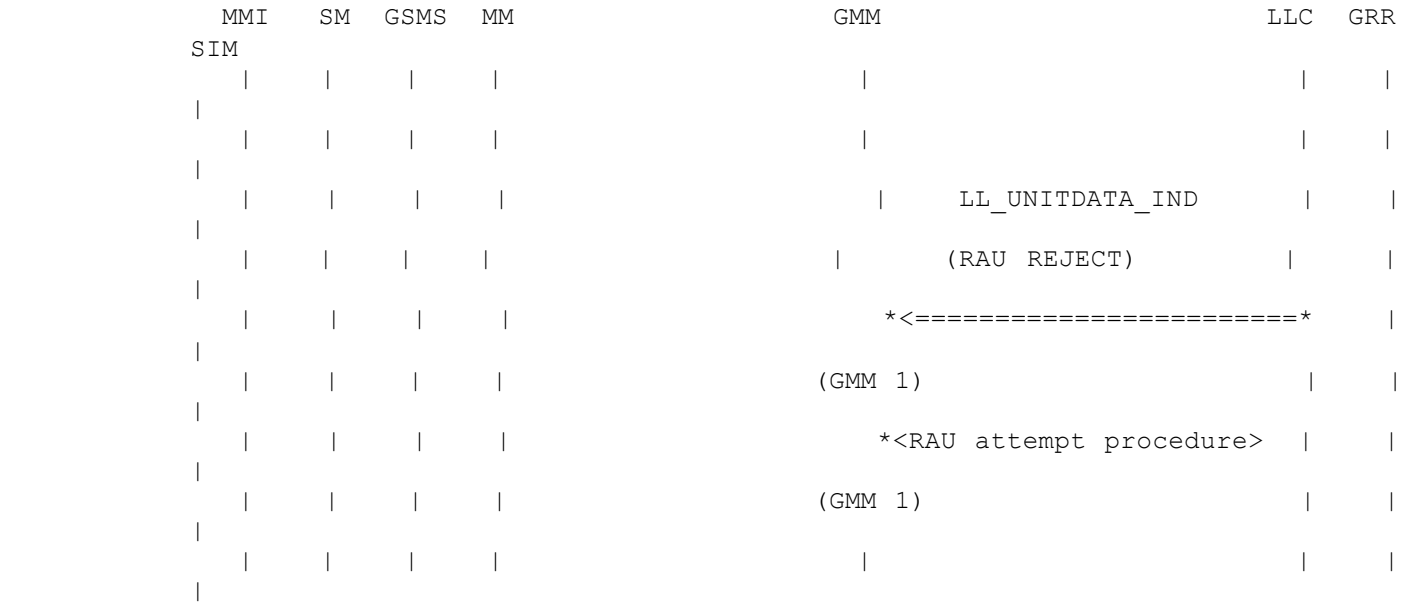
(GMM 1)
Timeout of timer T3330 for the fifth time.

<R.GMM.RNABNORM.M.008>

(GMM 2)
The RAU attempt procedure is started (see section 4.10.1.5).

<R.GMM.RNABNORM.M.009>

4.10.1.4.4 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 section 4.10.1.5).

<R.GMM.RNABNORM.M.010>

4.10.1.4.5 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>

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

<R.GMM.RNABNORM.M.032>

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

<R.GMM.RNABNORM.M.011>

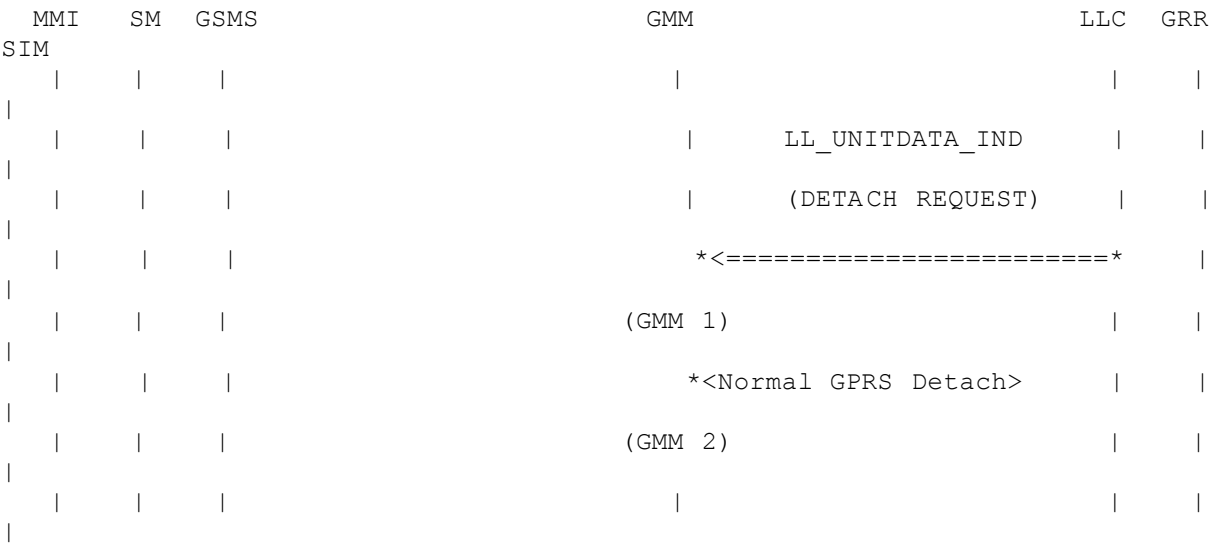
4.10.1.4.6 f) Change of cell within the same RA in state 'GMM–ROUTING-AREA-UPDATE-INITIATED'

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

<R.GMM.RNABNORM.M.012>

4.10.1.4.7 g) RAU and detach procedure collision

4.10.1.4.7.1 GPRS detach or combined GPRS/IMSI detach

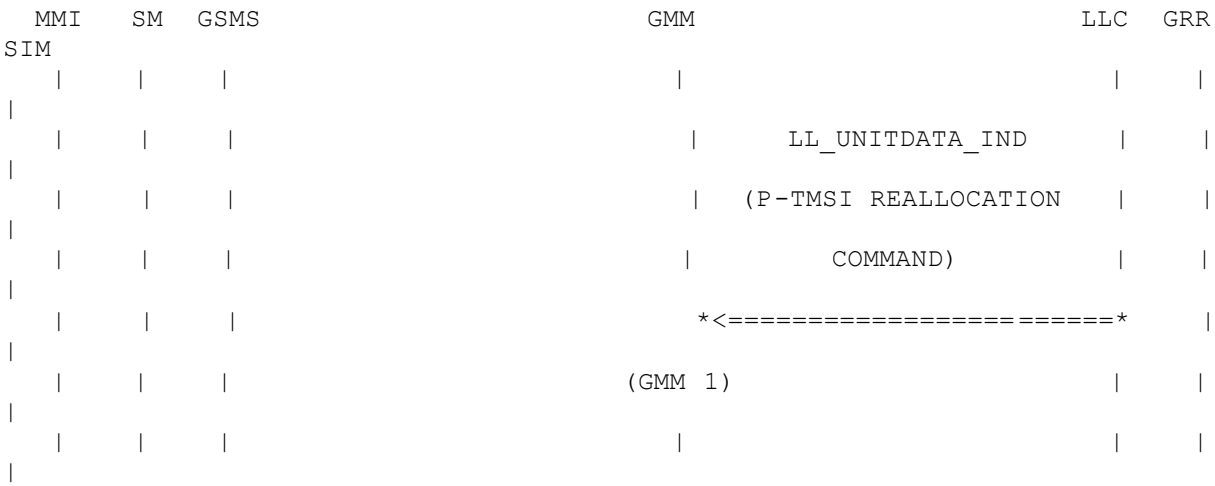


(GMM 1)
GMM is in state GMM-ROUTING-AREA-UPDATE-INITIATED. GMM receives the message DETACH REQUEST (Detach type = 'GPRS detach' or 'combined GPRS/IMSI detach') from the network.
(GMM 2)
The RAU procedure is aborted and the GPRS detach procedure is followed.
<R.GMM.RNABNORM.M.013>, <R.GMM.RNABNORM.M.014>

4.10.1.4.7.2 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>

4.10.1.4.8 h) RAU and P-TMSI procedure collision

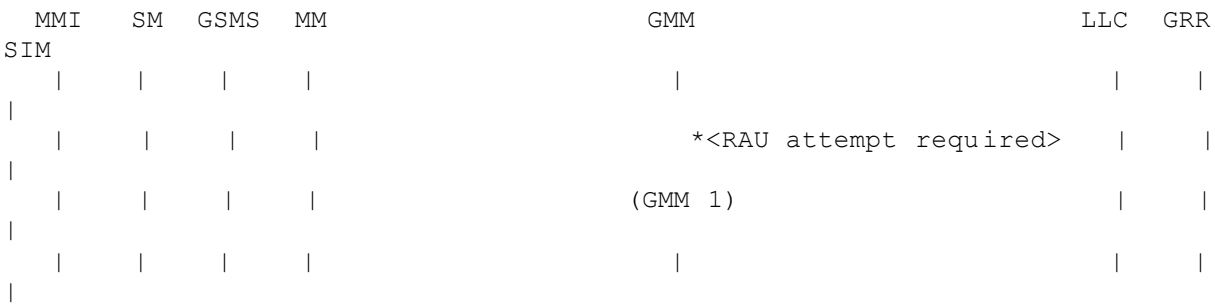


(GMM 1)
GMM is in state GMM-ROUTING-AREA-UPDATE-INITIATED. GMM receives the message P-TMSI REALLOCATION COMMAND with the LL_UNITDATA_IND primitive. The P-TMSI REALLICATION COMMAND message is ignored and the RAU procedure is continued.
<R.GMM.RNABNORM.M.017>, <R.GMM.RNABNORM.M.018>

4.10.1.5 RAU attempt procedure

4.10.1.5.1 RAU attempt counter less than 5

4.10.1.5.1.1 RA is not changed and update state is GU1



(GMM 1)
The stored RAI is equal to the RAI in the current serving cell, or 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>

4.10.1.5.1.2 RA chanched or update state is not GU1

(GMM 1)
The stored RAI is different to the RAI in the current serving cell, or the GMM update state is different 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.ATTEMPTING-TO-UPDATE.

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

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

<R.GMM.RNABNORM.M.029>

4.10.1.5.2 RAU 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.019>, <R.GMM.RNABNORM.M.020>, <R.GMM.RNABNORM.M.027>, <R.GMM.RNABNORM.M.028>

NOTE:
Optionally: GMM could state GMM-DEREGISTERED.PLMN-SERCH. This is not implemented!

<R.GMM.RNABNORM.M.031>

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

<R.GMM.RNABNORM.M.030>

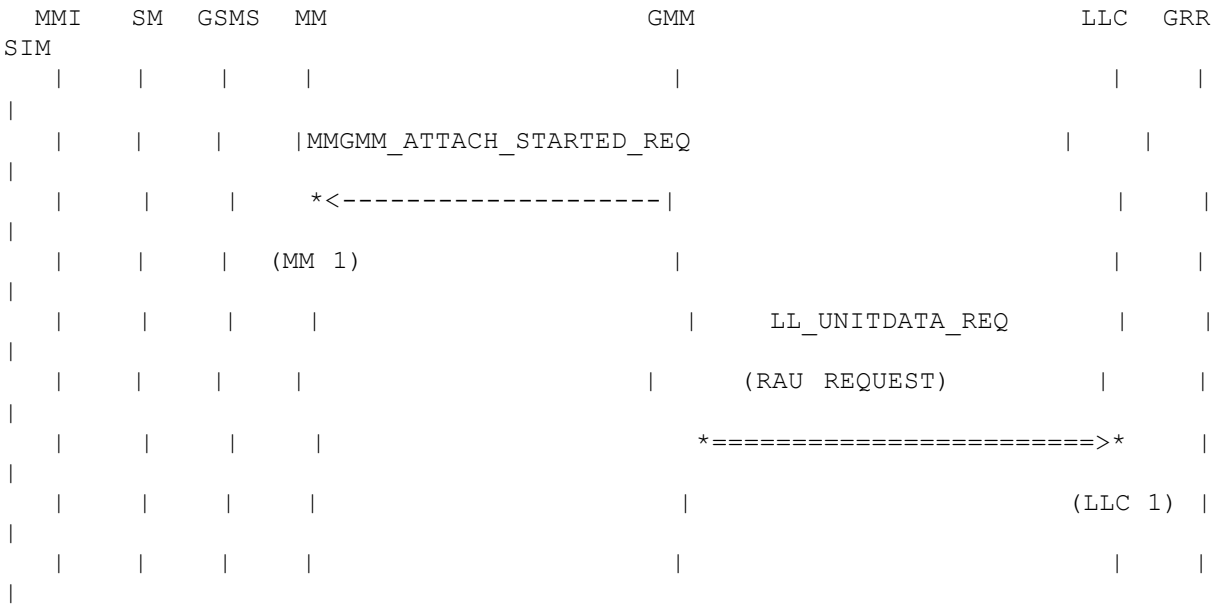
4.10.2 Combined RAU procedure

4.10.2.1 Initiation

The combined RAU procedure is initiated only by, if the MS is in state GMM-REGISTERED in operation mode A or B.

<R.GMM.RCINIT.M.001>

4.10.2.1.1 State GMM_REGISTERED.UPDATE-NEEDED



(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-INITIATED. The normal RAU procedure aborts any ongoing GMM procedure. The variable (s) rau_whilst_<procedure> is set.

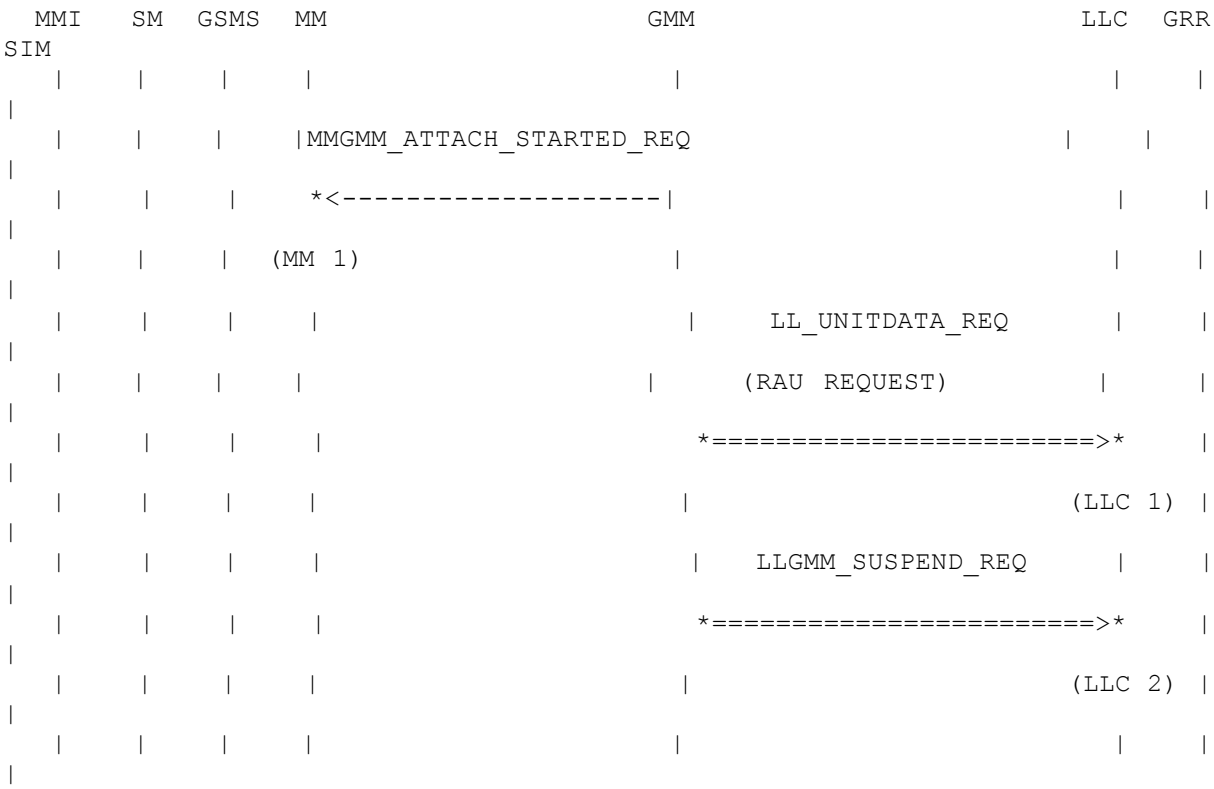
<R.GMM.RAU.M.006>, <R.GMM.RCINIT.M.014>, <R.GMM.RCINIT.M.011>, <R.GMM.RCINIT.M.012>, <R.GMM.RCINIT.M.013>, <R.GMM.RCINIT.M.015>, <R.GMM.RCCOMBN.A.001>, <R.GMM.PTMSISIG.M.003>, <R.GMM.PTMSISIG.M.004>, <R.GMM.RCINIT.M.008>, <R.GMM.DMABNORM.M.017>, <R.GMM.RAUTIMER.M.021>

(MM 1)

The MS changes to state MM LOCATION UPDATING PENDING.

<R.GMM.RCINIT.M.014>

4.10.2.1.2 State GMM_REGISTERED, except substate UPDATE-NEEDED



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

<R.GMM.RCINIT.M.014>

(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-INITIATED. 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.M.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>, <R.GMM.RAUTIMER.M.021>

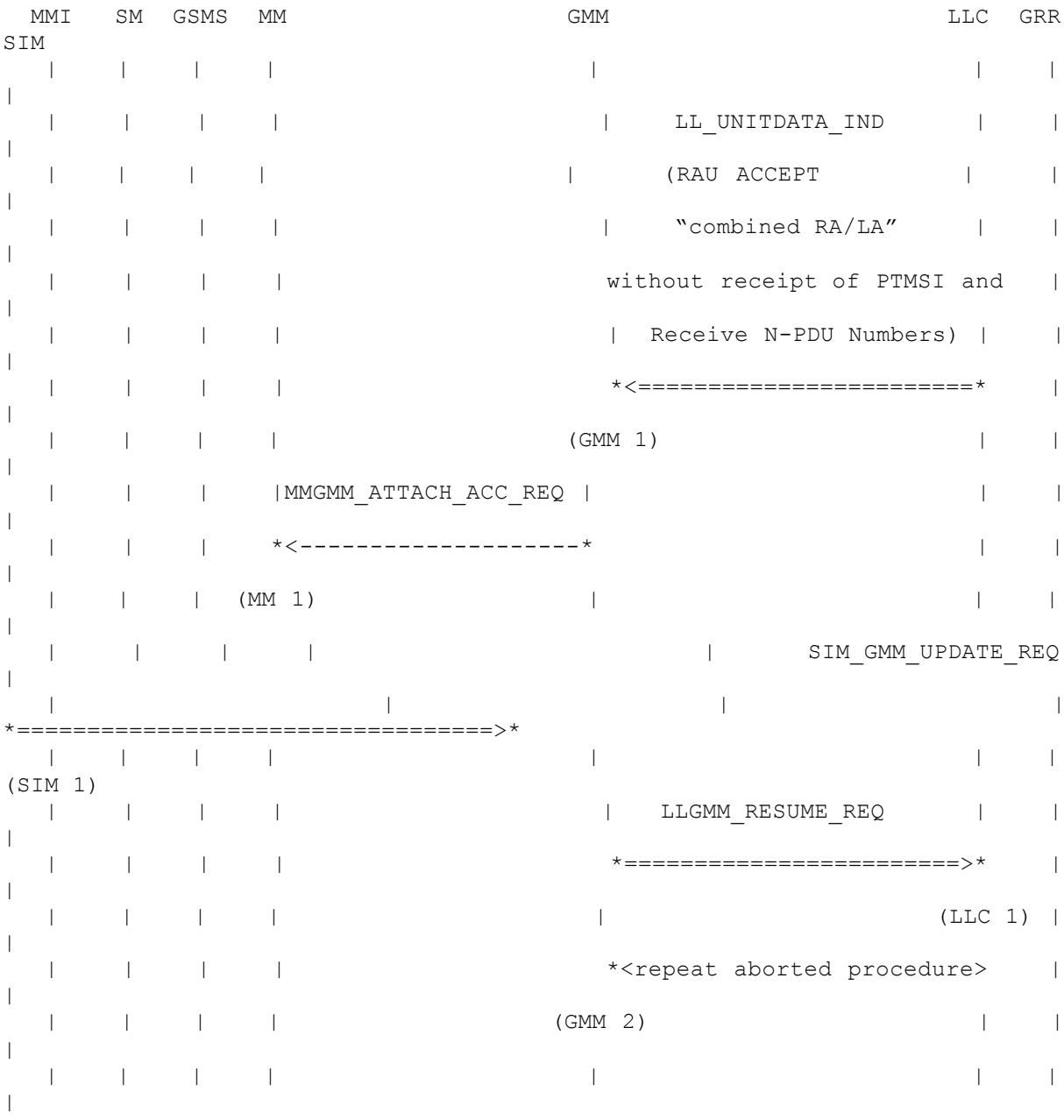
(LLC 2)
User data transmission in LLC is suspended during RAU procedure.

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

4.10.2.2 Combined RAU accepted by the network for GPRS and non-GPRS service

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

4.10.2.2.1 P-TMSI and TMSI and Receive N-PDU Numbers not included



(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.RNACCEPT.M.009>, <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>, <R.GMM.CIPSEQNR.A.016>

(MM 1)
GMM indicates MM, that MM has to enter state MM IDLE and in update state U1 UPDATED. The MS shall stop any timer used for triggering the LAU procedure (e.g. T3211, T3212) if running. MM has to reset the LAU attempt counter.

<R.GMM.RCSUBOTH.A.003>, <R.GMM.RCSUBOTH.M.006>, <R.GMM.RCSUBOTH.M.008>, <R.GMM.RCSUBOTH.M.011>, <R.GMM.RCSUBOTH.M.012>, <R.GMM.RCSUBOTH.M.013>, <R.GMM.RCSUBOTH.M.014>, <R.GMM.RCSUBOTH.M.018>, <R.GMM.RCSUBOTH.M.009>

(SIM 1)
GMM enters update status GU1 UPDATED.

<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>

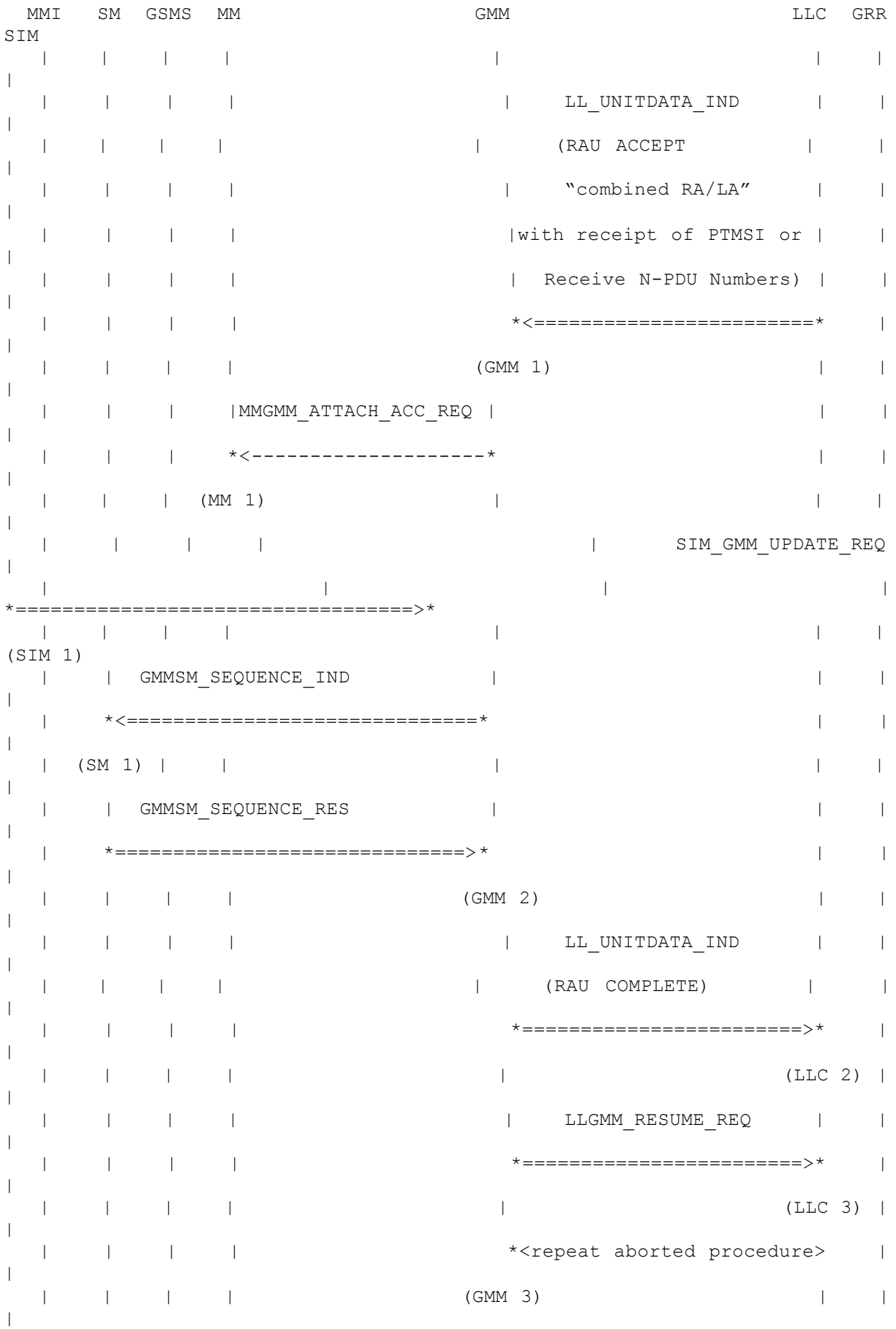
(LLC 1)
User data transmission is resumed in LLC.

<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>

4.10.2.2.2 P-TMSI or TMSI or Receive N-PDU Numbers included


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(RAU ACCEPT
"combined RA/LA"
with receipt of PTMSI or
Receive N-PDU Numbers)
(GMM 1)
MMGMM_ATTACH_ACC_REQ
(MM 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
GMMSM_SEQUENCE_IND
(SM 1)
GMMSM_SEQUENCE_RES
(GMM 2)
LL_UNITDATA_IND
(RAU COMPLETE)
(LLC 2)
LLGMM_RESUME_REQ
(LLC 3)
repeat aborted procedure
(GMM 3)

(GMM 1)
GMM receives a RAU ACCEPT message containing a P-TMSI and/or Receive N-PDU Numbers 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>, <R.GMM.CIPSEQNR.A.016>

(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. The MS shall stop any timer used for triggering the LAU procedure (e.g. T3211, T3212) if running. 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>, <R.GMM.RCSUBOTH.M.018>, <R.GMM.RCSUBOTH.M.009>

(SIM 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>

(SM 1)
GMM requests the current values of the receive N-PDU values.

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

(GMM 2)
SM delivers the current values of the received N-PDU values.

<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.

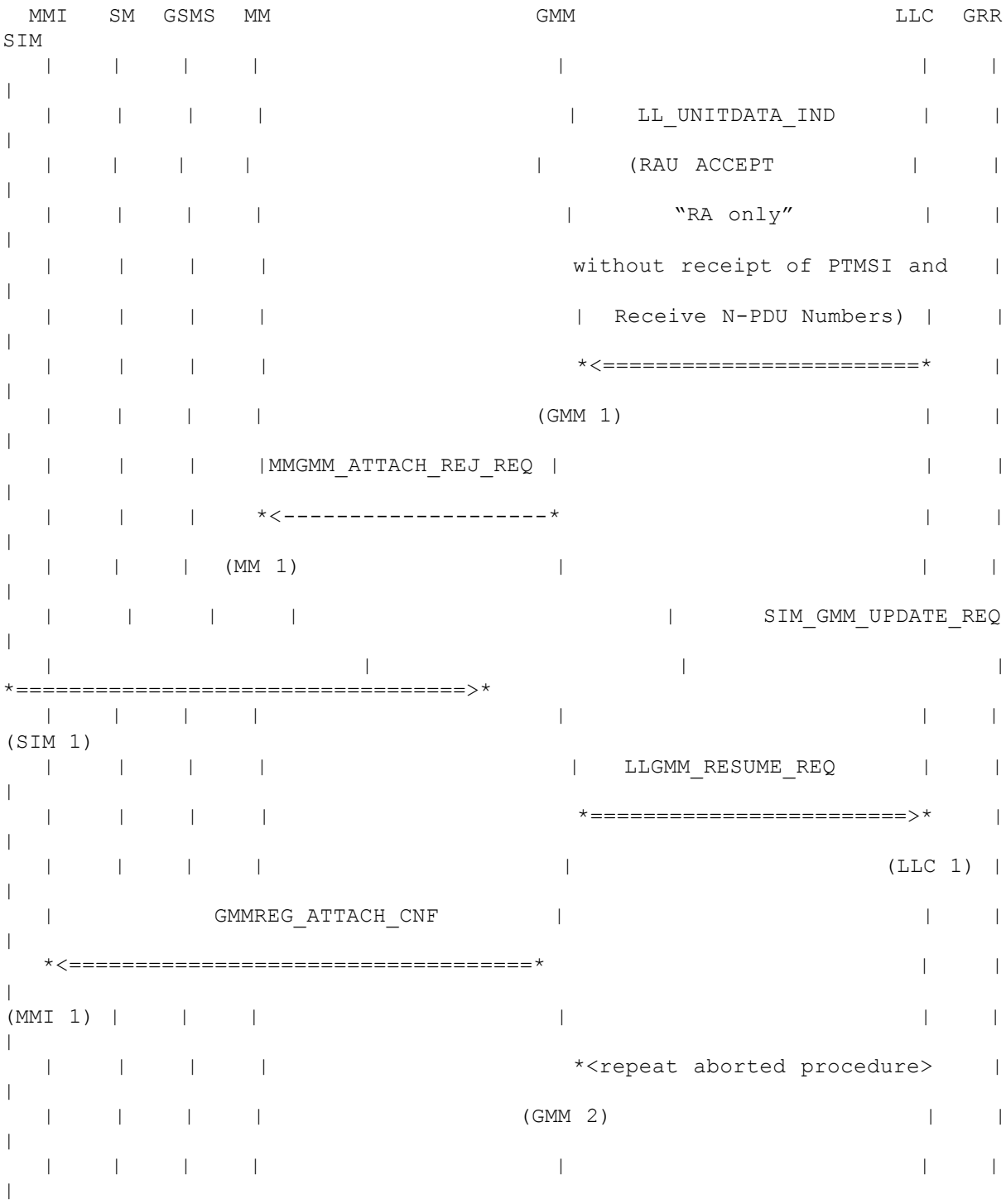
<R.GMM.RAUNORM.M.010>

4.10.2.3 Combined RAU accepted by the network for GPRS service only

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

4.10.2.3.1 P-TMSI and TMSI and Receive N-PDU Numbers not included

4.10.2.3.1.1 Reject cause #2



(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 GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.

<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>, <R.GMM.ORATMUMM.M.001>, <R.GMM. DRATMUMM.M.001>, <R.GMM.CIPSEQNR.A.016>

(MM 1)
The new MM state is MM IDLE. GMM indicates 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.RCSUGPRS.M.002>, <R.GMM.RCSUGPRS.M.003>, <R.GMM.RCSUGPRS.M.004>, <R.GMM.RCSUGPRS.M.005>

(SIM 1)
GMM enters state GU1 UPDATED.

<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>

(MMI 1)
If the PLMN was changed, MMI will be informed.

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

<R.GMM.RAUNORM.M.010>

4.10.2.3.1.2 Reject cause #16, #17, or #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 GMM increments the RAU attempt counter ~~reset~~. GMM enters state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.

<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>,

<R.GMM.RCSUGPRS.M.010>, <R.GMM.RCSUGPRS.M.011>, <R.GMM.RCSUGPRS.M.012>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.CIPSEQNR.A.016>

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

<R.GMM.RAU.M.015>

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

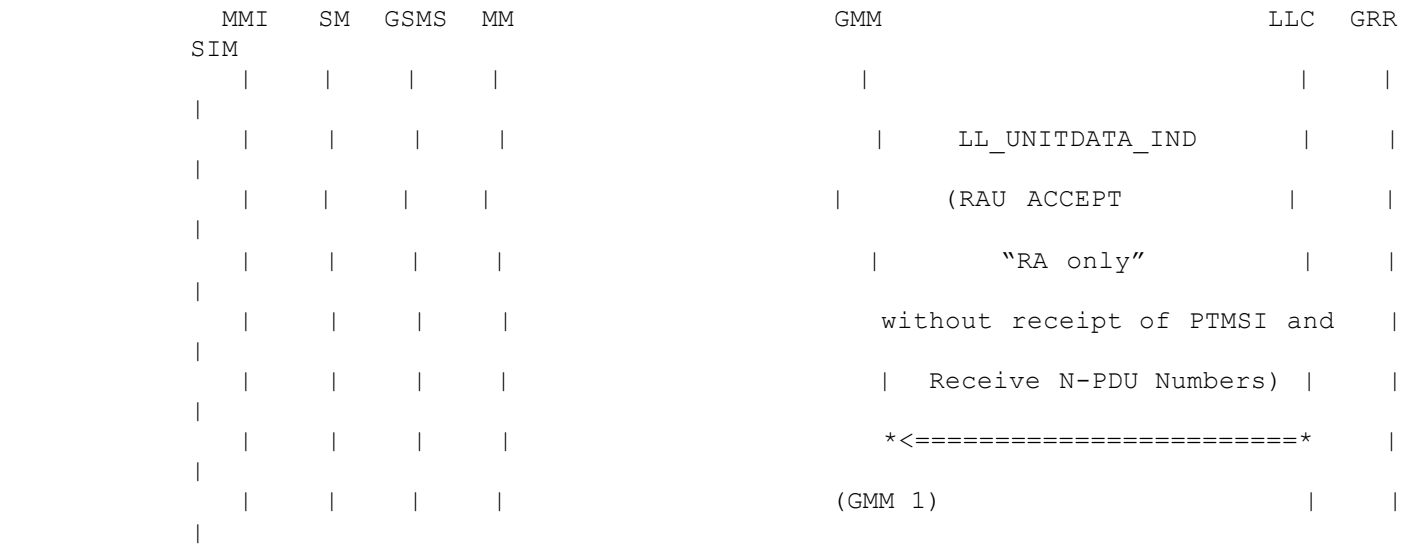
<R.GMM.RCSUGPRS.M.006>, <R.GMM.RCSUGPRS.M.007>

(MMI 1)
If the PLMN was changed, MMI will be informed.

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

<R.GMM.RCINIT.M.009>

4.10.2.3.1.3 Other reject causes



(GMM 1)
Other reject causes than #2, #16, #17, or #22 considered as abnormal. GMM enters state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.

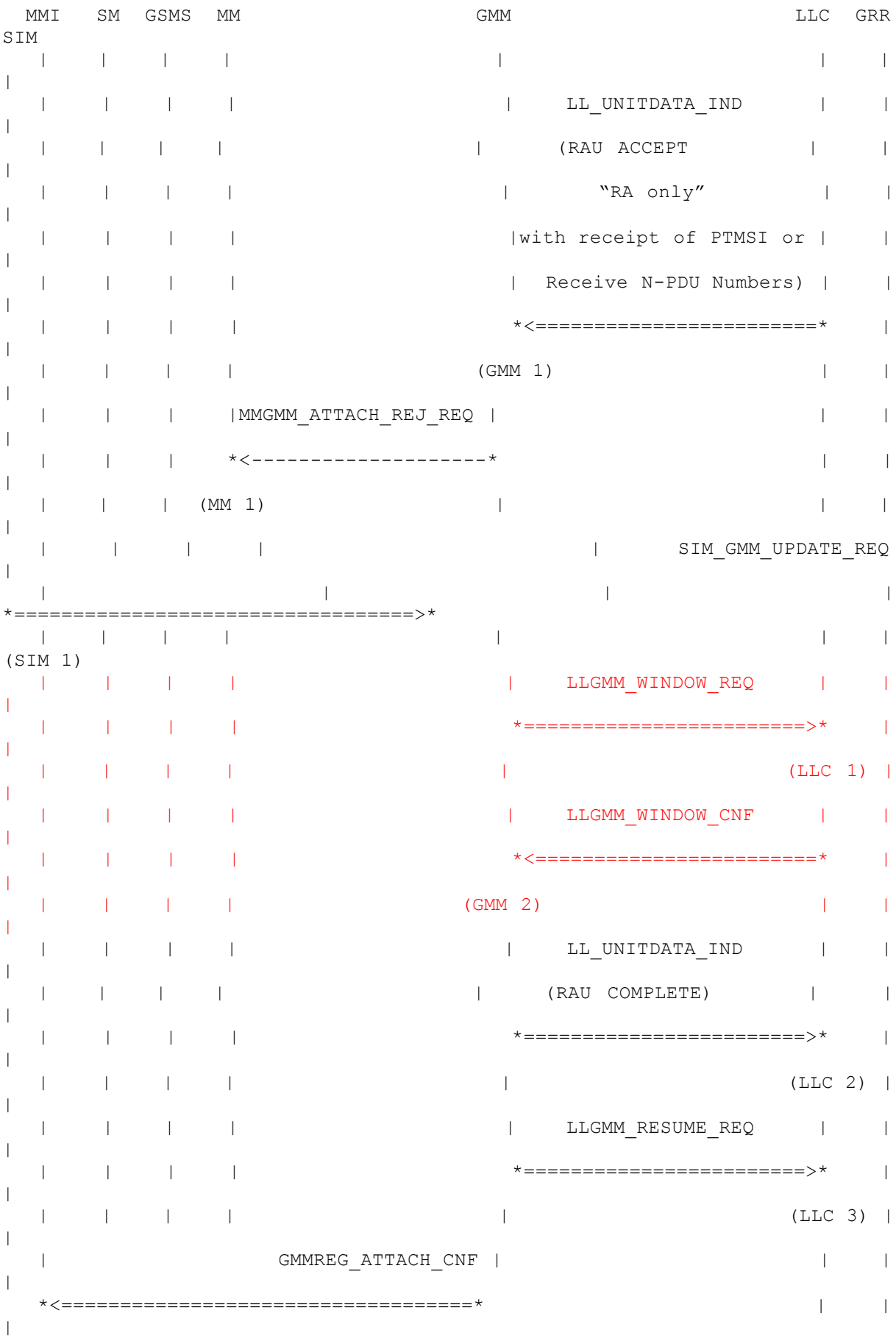
<R.GMM.RCSUGPR.M.008>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.CIPSEQNR.A.016>

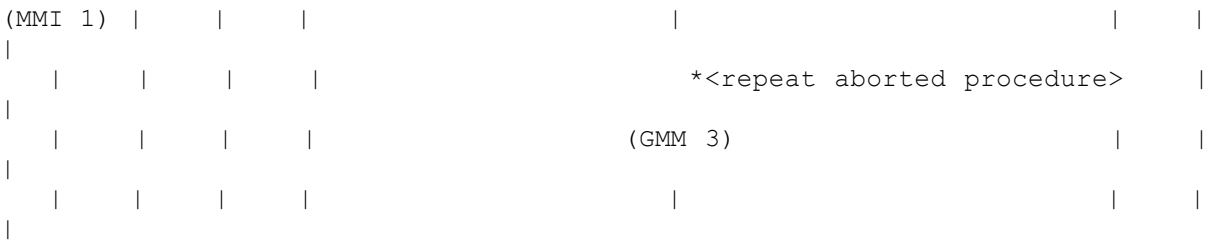
(GMM 2)
The abnormal cases procedure is followed.

<R.GMM.RCSUGPR.M.009>

4.10.2.3.2 P-TMSI or TMSI or Receive N-PDU Numbers included

4.10.2.3.2.1 Reject cause #2


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(RAU ACCEPT
"RA only"
with receipt of PTMSI or
Receive N-PDU Numbers)
(GMM 1)
MMGMM_ATTACH_REJ_REQ
(MM 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
LLGMM_WINDOW_REQ
(LLC 1)
LLGMM_WINDOW_CNF
(GMM 2)
LL_UNITDATA_IND
(RAU COMPLETE)
(LLC 2)
LLGMM_RESUME_REQ
(LLC 3)
GMMREG_ATTACH_CNF



(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". The timer T3330 is stopped and the RAU attempt counter is reset. GMM enters state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.

<R.GMM.RNACCEPT.M.008>, <R.GMM.PTMSISIG.M.002>, <R.GMM.RAU.M.009>, <R.GMM.RCACCEPT.M.002>, <R.GMM.RCSUGPRS.M.001>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.CIPSEQNR.A.016>

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

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

(SIM 1)
GMM enters state GU1 UPDATED.

<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)
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.

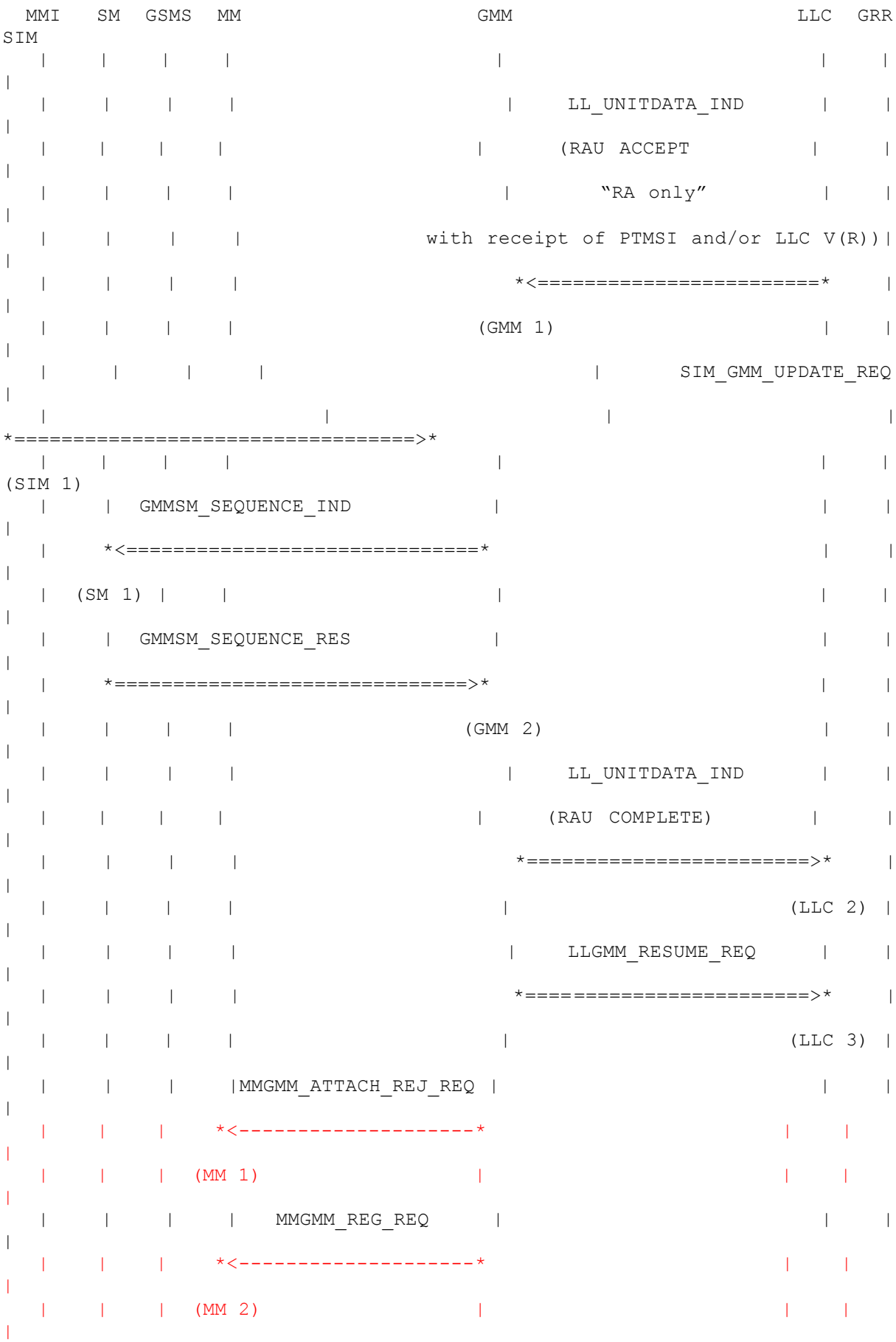
<R.GMM.RAU.M.015>

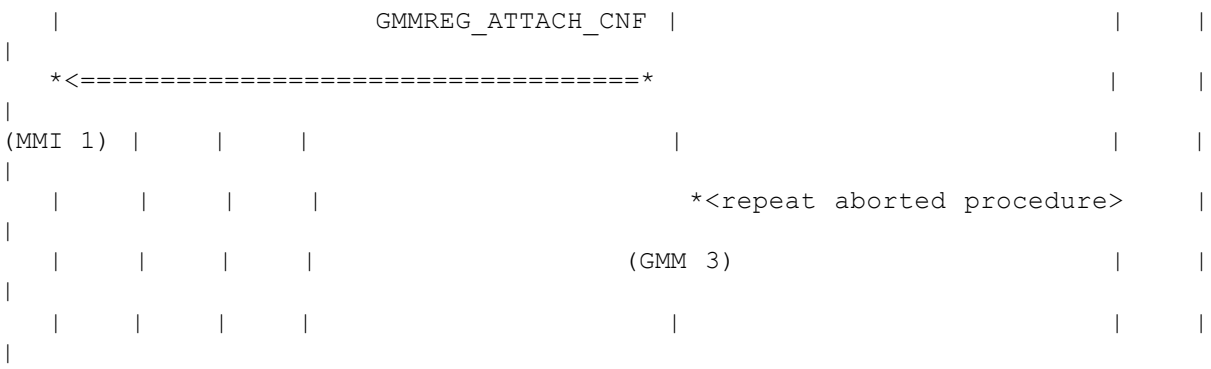
(MMI 1)
If the PLMN was changed, MMI will be informed.

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

<R.GMM.RAUNORM.M.010>

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


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(RAU ACCEPT
"RA only"
with receipt of PTMSI and/or LLC V(R))
(GMM 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
GMMSM_SEQUENCE_IND
(SM 1)
GMMSM_SEQUENCE_RES
(GMM 2)
LL_UNITDATA_IND
(RAU COMPLETE)
(LLC 2)
LLGMM_RESUME_REQ
(LLC 3)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MMGMM_REG_REQ
(MM 2)



(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 is reset. GMM enters state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.

<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. ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.CIPSEQNR.A.016>

(SIM 1)
GMM enters state GU1 UPDATED.

<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>

(SM 1)
GMM requests the current values of the receive N-PDU values.

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

(GMM 2)
SM delivers the current values of the received N-PDU values.

<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>

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

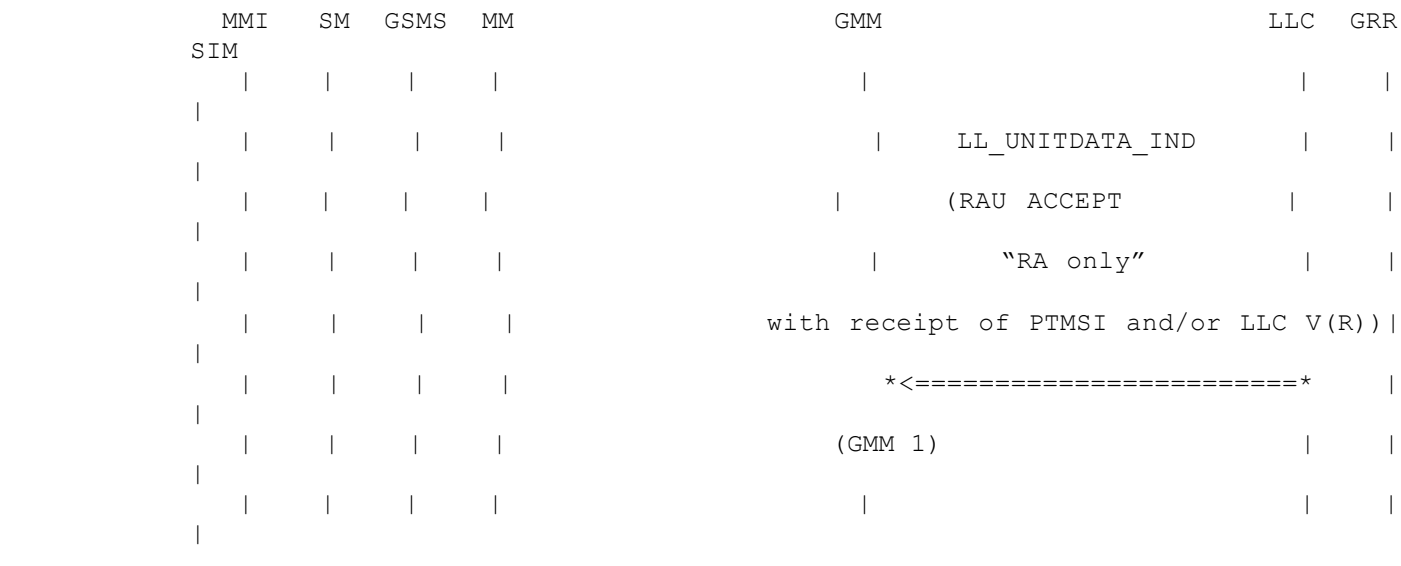
<R.GMM.RCSUGPRS.M.006>, <R.GMM.RCSUGPRS.M.007>

(MMI 1)
If the PLMN was changed, MMI will be informed.

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

<R.GMM.RAUNORM.M.010>

4.10.2.3.2.3 Other reject causes



(GMM 1)
Other reject causes than #2, #16, #17, or #22 considered as abnormal. GMM enters state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.

<R.GMM.RCSUGPR.M.008>, <R.GMM.ORATMUMM.M.001>, <R.GMM.DRATMUMM.M.001>, <R.GMM.CIPSEQNR.A.016>

(GMM 2)
The abnormal cases procedure is followed.

<R.GMM.RCSUGPR.M.009>

4.10.2.3.3 RAU attempt procedure on recejct cause #16, #17, or #22

This procedure is equivalent to the RAU attempt procedure on reject cause #16, #17, or #20 in chapter "TH.M.016>, <R.GMM.ACSUBOTH.M.009>

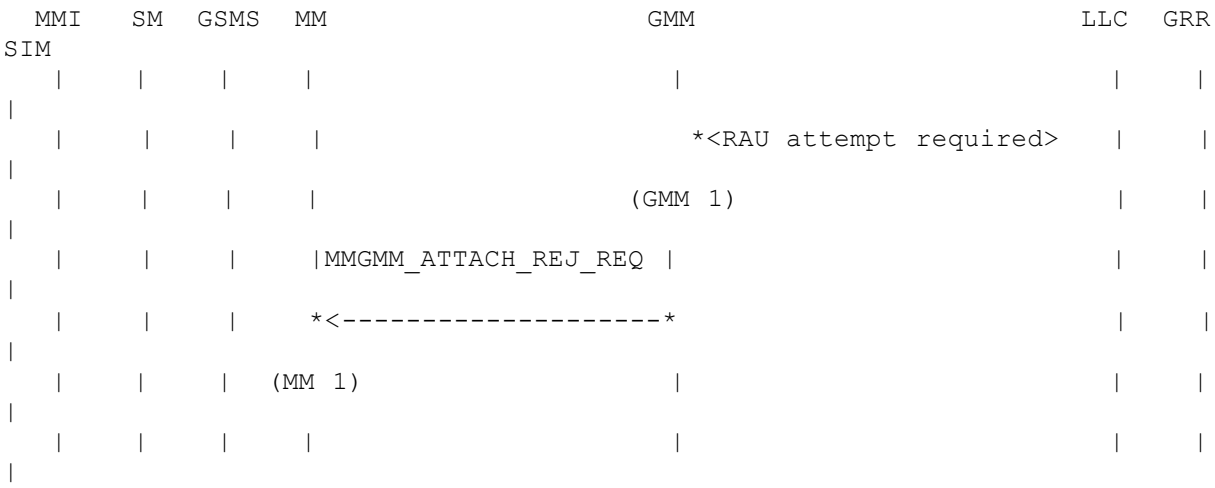
Combined GPRS attach accepted by the network for GPRS services only" (**Error! Reference source not found.**) except of stopping of either timer T3330 or T3310!

4.10.2.3.3.1 RAU attempt counter less than 5

(GMM 1)
The stored RAI is equal to the RAI in the current serving cell, or 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.ATTEMPTING-TO-UPDATE-MM on reject cause #16, #17, or #22.

<R.GMM.RCSUGPRS.M.013>, <R.GMM.RCSUGPRS.M.014>, <R.GMM.RCSUGPRS.M.015>

4.10.2.3.3.2 RAU 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-MM on reject cause #16, #17, or #22.

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

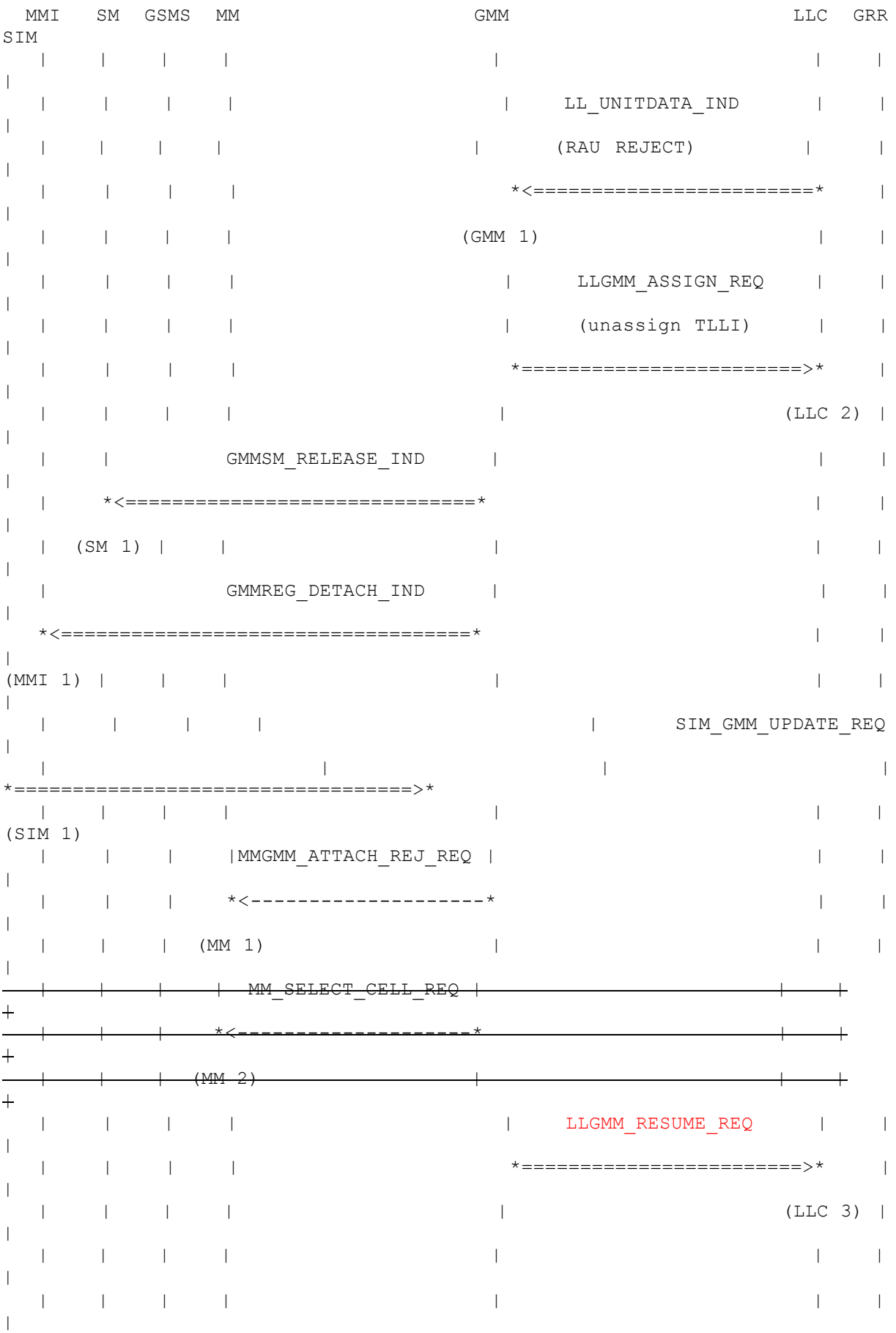
(MM 1)
MM proceed with appropriate MM specific procedure on reject cause #16, #17, or #22. MM enters state IDLE.

<R.GMM.RCSUGPRS.M.006>, <R.GMM.RCSUGPRS.M.007>, <R.GMM.RCSUGPRS.M.019>, <R.GMM.RCSUGPRS.M.020>

4.10.2.4 Combined RAU not accepted by the network

See also chapter 4.17.6 READY timer behaviour and chapter 4.17.7 Force to standby IE!

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


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(RAU REJECT)
(GMM 1)
LLGMM_ASSIGN_REQ
(unassign TLLI)
(LLC 2)
GMMSM_RELEASE_IND
(SM 1)
GMMREG_DETACH_IND
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MM_SELECT_CELL_REQ
(MM 2)
LLGMM_RESUME_REQ
(LLC 3)

(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>

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

<R.GMM.RCREJECT.M.006>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

<R.GMM.RCREJECT.M.006>, <R.GMM.PDETIND.M.002>

(SIM 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.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>

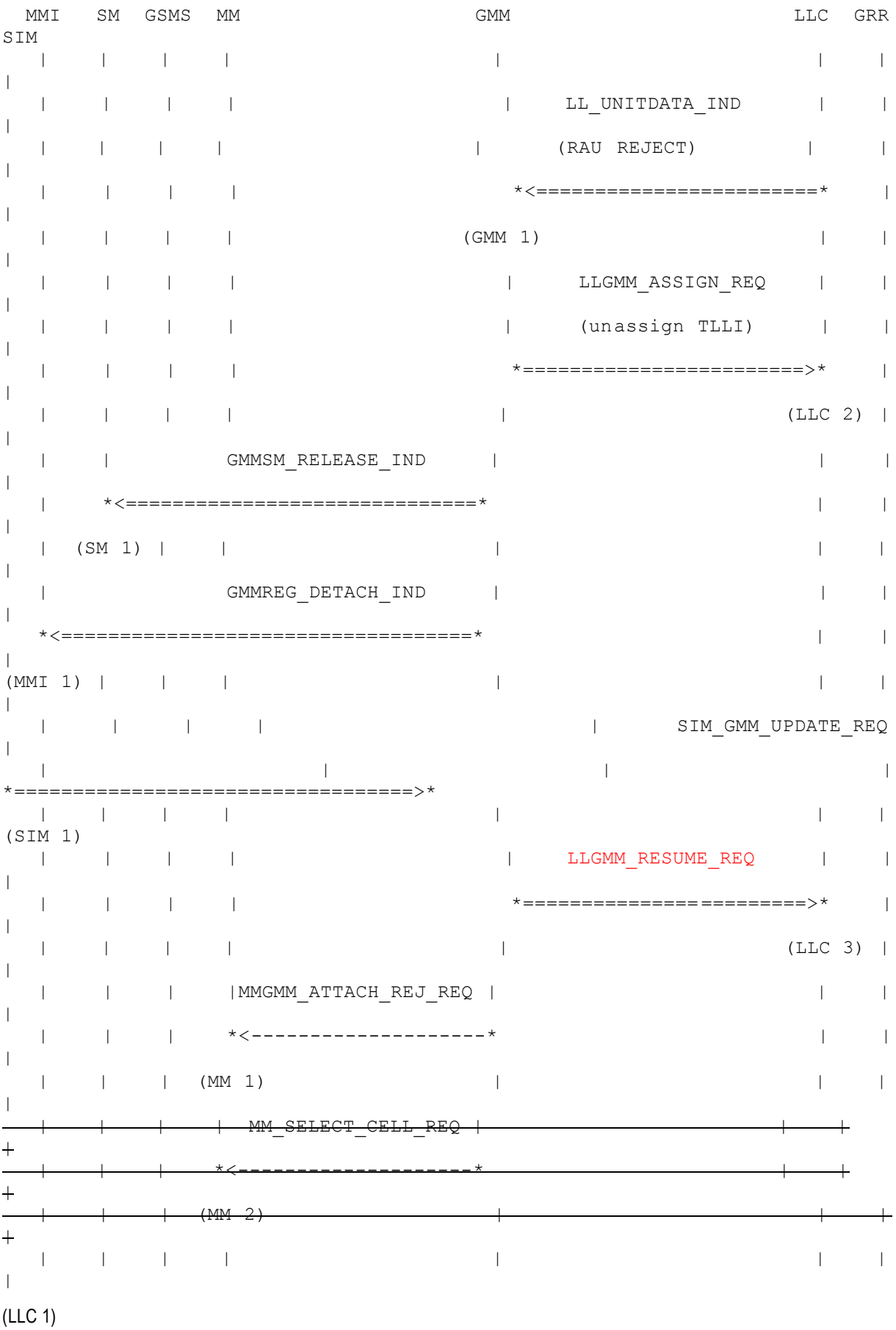
~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

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

<R.GMM.RAU.M.015>

4.10.2.4.2 Reject cause #7


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(RAU REJECT)
(GMM 1)
LLGMM_ASSIGN_REQ
(unassign TLLI)
(LLC 2)
GMMSM_RELEASE_IND
(SM 1)
GMMREG_DETACH_IND
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
LLGMM_RESUME_REQ
(LLC 3)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MM_SELECT_CELL_REQ
(MM 2)
(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>

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

<R.GMM.RCREJECT.M.012>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

<R.GMM.RCREJECT.M.012>, <R.GMM.PDETIND.M.002>

(SIM 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>

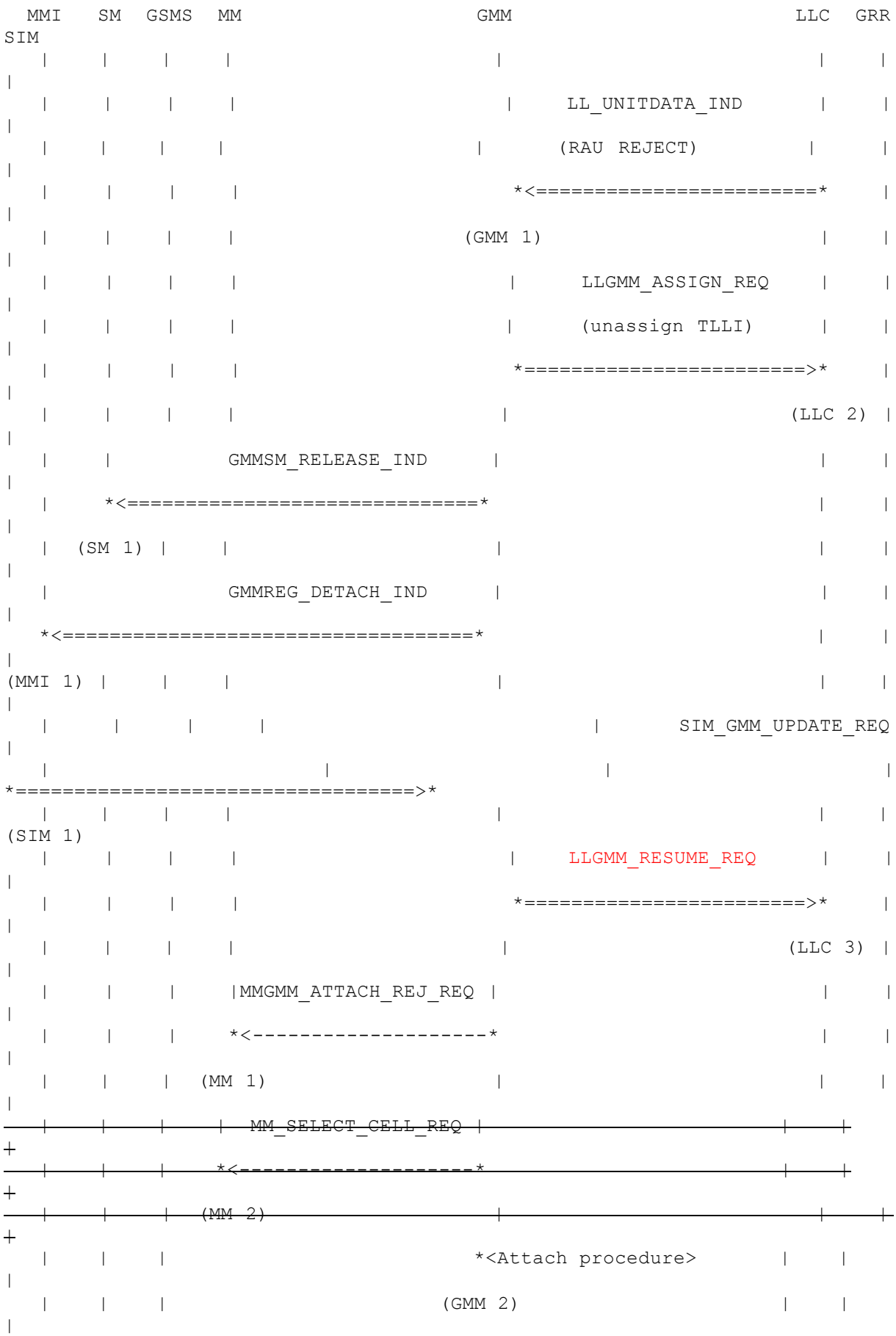
~~(MM 1)~~
~~MM enters state MM IDLE.~~

~~<R.GMM.RCREJECT.M.003>~~

(MM 2)
MM has to trigger the cell selection procedure.

<R.GMM.DSUBFANO.M.001>

4.10.2.4.3 Reject cause #9


MMI
SM
GSMS
MM
GMM
LLC
GRR
SIM
LL_UNITDATA_IND
(RAU REJECT)
(GMM 1)
LLGMM_ASSIGN_REQ
(unassign TLLI)
(LLC 2)
GMMSM_RELEASE_IND
(SM 1)
GMMREG_DETACH_IND
(MMI 1)
SIM_GMM_UPDATE_REQ
(SIM 1)
LLGMM_RESUME_REQ
(LLC 3)
MMGMM_ATTACH_REJ_REQ
(MM 1)
MM_SELECT_CELL_REQ
(MM 2)
Attach procedure
(GMM 2)

(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.RCREJECT.M.002>, <R.GMM.RCREJECT.M.014>

(LLC 1)
GMM informs LLC, 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>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

<R.GMM.RCREJECT.M.014>, <R.GMM.PDETIND.M.002>

(SIM 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>

(MM 1)
MM enters state MM IDLE.

<R.GMM.RCREJECT.M.003>

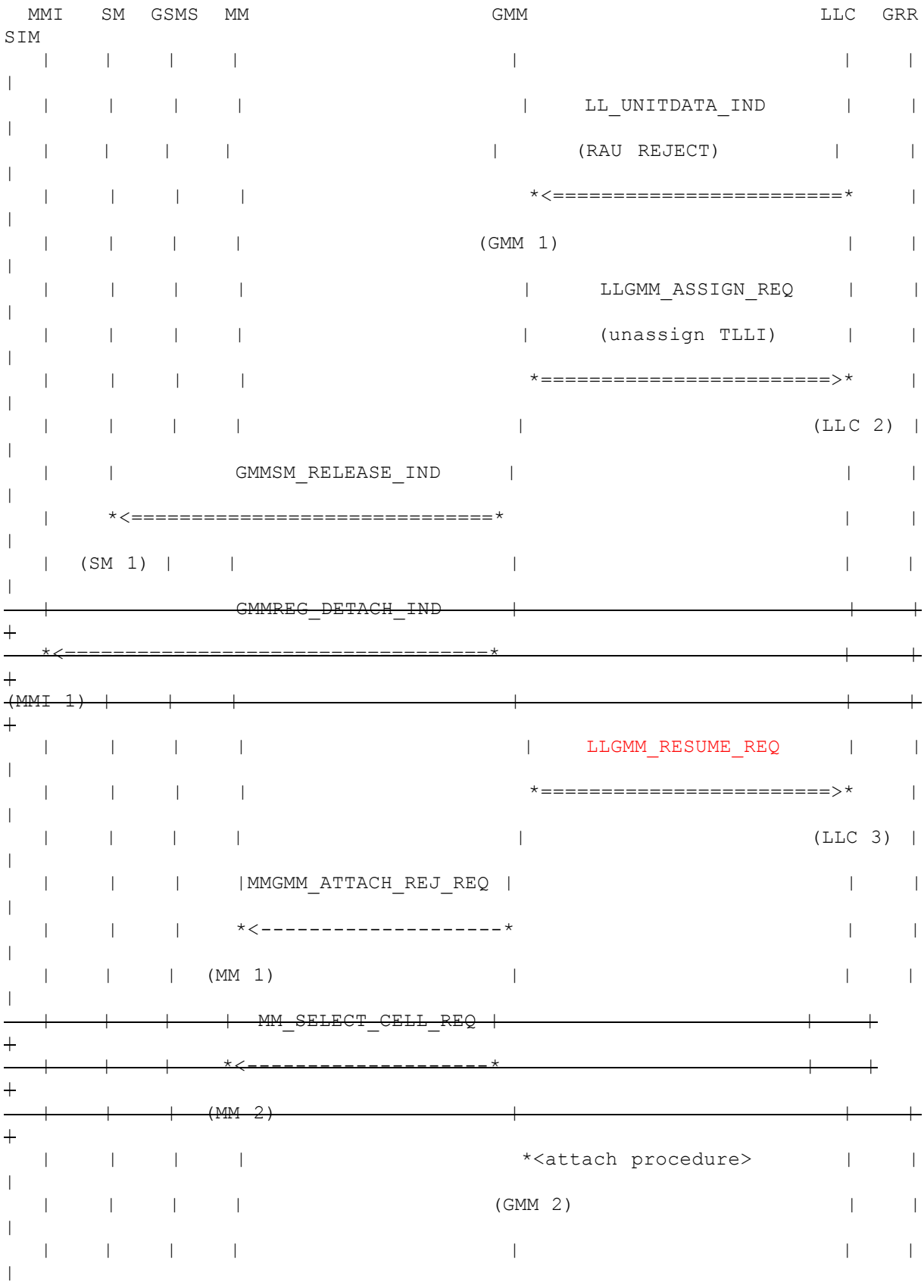
~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

(GMM 2)
The Attach procedure is reinitilized.

<R.GMM.RCREJECT.M.026>

4.10.2.4.4 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.RCREJECT.M.002>, <R.GMM.RCREJECT.M.030>

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

<R.GMM.RCREJECT.M.030>

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

<R.GMM.RCREJECT.M.030>, <R.GMM.RCREJECT.M.032>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

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

<R.GMM.RCREJECT.M.030>, <R.GMM.PDETIND.M.002>

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

<R.GMM.RAU.M.015>

(MM 1)
MM enters state MM IDLE.

<R.GMM.RCREJECT.M.003>

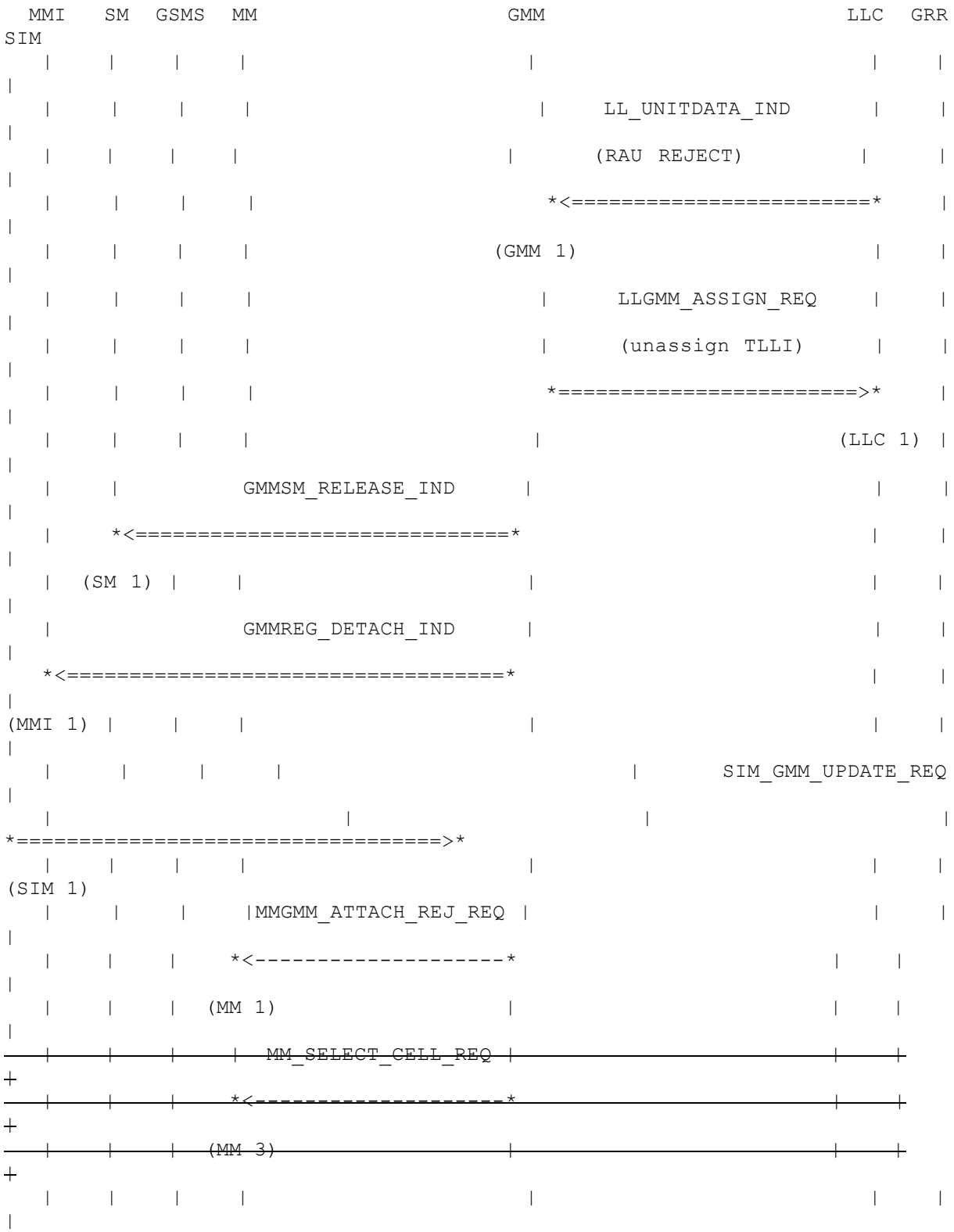
~~(MM 2)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

(GMM 2)
GMM perform a new attach procedure.

<R.GMM.RCREJECT.M.031>

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



(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>
(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.RCREJECT.M.019>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>
(MMI 1)
GMM informs MMI, that GMM context is released.
<R.GMM.RCREJECT.M.019>, <R.GMM.PDETIND.M.002>
(SIM 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. LA , PLMN, or Roaming are not allowed. MM has to select a new cell. On error cause #11 and #13: The MS shall perform a PLMN selection instead of a cell selection.
<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>, <R.GMM.RCREJECT.M.024>, <R.GMM.RCREJECT.M.026>, <R.GMM.RCREJECT.M.027>, <R.GMM.RCREJECT.M.025>, <R.GMM.RCREJECT.M.028>

~~(MM 3)~~
~~MM has to trigger the cell selection procedure.~~
~~<R.GMM.DSUBFANO.M.001>~~

4.10.2.5 Abnormal cases

See section 4.10.1.4. in chapter "Normal and periodic RAU procedure"

4.10.2.6 RAU attempt procedure

See sections **Error! Reference source not found.** in chapter "Combined GPRS attach procedure for GPRS and non-GPRS services" and 4.10.1.5 in chapter "Normal and periodic RAU procedure"

4.10.2.6.1 RAU attempt counter less than 5

(GMM 1)
The stored RAI is equal to the RAI in the current serving cell, or 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>, <R.GMM.RCABNORM.M.008>

(MM 1)

The new MM state shall be MM-IDLE.NORMAL SERVICE.

<R.GMM.RCABNORM.M.011>, <R.GMM.RCABNORM.M.010>

4.10.2.6.2 RAU attempt counter greater than or equal to 5 or RA chanched or update state is not GU1

(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.019>, <R.GMM.RNABNORM.M.020>, <R.GMM.RNABNORM.M.027>, <R.GMM.RNABNORM.M.028>

NOTE:
Optionally: GMM could state GMM-DEREGISTERED.PLMN-SERCH. This is not implemented!

<R.GMM.RNABNORM.M.031>

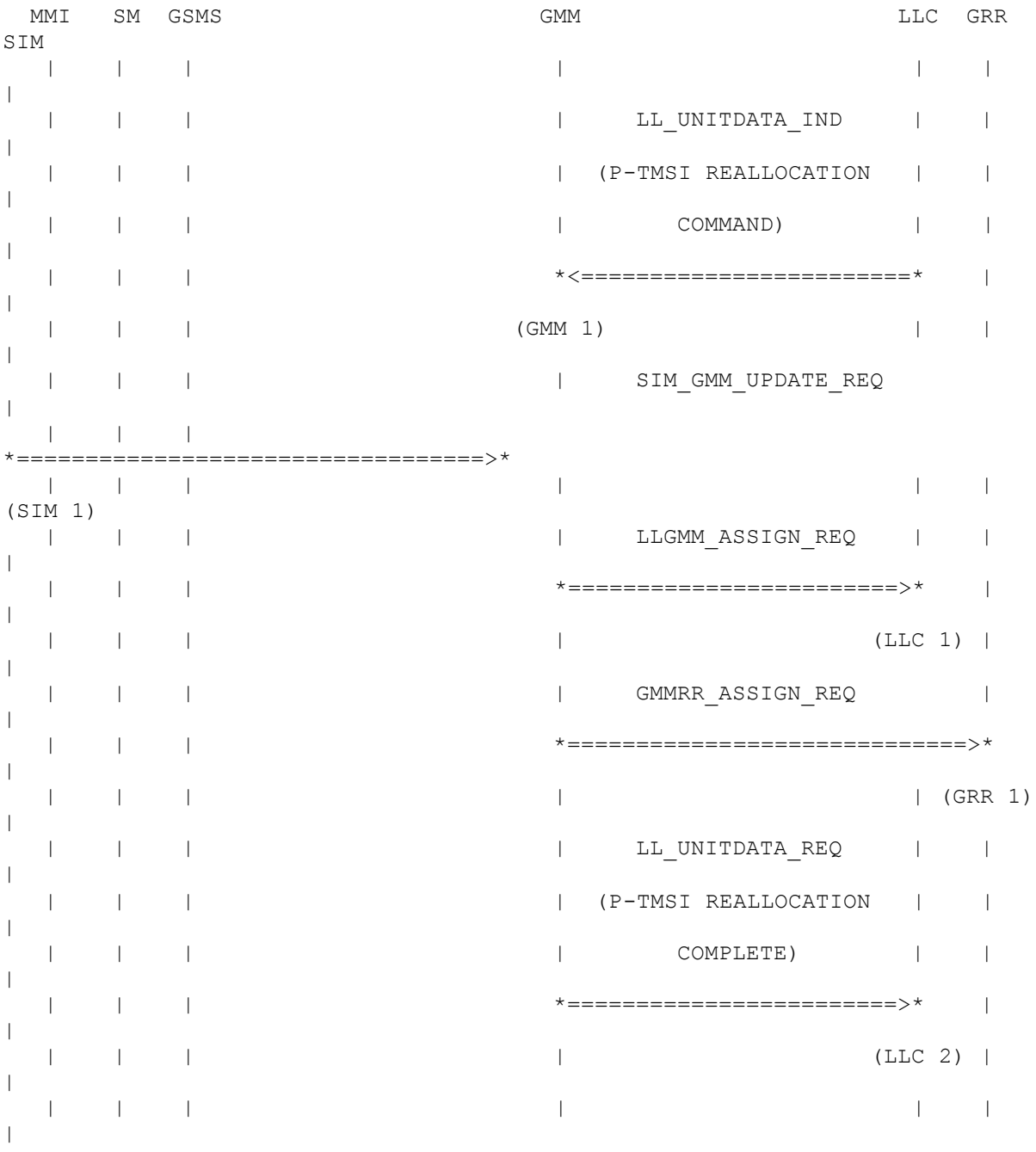
(MM 1)
The MS shall delete any LAI, TMSI, and CKSN stored in the SIM. The MS shall set the update status to U2 NOT UPDATED. The new MM state shall be MM-IDLE.ATTEMPTING-TO-UPDATE.

<R.GMM.RCABNORM.M.005>, <R.GMM.RCABNORM.M.006>, <R.GMM.RCABNORM.M.009>

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

<R.GMM.RNABNORM.M.030>

4.11 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>, <R.GMM.PTMSIHND.M.001>, <R.GMM.PTMSIHND.M.002>, <R.GMM.PTMSIHND.M.003>

(SIM 1)
GMM enters update state GU1 UPDATED.

<R.GMM.REACMPLM.M.001>

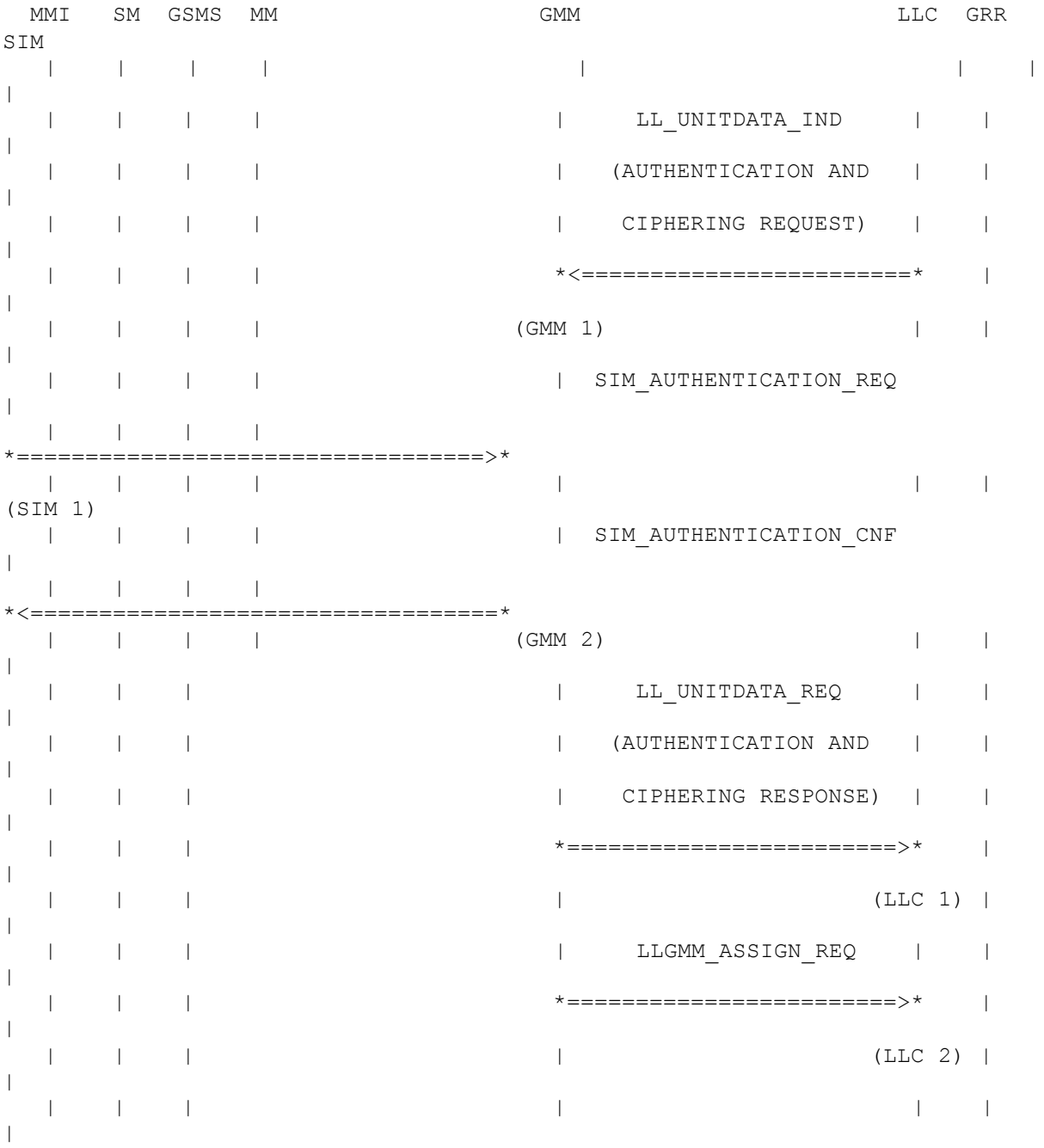
(LLC 1)
GMM assigns the TLLI to LLC with the primitive LLGMM_ASSIGN_REQ.
<R.GMM.REACMPLM.M.001>

(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>

4.12 Authentication and ciphering procedure

4.12.1 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>, <R.GMM.AUTHCIPH.M.004>, <R.GMM.AUTHCIPH.M.005>, <R.GMM.CIPSEQNR.A.014>, <R.GMM.CIPSEQNR.A.016>

(SIM 1/2)
MM is responsible for the authentication procedure between MM and SIM.

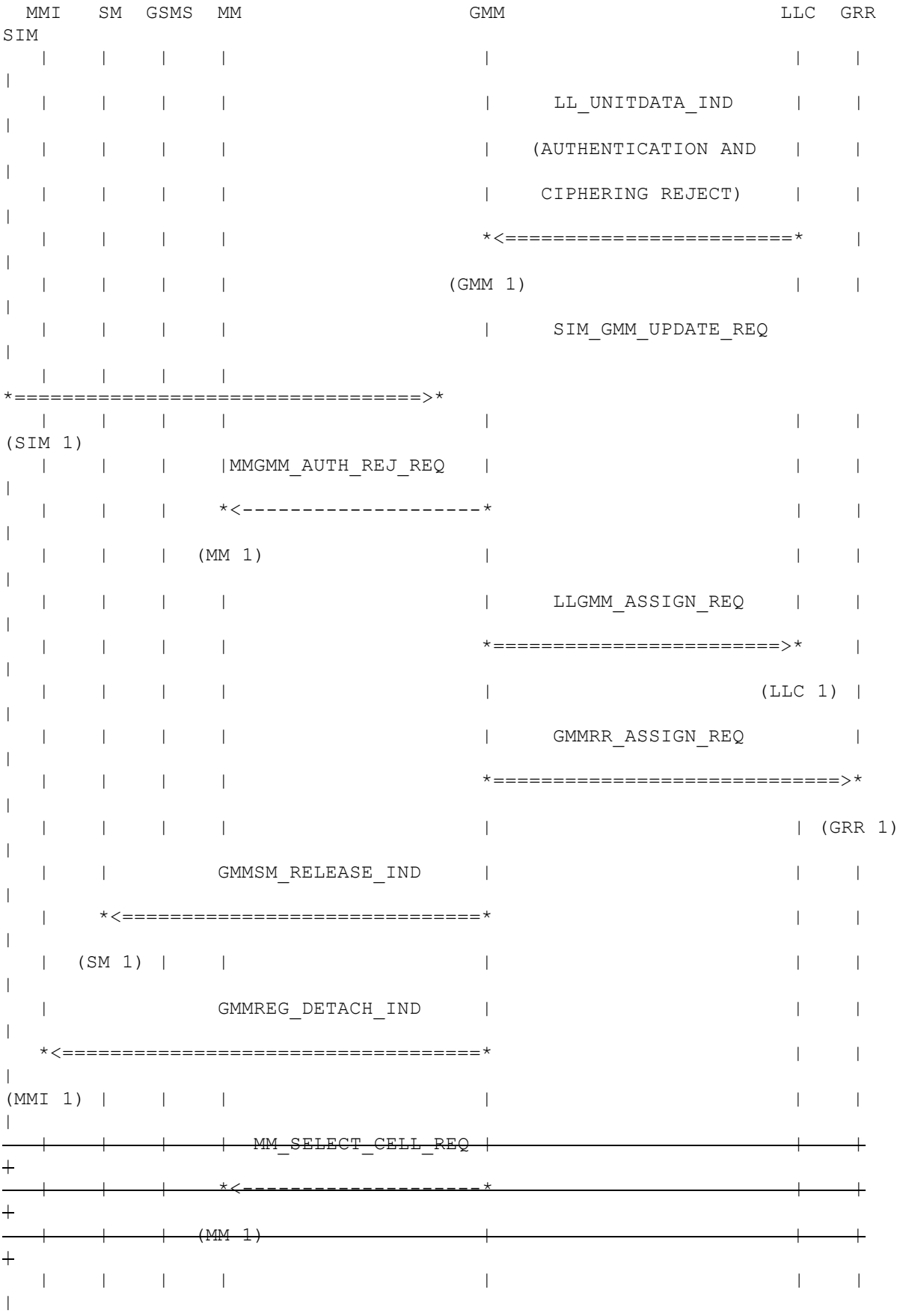
(SIM 3)
GMM stores the new GPRS ciphering key and the GPRS ciphering key sequence number on the SIM.

<R.GMM.AUTHRES.M.003>, <R.GMM.AUTHRES.M.004>, <R.GMM.CIPSEQNR.M.004>, <R.GMM.CIPSEQNR.M.007>

(LLC 1)
GMM transmits the AUTHENTICATION AND CIPHERING RESPONSE with the LL_UNITDATA_REQ primitive.
<R.GMM.AUTHRES.M.005>, <R.GMM.AUTHRES.M.007>

(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>, <R.GMM.CIPSEQNR.M.011>

4.12.2 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>

(SIM 1)
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.AUTHREJ.M.005>, <R.GMM.AUTHREJ.M.006>, <R.GMM.UPDTGU3.M.001>, <R.GMM.UPDTGU3.M.002>, <R.GMM.UPDTGU3.M.003>

(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>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

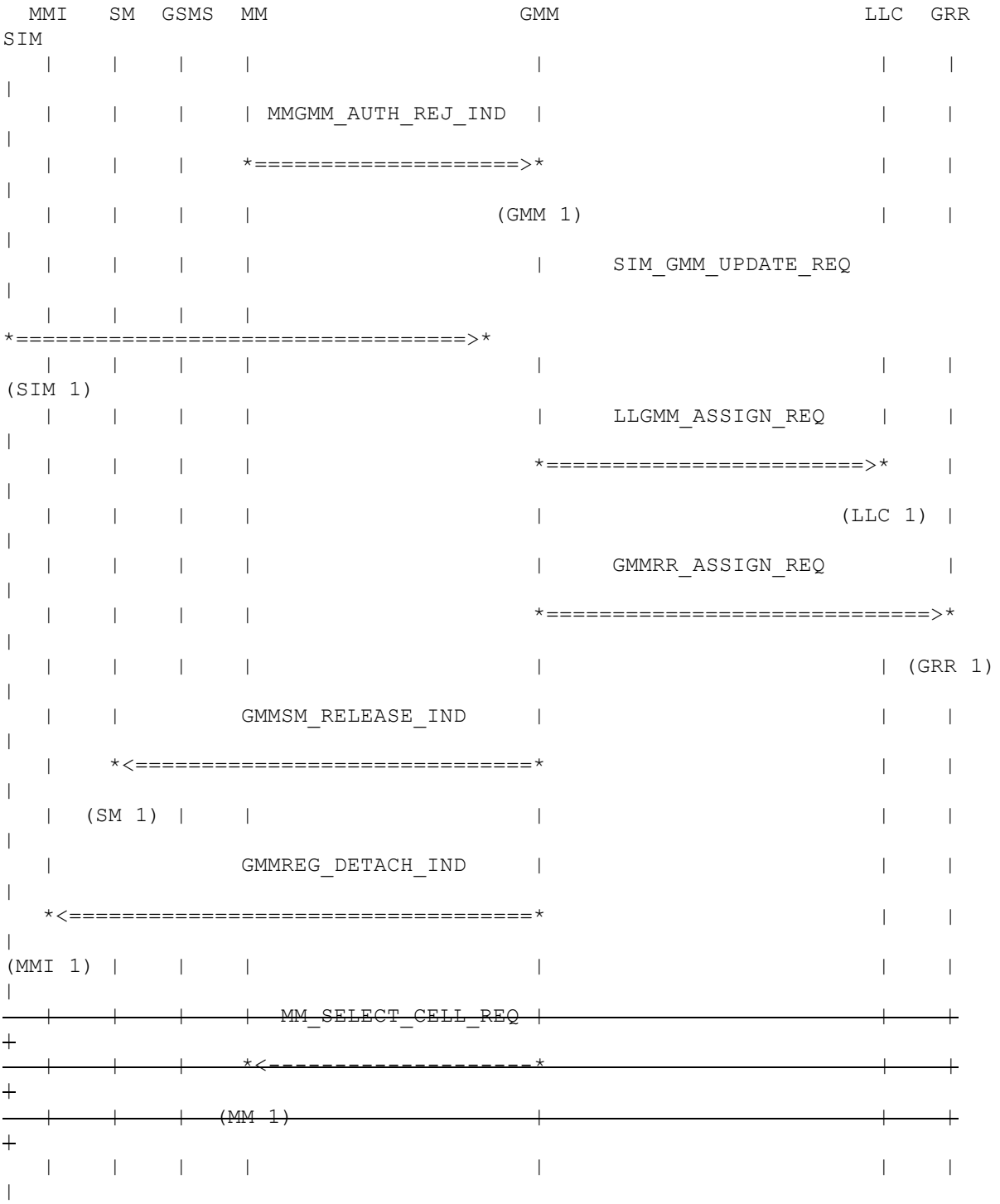
(MMI 1)
GMM informs MMI, that the GMM context is released.

<R.GMM.AUTHREJ.M.012>, <R.GMM.PDETIND.M.002>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~

~~<R.GMM.DSUBFANO.M.001>~~

4.12.3 Unsuccessful authentication and ciphering by MM



(GMM 1)
MM received the AUTHENTICATION REJECT message. GMM aborts any GMM procedure. GMM stops timers T3310 and T3330. GMM enters state GMM-DEREGISTERED.NO-IMSI.

<R.GMM.MMONE.M.005>, <R.GMM.MMTWO.M.003>, <R.GMM.MMTWO.M.008>, <R.GMM.MMTWO.M.006>

(SIM 1)
GMM enters GPRS update status GU3 ROAMING NOT ALLOWED.

<R.GMM.MMONE.M.005>, <R.GMM.MMONE.M.006>, <R.GMM.MMONE.M.007>, <R.GMM.MMTWO.M.003>, <R.GMM.MMTWO.M.004>, <R.GMM.MMTWO.M.005>, <R.GMM.UPDTGU3.M.001>, <R.GMM.UPDTGU3.M.002>, <R.GMM.UPDTGU3.M.003>

(LLC 1)
GMM deletes the TLLI in LLC with the primitive LLGMM_ASSIGN_REQ. LLC enters state 'TLLI Unassigned'.
<R.GMM.AUTHREJ.M.006>

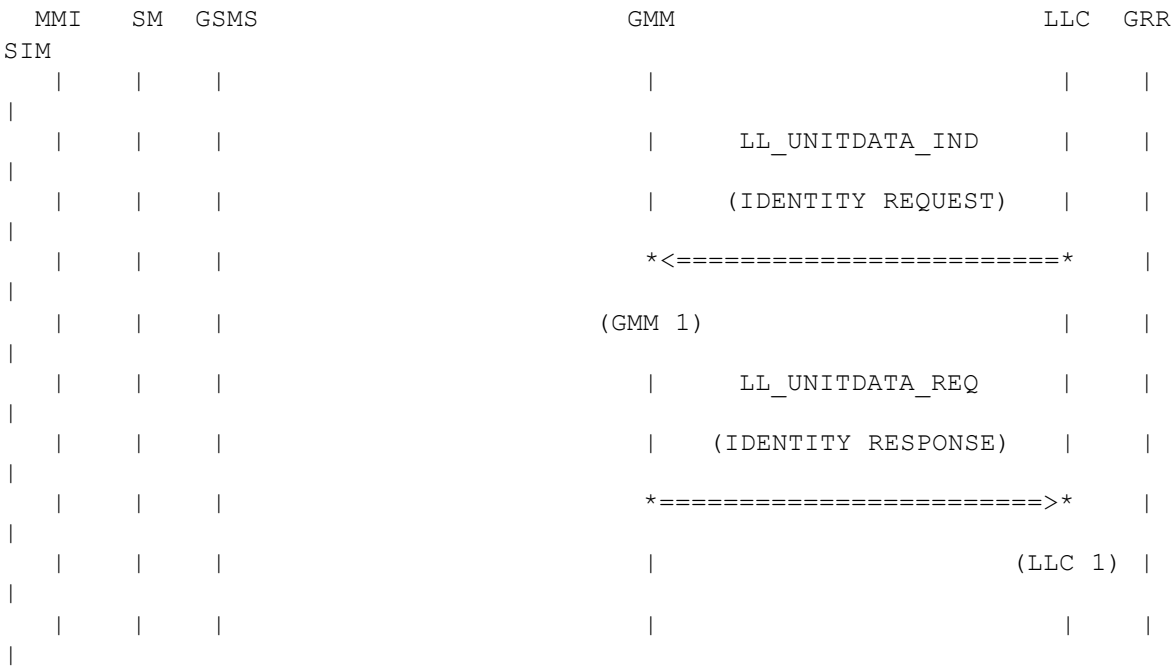
(GRR 1)
GMM deletes the TLLI in GRR with the primitive GMMRR_ASSIGN_REQ.
<R.GMM.AUTHREJ.M.006>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.AUTHREJ.M.012>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>

(MMI 1)
GMM informs MMI, that the GMM context is released.
<R.GMM.AUTHREJ.M.012>, <R.GMM.PDETIND.M.002>

~~(MM 1)~~
~~MM has to trigger the cell selection procedure.~~
~~<R.GMM.DSUBFANO.M.001>~~

4.13 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>

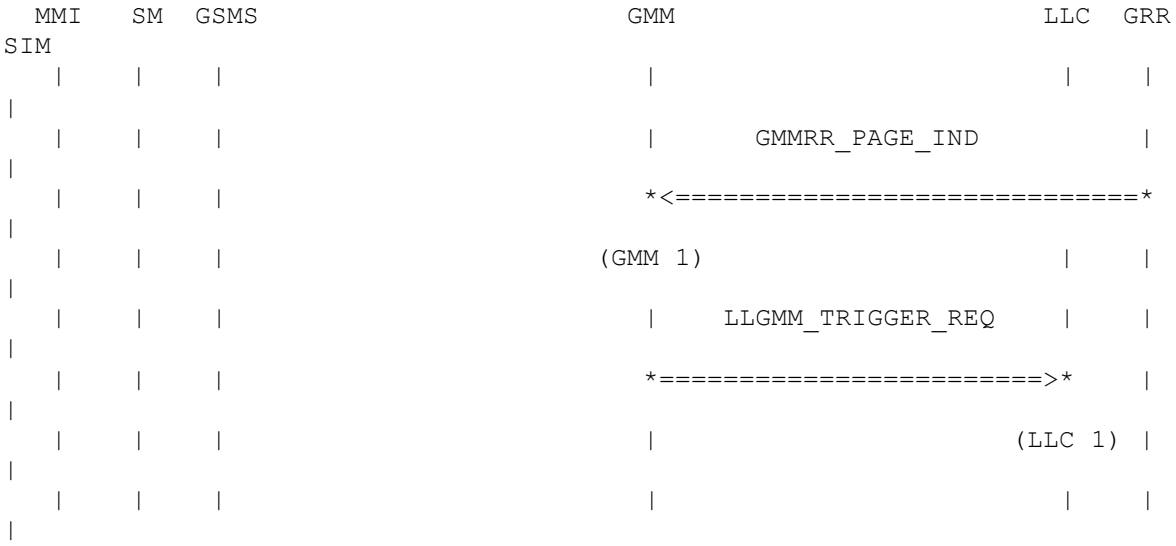
4.14 Paging procedure for GPRS services

4.14.1 State GMM-DEREGISTERED

(GMM 1)
The MS is not GPRS attached. The paging message is ignored. No further action sare taken.
<R.GMM.PAGNGPRS.M.17>

4.14.2 State GMM-REGISTERED

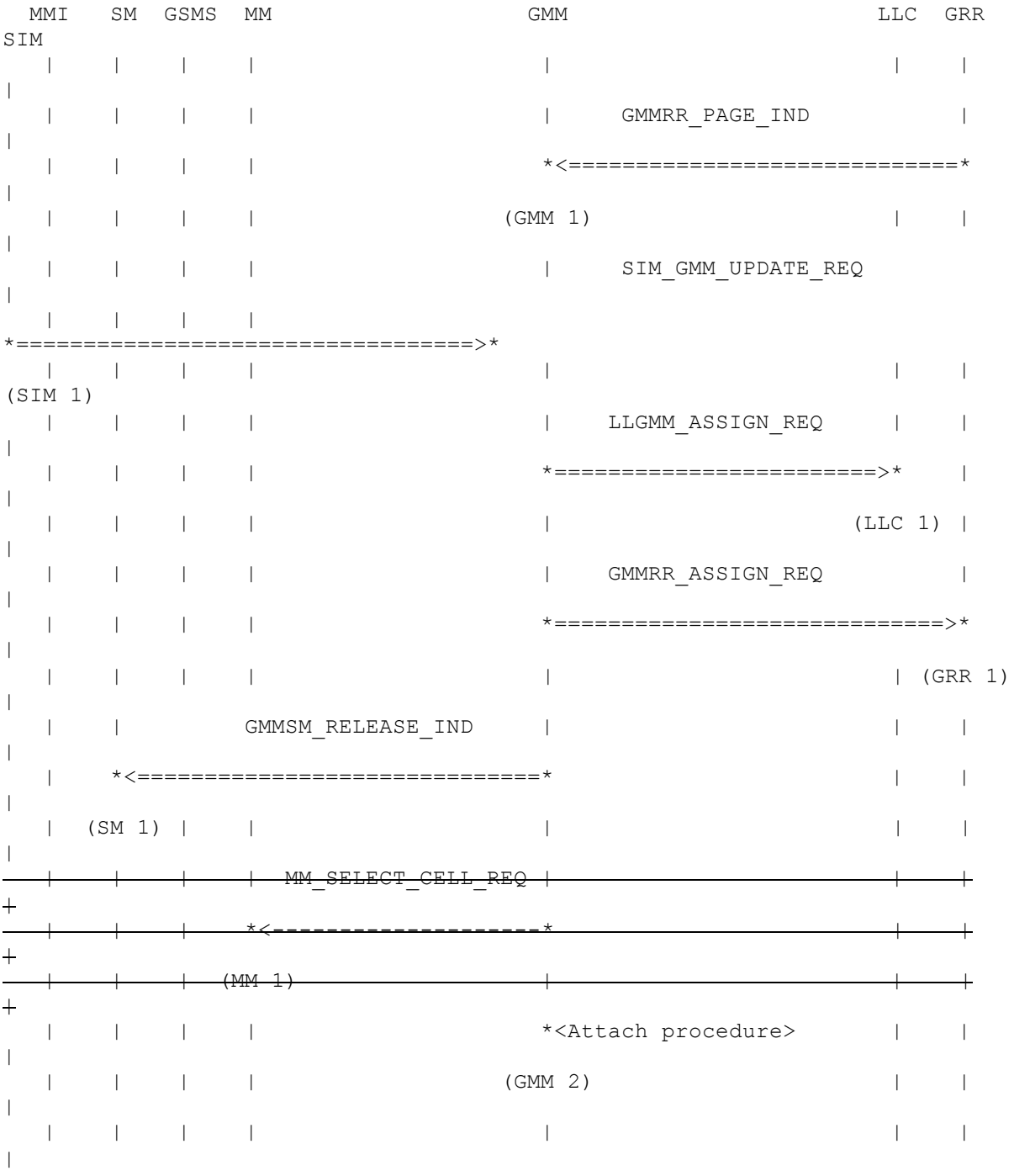
4.14.2.1 Paging with the P-TMSI



(GMM 1)
GMM is in state GMM-REGISTERED.any-state. GMM receives the primitive GMMRR_PAGE_IND (Page ID = 'P-TMSI') from GRR.
<.R.GMM.PAGNGPRS.A.001>, <.R.GMM.PGPPTMSI.M.005>, <.R.GMM.PGPPTMSI.M.006>

(LLC 1)
GMM sends the primitive LLGMM_TRIGGER_REQ to LLC in order to request LLC to send any LLC frame.
<.R.GMM.PGPPTMSI.M.007>

4.14.2.2 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.PGPPIMSI.M.005>, <R.GMM.PGPIMSI.M.008>, <R.GMM.PGPIMSI.M.009>, <R.GMM.DSUBFANO.M.004>

(SIM 1)
GMM enters GPRS update status GU2.

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

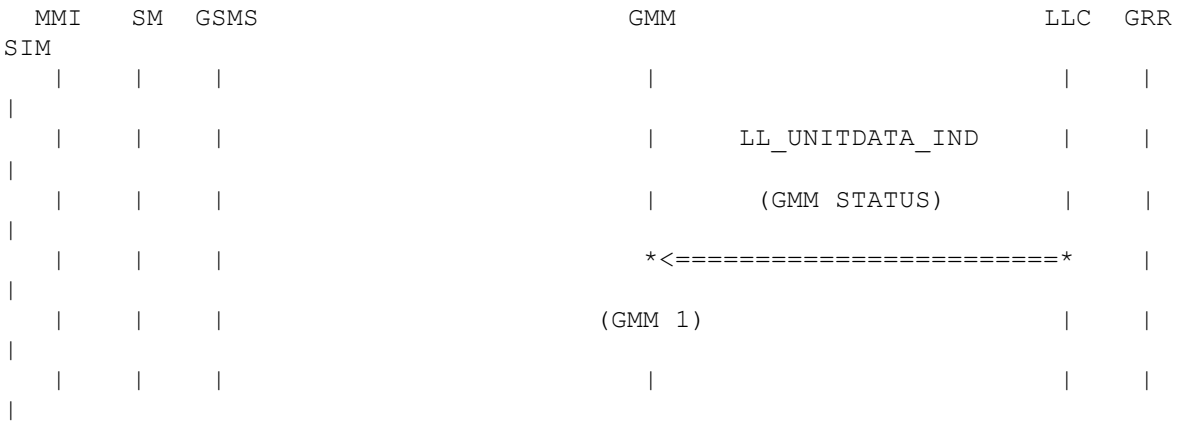
(LLC 1)
GMM unassigns all TLLIs in LLC with the primitive LLGMM_ASSIGN_REQ.

<R.GMM.PGPIMSI.M.008>

(GRR 1)
GMM unassigns all TLLIs in GRR with the primitive GMMRR_ASSIGN_REQ.
<R.GMM.PGPIMSI.M.008>

(SM 1)
GMM informs SM, that the GMM context is released.
<R.GMM.PGPIMSI.M.004>, <R.GMM.PGPIMSI.M.008>, <R.GMM.PRELIND.M.001>, <R.GMM.PDETIND.M.003>
network operation mode, the normal or combined GPRS attach procedure is started (see section 4.8).
, <R.GMM.PGPIMSI.M.009>, <R.GMM.PGPIMSI.M.010>, <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>

4.15 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>

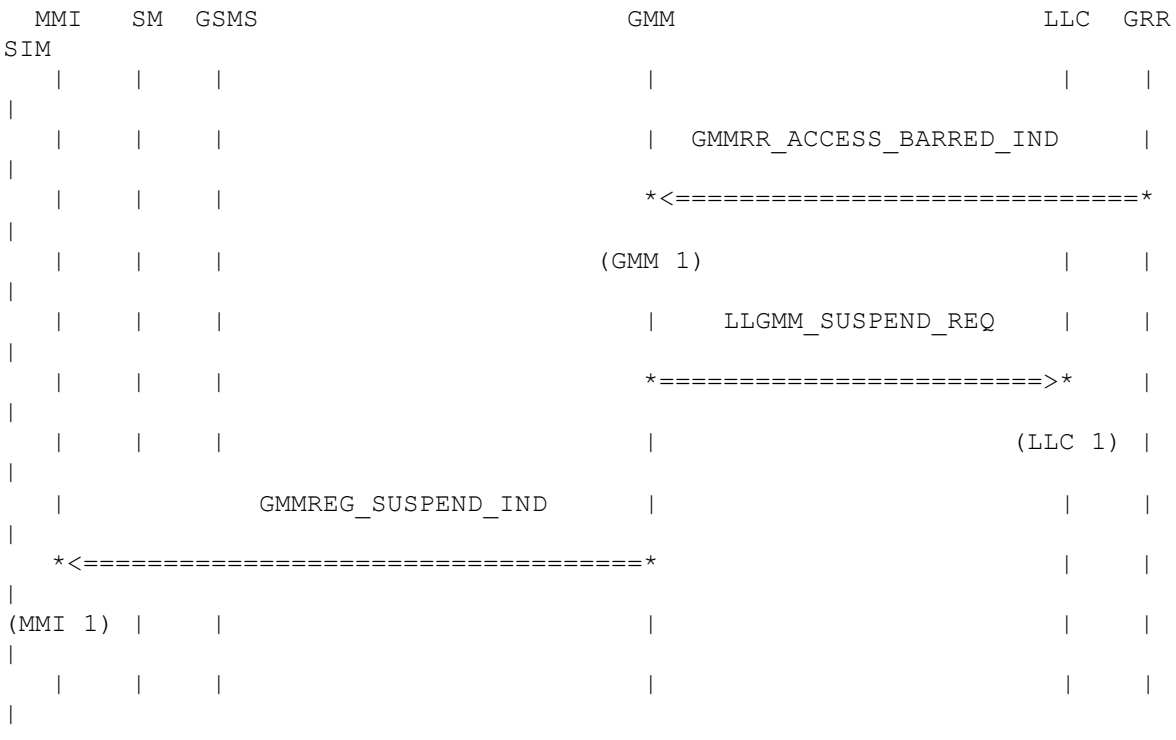
4.16 Access Control Class

4.16.1 Access barred

4.16.1.1 State GMM-DEREGISTERED

(GMM 1)
GMM is in state DEREGISTERED and receives the information, that the access to the network is not allowed. GMM enters the state GMM-DEREGISTERED.ATTACH-NEEDED.
<R.GMM.ODATTNEE.M.003>

4.16.1.2 State GMM-REGISTERED



(GMM 1)
GMM is in state REGISTERED and receives the information, that the access to the network is not allowed. GMM enters the state GMM-REGISTERED.UPDATE-NEEDED.

<R.GMM.ORUPDNEE.M.001>, <R.GMM.ORUPDNEE.M.003>, <R.GMM.ORUPDNEE.M.005>

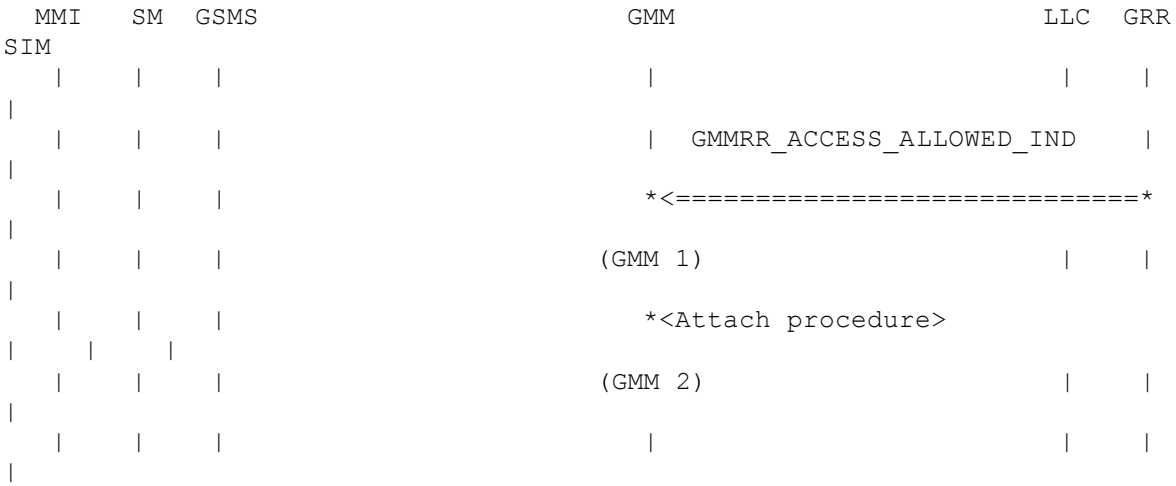
(LLC 1)
GMM indicates LLC, that user data must not be sent.

<R.GMM.ORUPDNEE.M.004>, <R.LLC.M_SUSPND.A.001>

(MMI 1)
GMM suspends GACI.

4.16.2 Access allowed

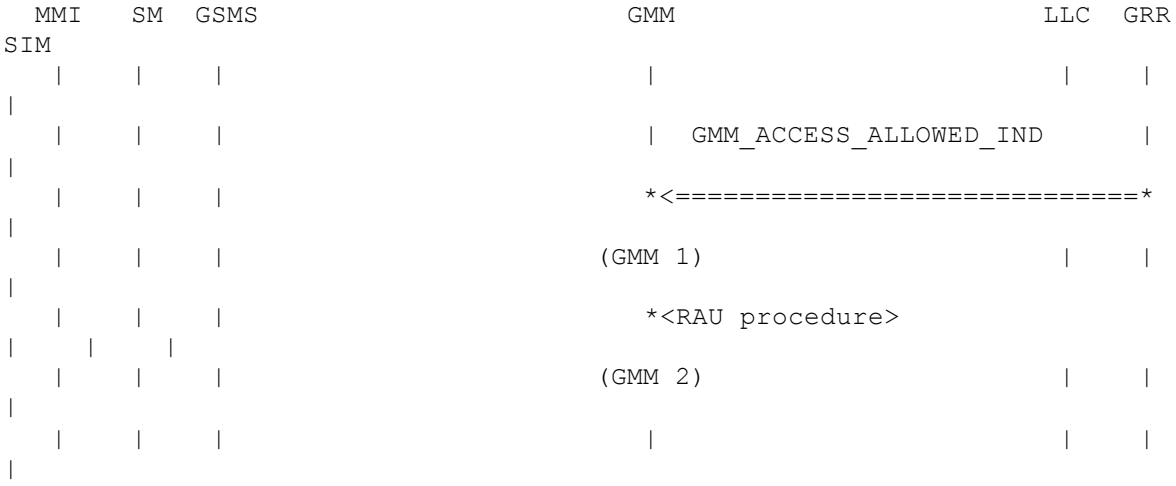
4.16.2.1 State GMM-DEREGISTERED



(GMM 1)
GMM is in state DEREGISTERED.ATTACH-NEEDED and receives the information, that the access to the network is allowed.

(GMM 2)
GMM enters the state GMM-DEREGISTERED.NORMAL-SERVICE and performs the attach procedure.
<R.GMM.DDATTNEE.M.001>, <R.GMM.ODATTNEE.M.002>

4.16.2.2 State GMM-REGISTERED



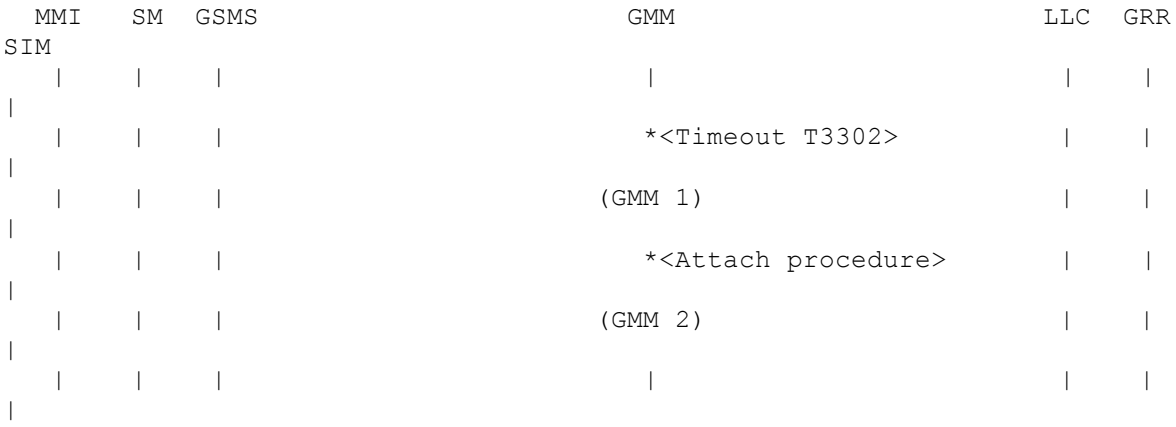
(GMM 1)
GMM is in state REGISTERED.UPDATE-NEEDED and receives the information, that the access to the network is allowed.

(GMM 2)
GMM performs the RAU procedure.
<R.GMM.ORUPDNEE.M.001>, <R.GMM.ORUPDNEE.M.002>

4.17 Timer

4.17.1 T3302 time-out

4.17.1.1 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>

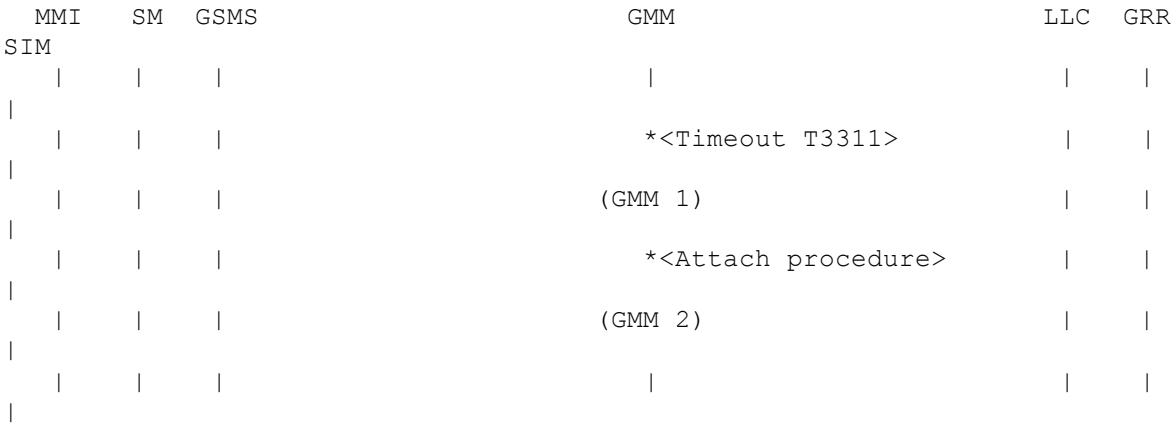
4.17.1.2 State GMM-REGISTERED

(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>

4.17.2 T3311 time-out

4.17.2.1 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>, <R.GMM.ACSUGPRS.M.016>

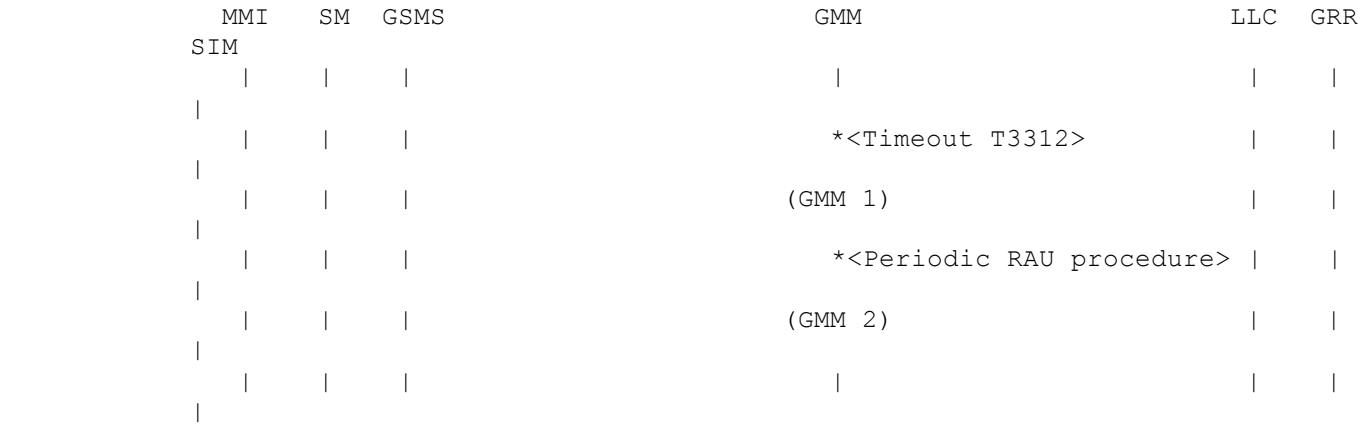
4.17.2.2 State GMM-REGISTERED

(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>

4.17.3 T3312 time-out

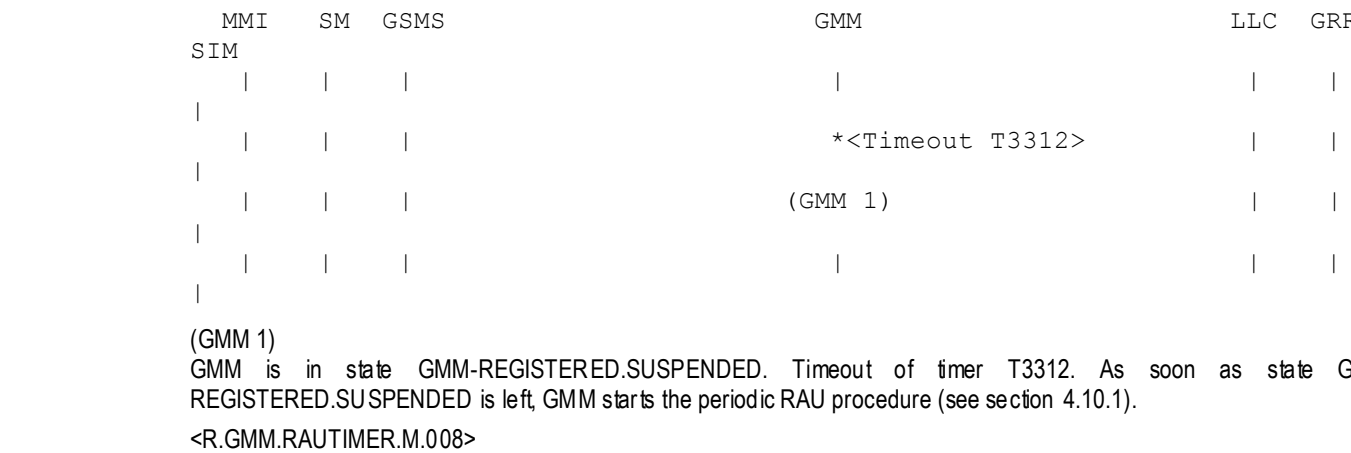
4.17.3.1 State GMM-REGISTERED.NORMAL-SERVICE



(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE. Timeout of timer T3312.
<R.GMM.RAUTIMER.M.007>, <R.GMM.RAU.M.003>

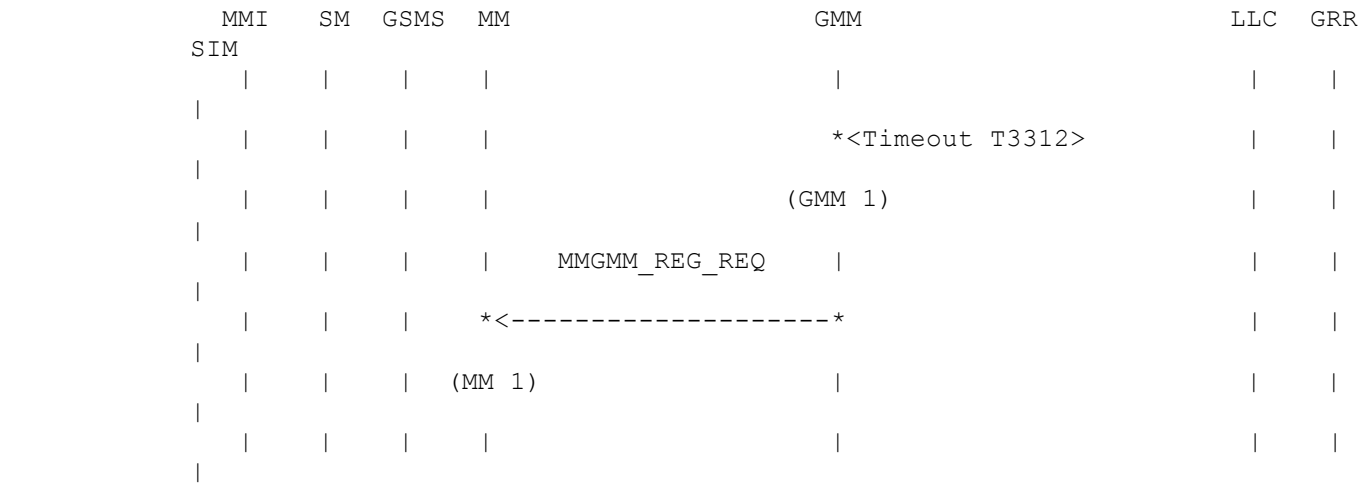
(GMM 2)
GMM starts the periodic RAU procedure (see section 4.10.1).
<R.GMM.RAUTIMER.M.007>, <R.GMM.RAU.M.003>, <R.GMM.RAUNORM.M.005>

4.17.3.2 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 (see section 4.10.1).
<R.GMM.RAUTIMER.M.008>

4.17.3.3 State GMM-REGISTERED.NO-CELL_AVAILABLE



(GMM 1)
GMM is in state GMM-REGISTERED.NO-CELL-AVAILABLE, MS is also IMSI attached for non-GPRS services, 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' (see section 4.10.2).

<R.GMM.RAUTIMER.M.018>

(MM 1)
GMM requests MM to perform the LAU procedure.

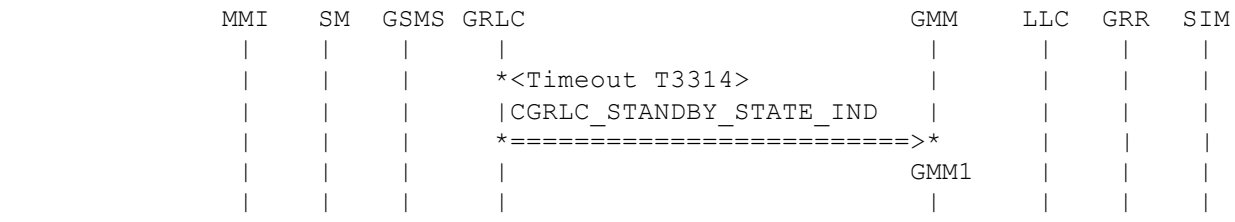
<R.GMM.RAUTIMER.M.017>

4.17.3.4 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 (see section 4.10.1).

<R.GMM.RAUTIMER.M.009>

4.17.4 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.READYTIM.M.008>, <R.GMM.RAUTIMER.M.005>

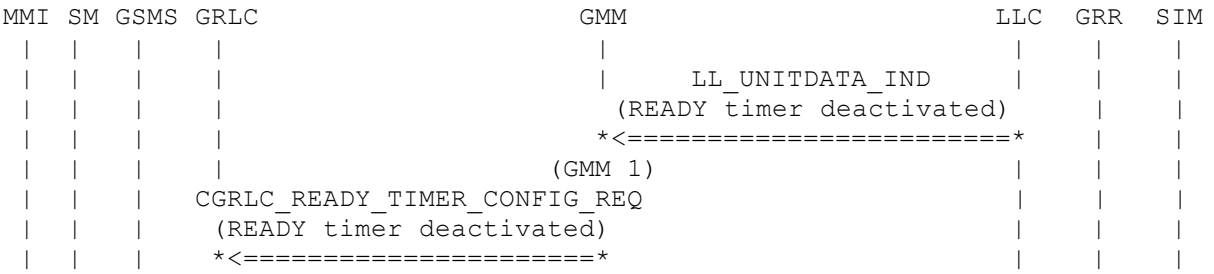
4.17.5 T3316 time-out

(GMM 1)
GMM-AA is in state GMM-REGISTERED. Timeout of timer T3316. GMM-AA enters state GMM-DEREGISTERED.
<R.GMM.READYTIM.M.006>, <R.GMM.READYTIM.M.007>, <R.GMM.GMMAAMS.M.003>, <R.GMM.GMMAAMS.M.004>, <R.GMM.DSUBFANO.M.001>

(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>

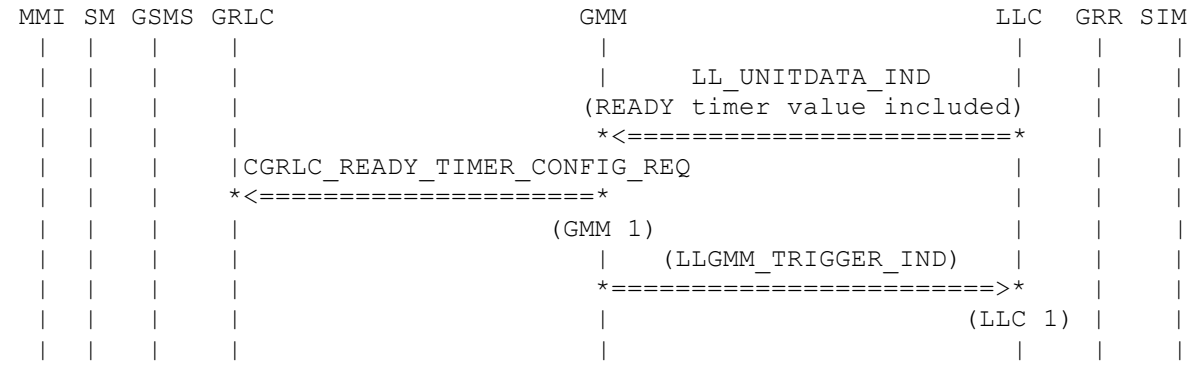
4.17.6 READY timer behaviour

4.17.6.1 READY timer is deactiveted



(GMM 1)
GMM receives a message ATTACH ACCEPT or RAU ACCEPT from the network with READY timer deactivated. GMM sends CGRLC_TIMER_CONFIG_REQ with ready timer value as deactivated.
<R.GMM.READYTIM.A.002>, <R.GMM.READYTIM.A.003>, <R.GMM.READYTIM.M.019>, <R.GMM.READYTIM.M.022>, <R.GMM.READYTIM.A.023>

4.17.6.2 READY timer is not set to zero



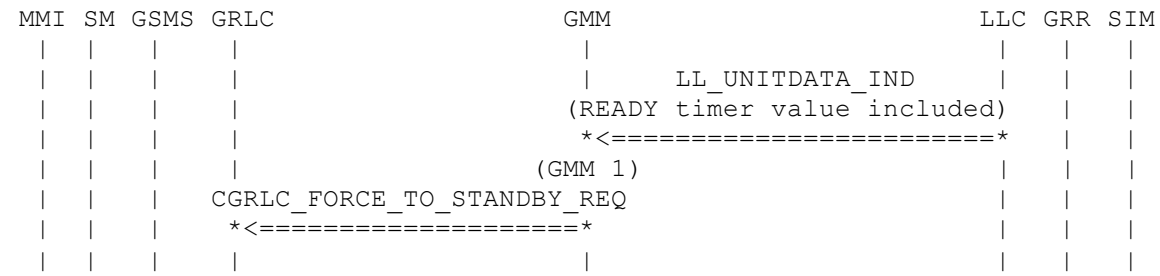
(GMM 1)
GMM receives a message ATTACH ACCEPT or RAU ACCEPT from the network with READY timer value included. GMM informs GRLC about new READY timer value.

<R.GMM.READYTIM.A.002>, <R.GMM.READYTIM.M.003>, <R.GMM.READYTIM.A.013>, <R.GMM.READYTIM.A.016>, <R.GMM.READYTIM.A.017>, <R.GMM.READYTIM.A.018>, <R.GMM.READYTIM.M.022, <R.GMM.READYTIM.A.024>, <R.GMM.READYTIM.A.026>

(LLC 1)
If no READY timer is negotiated no furter action are taken. Otherwise if a new READY timer is negotiated, LLC has to transmit a frame to apply the new READY timer value. If no ATTACH COMPLETE or RAU COMPLETE message is sent, the triggers GMM LLC with the LLGMM_TRIGGER_REQ primitiv.

<R.GMM.READYTIM.A.024>

4.17.6.3 READY timer is set to zero

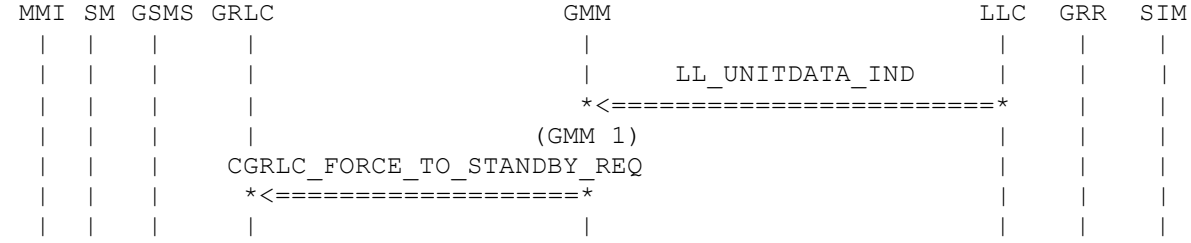


(GMM 1)
GMM receives a message ATTACH ACCEPT or RAU ACCEPT from the network with READY timer value included and is set to zero. The RAU timer T3312 is reset and started with the initial value.

<R.GMM.READYTIM.A.002>, <R.GMM.READYTIM.M.003>, <R.GMM.READYTIM.A.013>, <R.GMM.READYTIM.A.016>, <R.GMM.READYTIM.A.017>, <R.GMM.READYTIM.A.018>, , <R.GMM.READYTIM.A.019>, <R.GMM.READYTIM.M.022, <R.GMM.READYTIM.A.023>, <R.GMM.READYTIM.A.024>, <R.GMM.READYTIM.A.026>, <R.GMM.RAUTIMER.A.020>

4.17.7 Force to standby IE

4.17.7.1 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 starts timer T3312.

<R.GMM.READYTIM.A.011>, <R.GMM.READYTIM.M.012>, <R.GMM.READYTIM.M.021>, <R.GMM.READYTIM.M.022>, <R.GMM.READYTIM.A.023>, <R.GMM.RAUTIMER.M.005>

4.17.7.2 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.

<R.GMM.READYTIM.A.011>, <R.GMM.READYTIM.M.012>

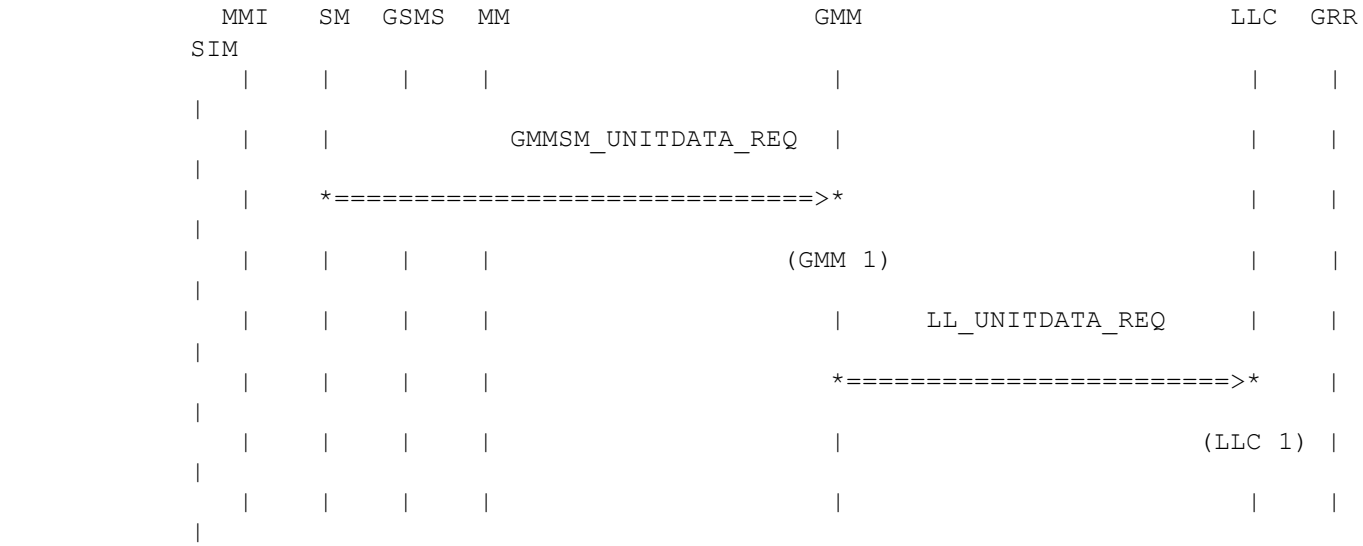
4.17.8 Receipt of LLGMM-TRIGGER-IND

(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. 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>

4.18 SM data transfer

4.18.1 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>

4.18.2 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>

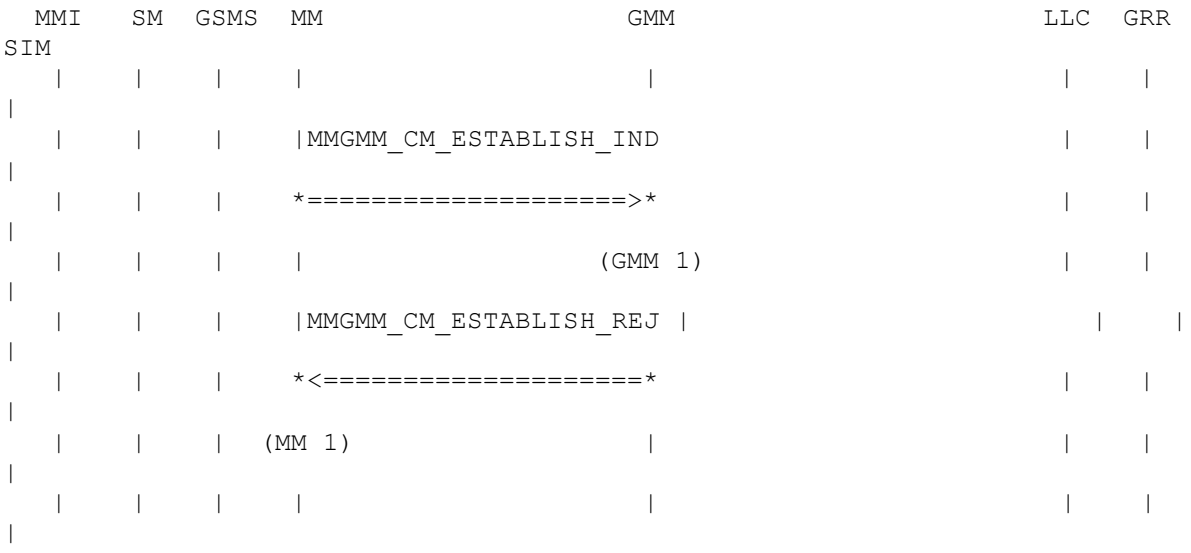
(SM 1)
GMM forwards the received SM message to SM with the GMMSM_UNITDATA_IND primitive.
<R.GMM.PUNITIND.M.001>

4.19 Circuit switched call

4.19.1 Mobile originated call

4.19.1.1 Initiation

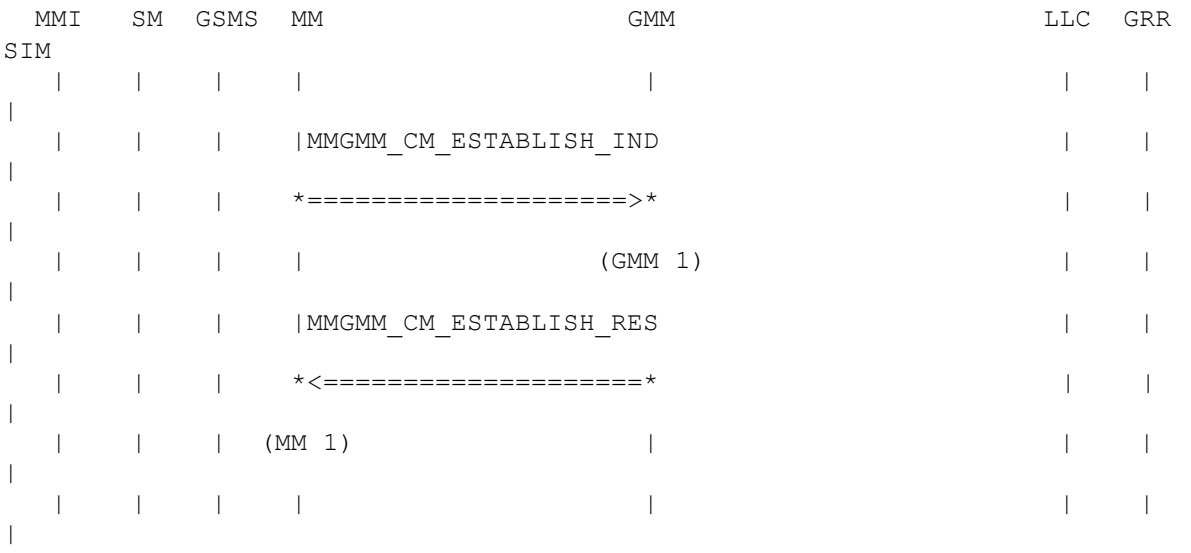
4.19.1.1.1 Net mode III – class B mobile which reverts to class CG mobile in net mode III



(GMM 1)
MM informs GMM that a circuit switched call has to be started.

(MM)
The establish request is rejected, because GSM side is deactivated.

4.19.1.1.2 Net mode III – class B mobile which reverts to class CC mobile in net mode III

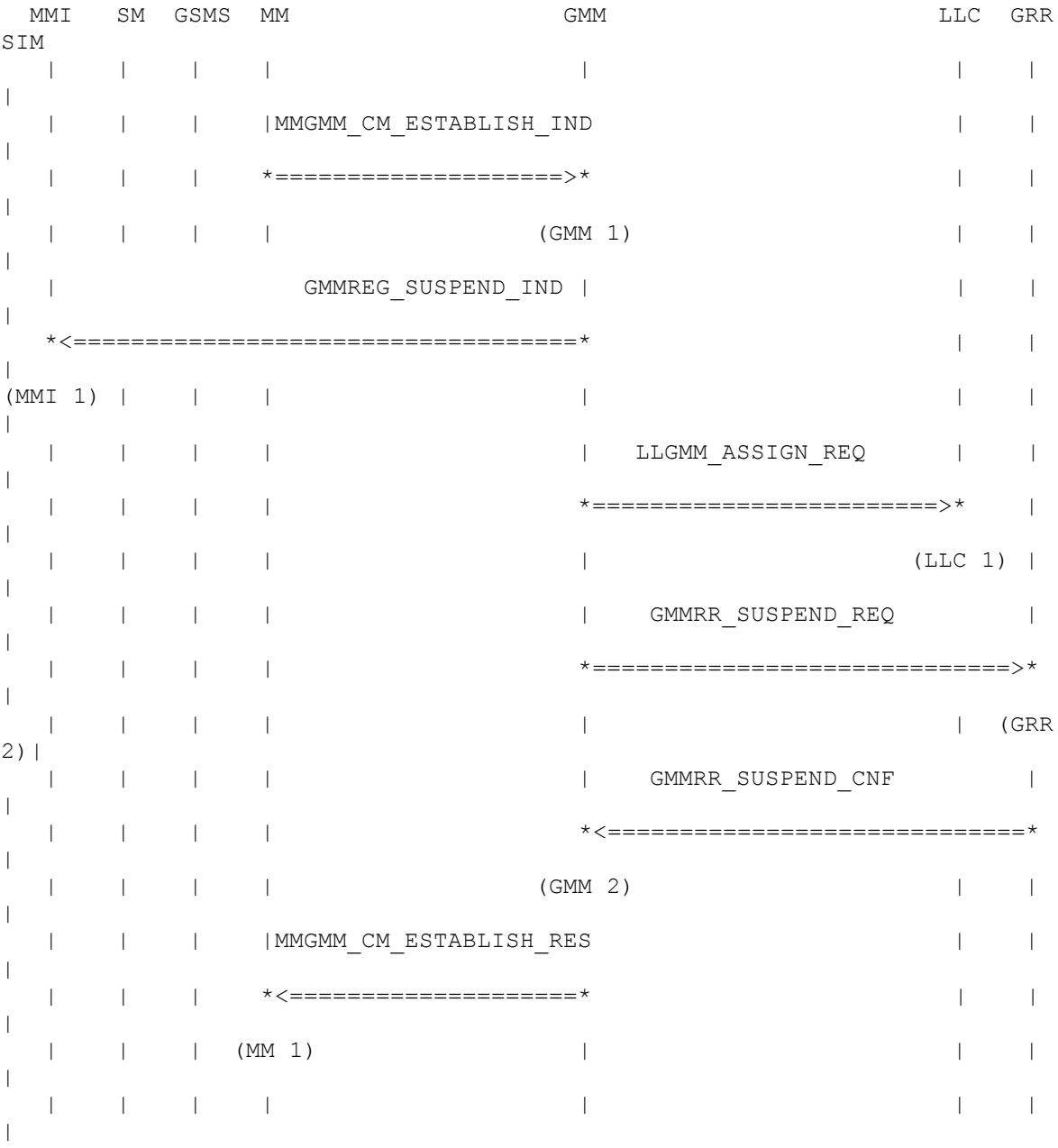


(GMM 1)
GMM is in state GMM-REGISTERED.SUSPENDED or GMM-DEREGISTERED-SUSPENDED. MM informs GMM that a circuit switched call has to be started.

<R.GMM.ORSUSPND.M.001>, <R.GMM.RAUTIMER.M.019>, <R.GMM. ODSUSPND.M.001>, <R.GMM.RCINIT.M.004>

(MM)
GMM confirmes the establish request from MM.

4.19.1.1.3 Net mode I/II – class B mobile



(GMM 1)
MM informs GMM that a circuit switched call has to be started. GMM enters state whether GMM-REGISTERED.SUSPENDED or GMM-DEREGISTERED-SUSPENDED.

<R.GMM.ORSUSPND.M.001>, <R.GMM.RAUTIMER.M.019>, <R.GMM.ODSUSPND.M.001>, <R.GMM.RCINIT.M.004>

(MMI)
GMM informs GACI.

<none>

(LLC 1)
GMM suspends data transmission in LLC by unassigning the TLLI.

<R.GMM.ORSUSPND.M.002>, <R.GMM.DRSUSPND.M.001>, <R.GMM.DDSUSPND.M.001>, <R.GMM.DDSUSPND.M.002>

(GRR 1)
GMM requests GRR to suspend GPRS mode.

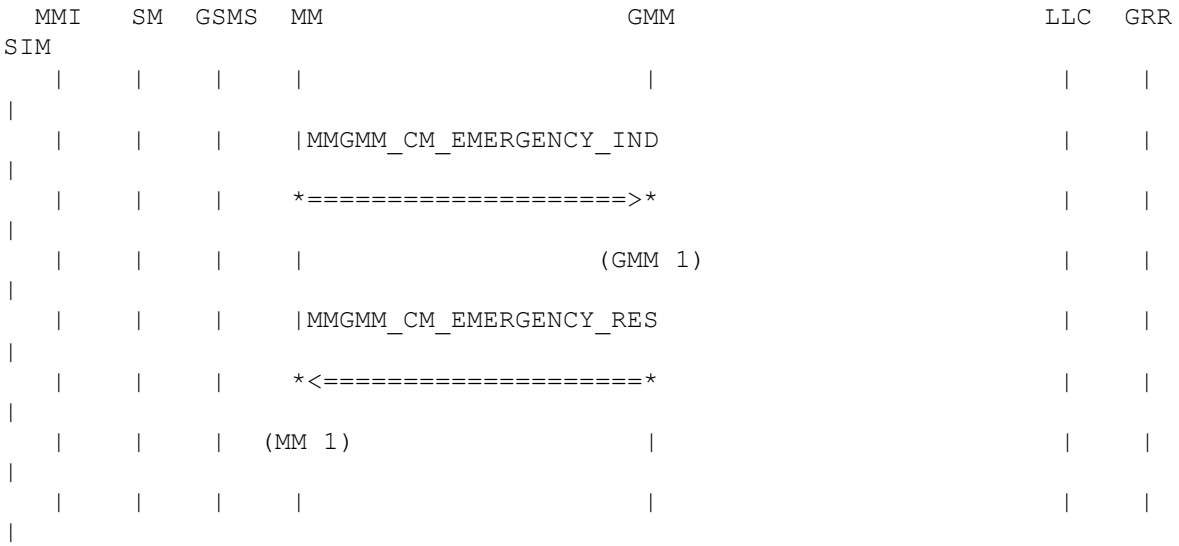
<R.GMM.DRSUSPND.M.003>

(GMM 2)
Suspension is confirmd by GRR

(MM 1)
GMM confirmes the establish request from MM.

4.19.1.1.4 Emergency Call

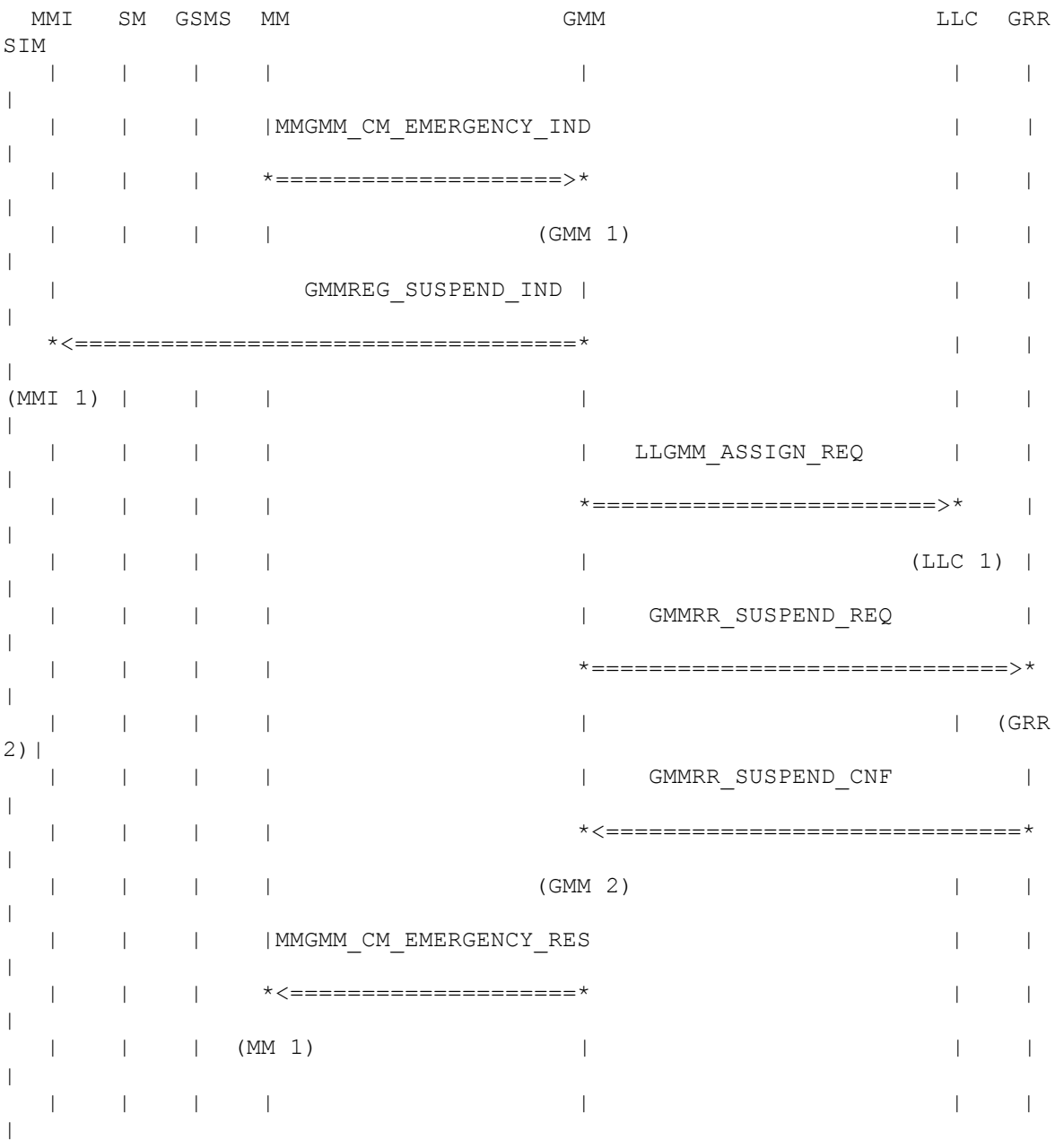
4.19.1.1.4.1 Net mode III – – class B mobile which reverts to class CC mobile in net mode III



(GMM 1)
MM informs GMM that a emergency call has to be started.
<R.GMM.ORSUSPND.M.001>, <R.GMM.RAUTIMER.M.019>, <R.GMM.ODSUSPND.M.001>, <R.GMM.RCINIT.M.004>

(MM)
GMM confirmes the establish request from MM.

4.19.1.1.4.2 Net mode I/II – class B mobile or Net mode III – class B mobile which reverts to class CG mobile in net mode III



(GMM 1)
MM informs GMM that a emergancy call has to be started. GMM enters state whether GMM-REGISTERED.SUSPENDED or GMM-DEREGISTERED-SUSPENDED.

<R.GMM.ORSUSPND.M.001>, <R.GMM.RAUTIMER.M.019>, <R.GMM. ODSUSPND.M.001>, <R.GMM.RCINIT.M.004>

(MMI)
GMM informs GACI.

<none>

(LLC 1)
GMM suspends data transmission in LLC by unassigning the TLLI.

<R.GMM.ORSUSPND.M.002>, <R.GMM.DRSUSPND.M.001>, <R.GMM.DDSUSPND.M.001>, <R.GMM.DDSUSPND.M.002>

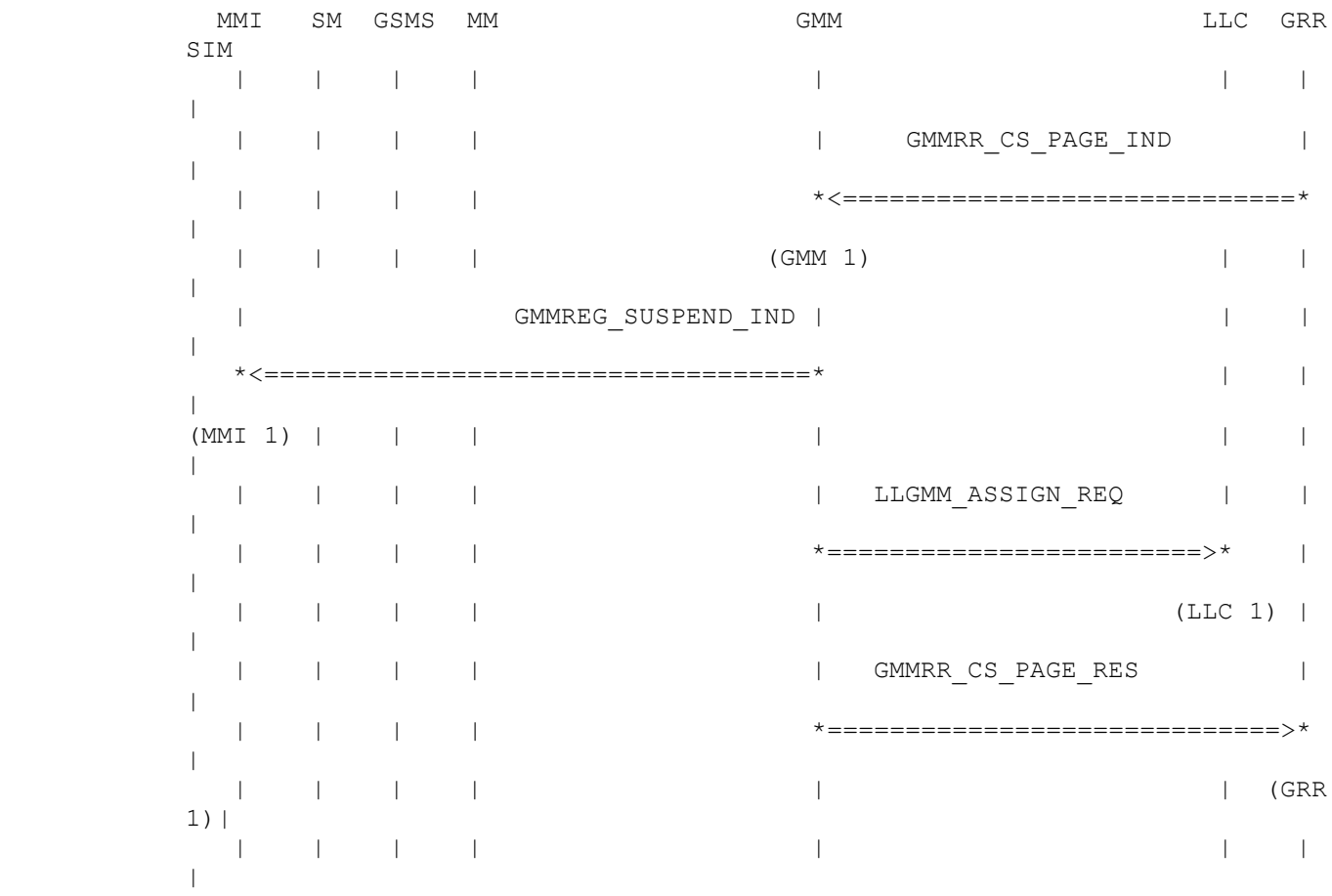
(GRR 1)
GMM requests GRR to suspend GPRS mode.

<R.GMM.DRSUSPND.M.003>

(GMM 2)
Suspension is confirmd by GRR

(MM 1)
GMM confirmes the establish request from MM.

4.19.2 Mobile terminated call



(GMM 1)
GRR informs GMM that an circuit swithed page is received. GMM enters state whether GMM-REGISTERED.SUSPENDED or GMM-DEREGISTERED-SUSPENDED.

<R.GMM.ORSUSPND.M.001>, <R.GMM.RAUTIMER.M.019>, <R.GMM. ODSUSPND.M.001>, <R.GMM.RCINIT.M.004>

(MMI)
GMM informs GACI.

<none>

(LLC 1)
GMM suspends data transmission in LLC by unassigning the TLLI.

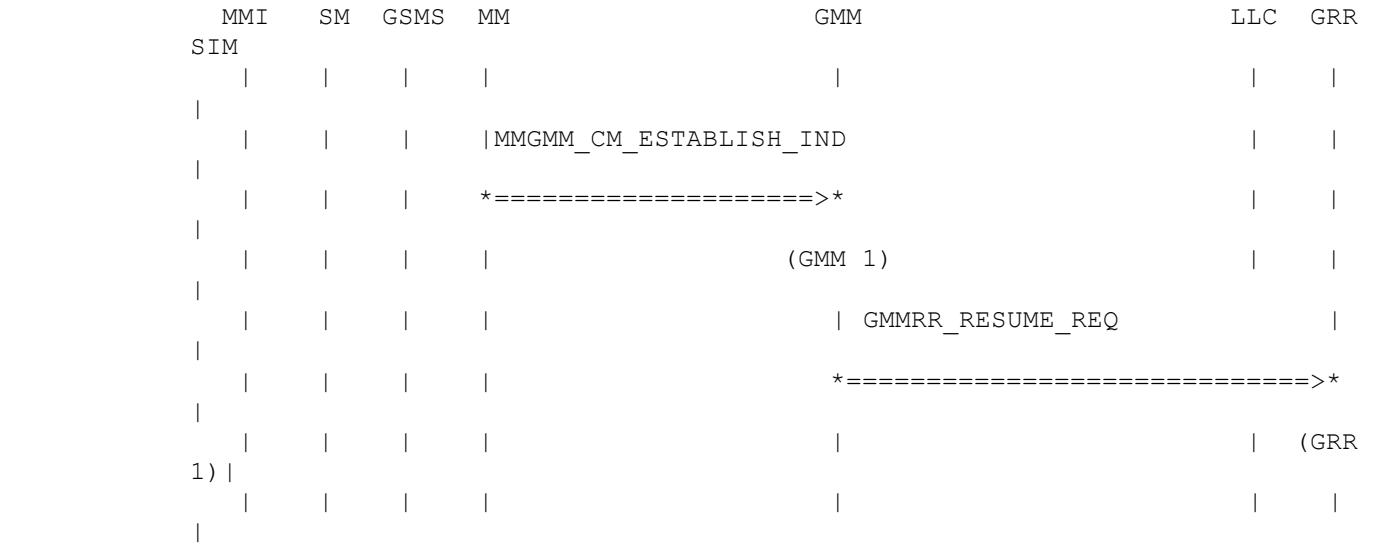
<R.GMM.ORSUSPND.M.002>, <R.GMM.DRSUSPND.M.001>, <R.GMM.DDSUSPND.M.001>, <R.GMM.DDSUSPND.M.002>

(GRR 1)
GMM requests GRR to establich a cs conection.

<R.GMM.DRSUSPND.M.003>

4.19.3 Call completion

4.19.3.1 Class B mobile

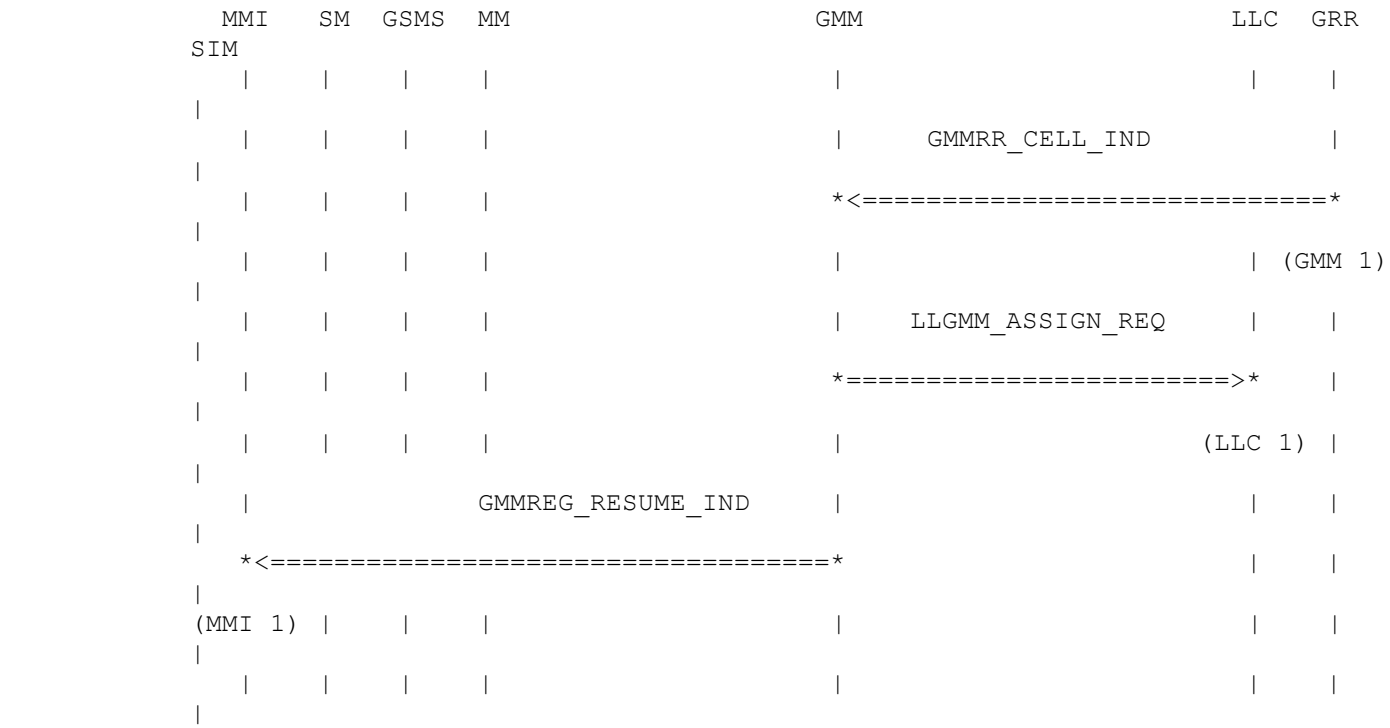


(GMM 1)
MM signals GMM that the call is released.

(MM)
If the net operates in mode III no further actions are taken. Otherwise GRR is resumed.

4.19.4 Leaving dedicated mode

4.19.4.1 RA/LA has not changed



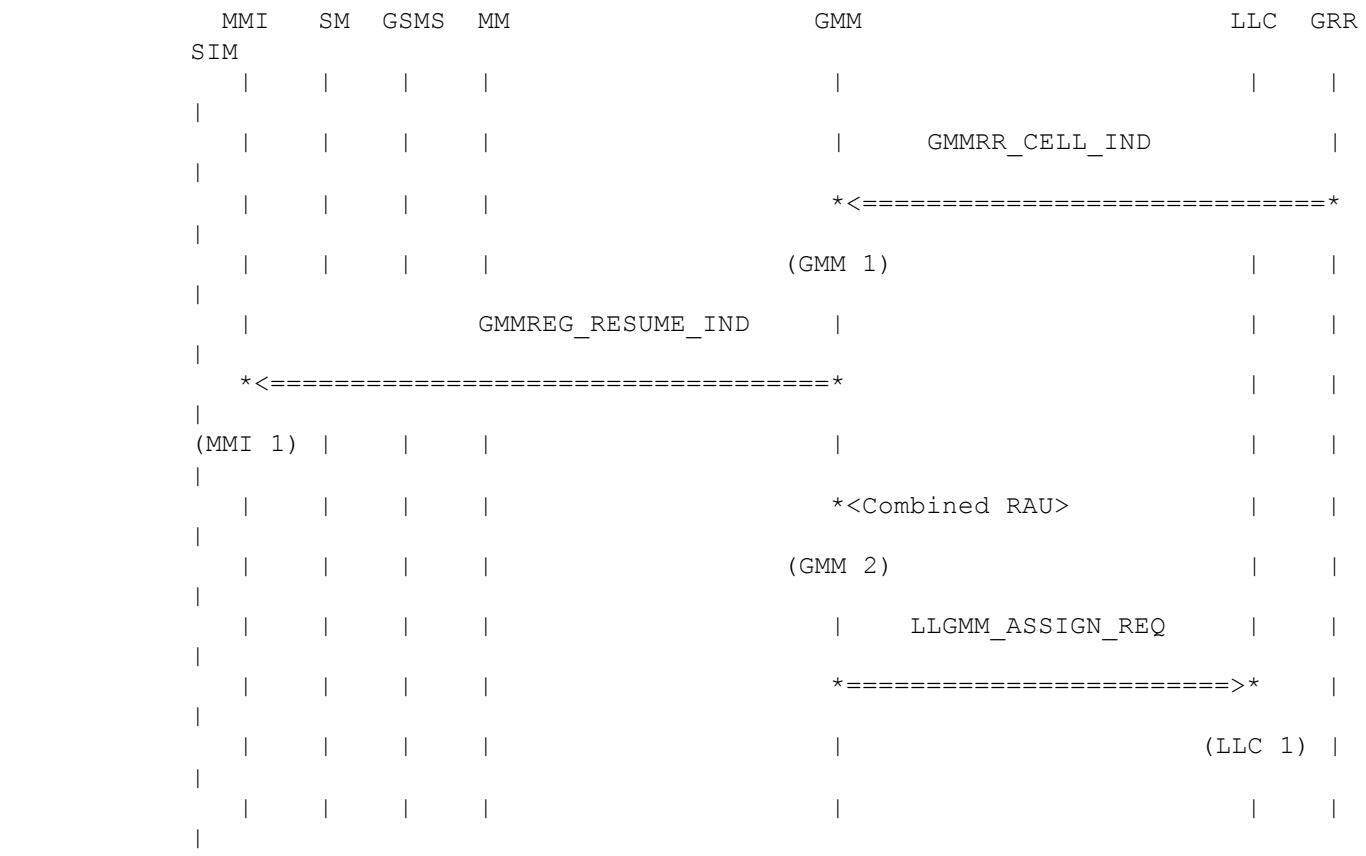
(GMM 1)
GMM is in state GMM-REGISTERED.SUSPENDED or GMM-DEREGISTERED-SUSPENDED. MM informs GMM that the circuit switched call has ended.

<R.GMM.ORSUSPND.M.004>, <R.GMM.MSREG.M.002>

(LLC 1)
GMM resumes data transmission in LLC.
<R.GMM.ORSUSPND.M.004>, <R.GMM.DRSUSPND.M.001>, <R.GMM.ODSUSPND.M.002>

(MMI 1)
GACI is informed that GPRS is resumed.

4.19.4.2 RA/LA has changed or (GPRS attach in mode A) during CS transaction

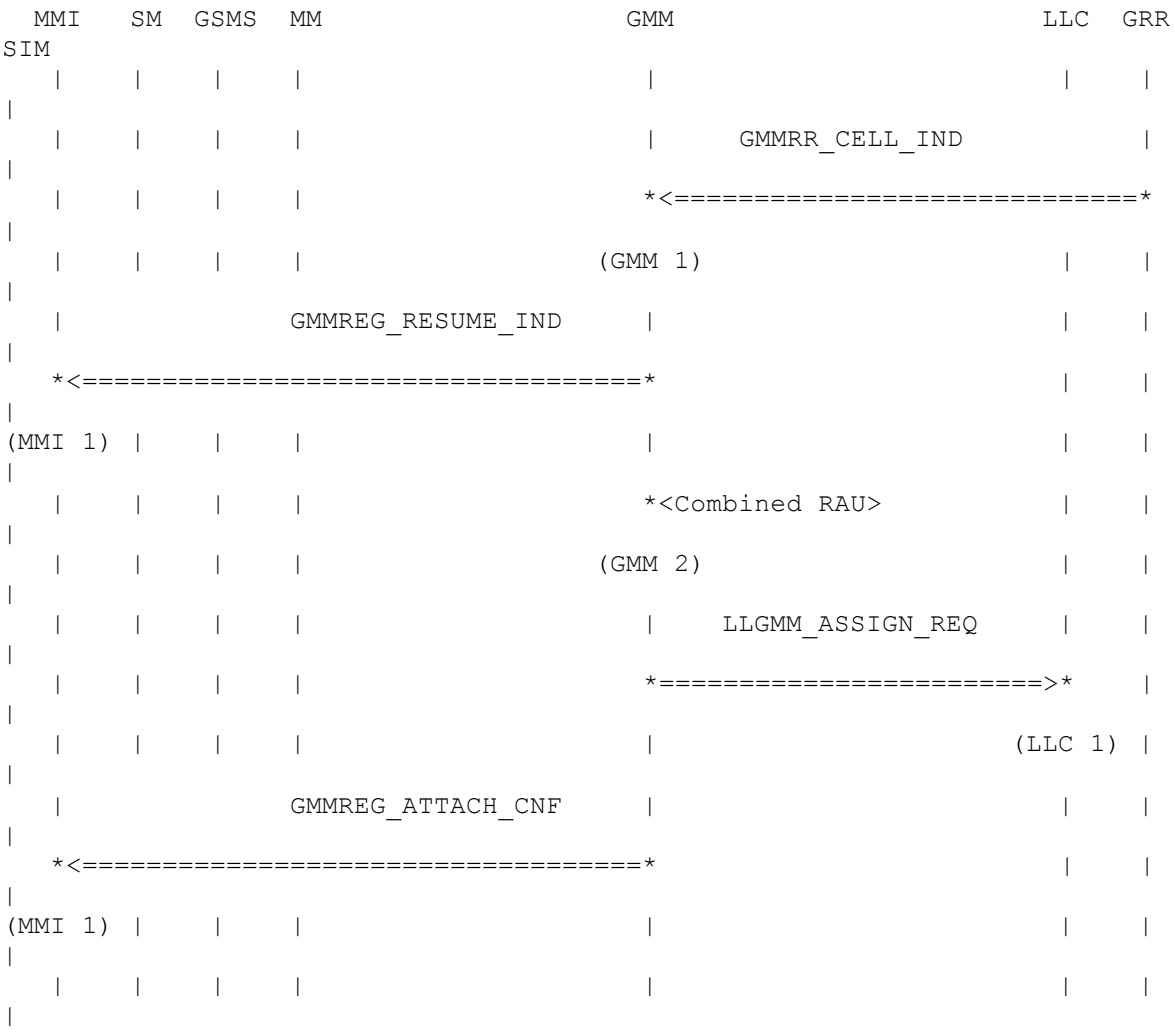


(GMM 1)
GMM is in state GMM-REGISTERED.SUSPENDED. MM informs GMM that the circuit switched call has ended. GMM enters state GMM-REGISTERED.NORMAL-SERVICE.
<R.GMM.ORSUSPND.M.004>, <R.GMM.MSREG.M.002>

(GMM 2)
The LA has changed during the circuit switched call was ongoing or GPRS attach was performed during CS transaction. GMM starts the combined RAU procedure (see section 4.10.2), if network operates in mode I.
<R.GMM.RCINIT.M.003>, <R.GMM.RCINIT.M.006>, <R.GMM.RCINIT.M.0016>

(LLC 1)
GMM resumes data transmission in LLC.
<R.GMM.ORSUSPND.M.002>, <R.GMM.DRSUSPND.M.001>

4.19.4.3 PLMN has changed



(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>

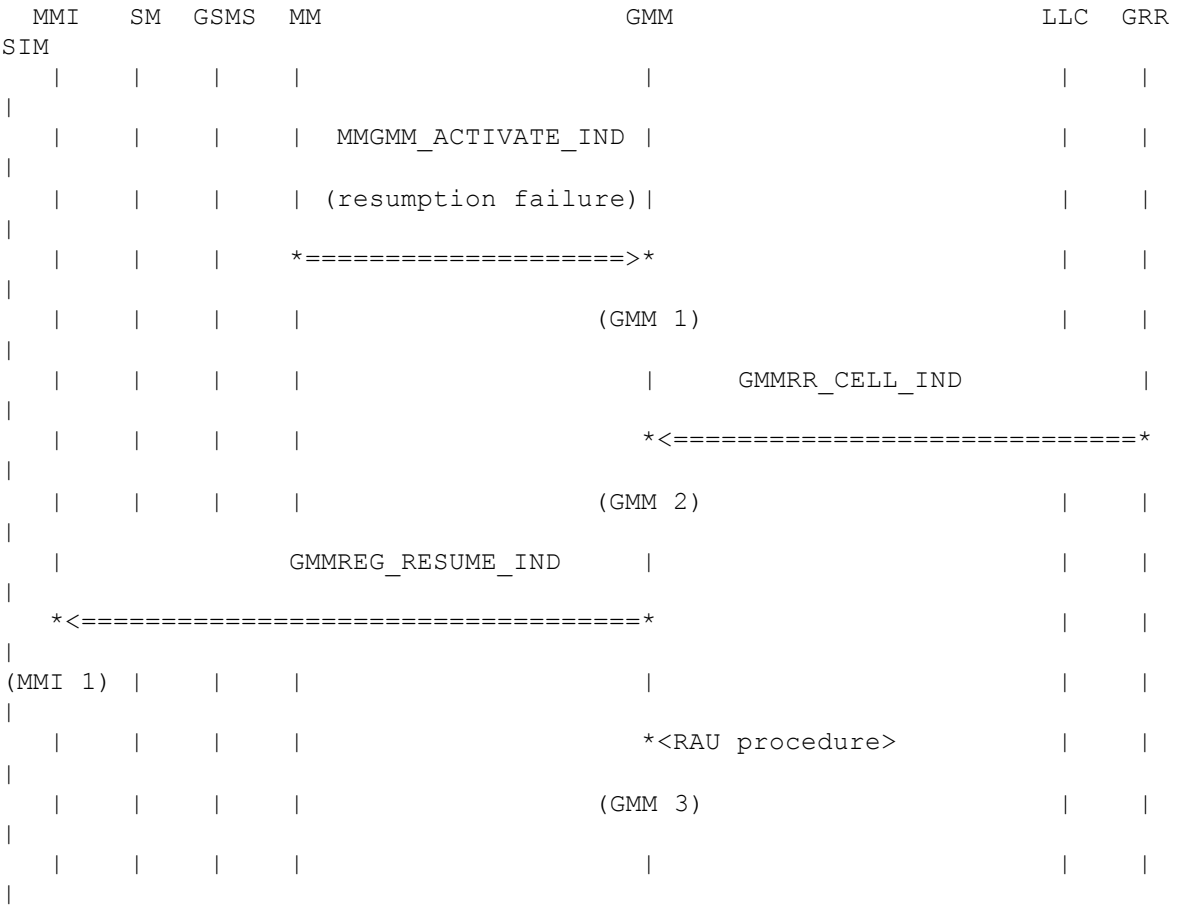
(GMM 2)
The LA has changed during the circuit switched call was ongoing or GPRS attach was performed during CS transaction. GMM starts the combined RAU procedure (see section 4.10.2), if network operates in mode I.

<R.GMM.RCINIT.M.003>, <R.GMM.RCINIT.M.006>, <R.GMM.RCINIT.M.0016>

(LLC 1)
GMM resumes data transmission in LLC.

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

4.19.5 Resumption failure after dedicated mode was left



(GMM 1)
MM indicates to GMM a resumption failure after dedicated mode was left.

<R.GMM.RAU.M.005>

(GMM 2)
GMM is in state GMM-REGISTERED.SUSPENDED. MM informs GMM that the circuit switched call has ended. GMM enters state GMM-REGISTERED.UPDATE_NEEDED.

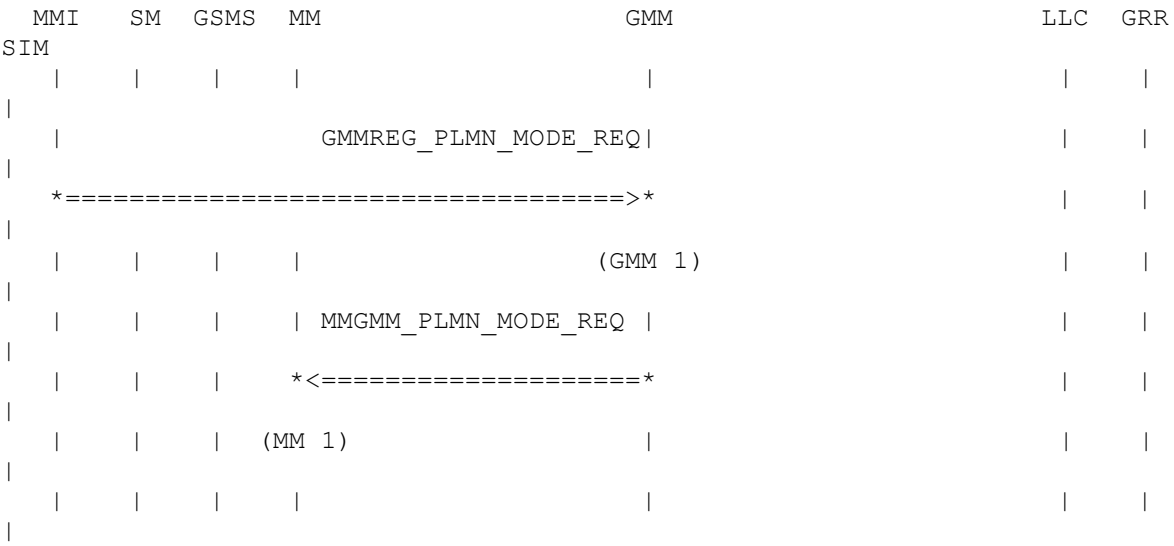
<R.GMM.ORSUSPND.M.004>, <R.GMM.MSREG.M.002>

(GMM 2)
The normal or combined RAU procedure is started (see section 4.10).

<R.GMM.RAU.M.005>

4.20 MM Interface

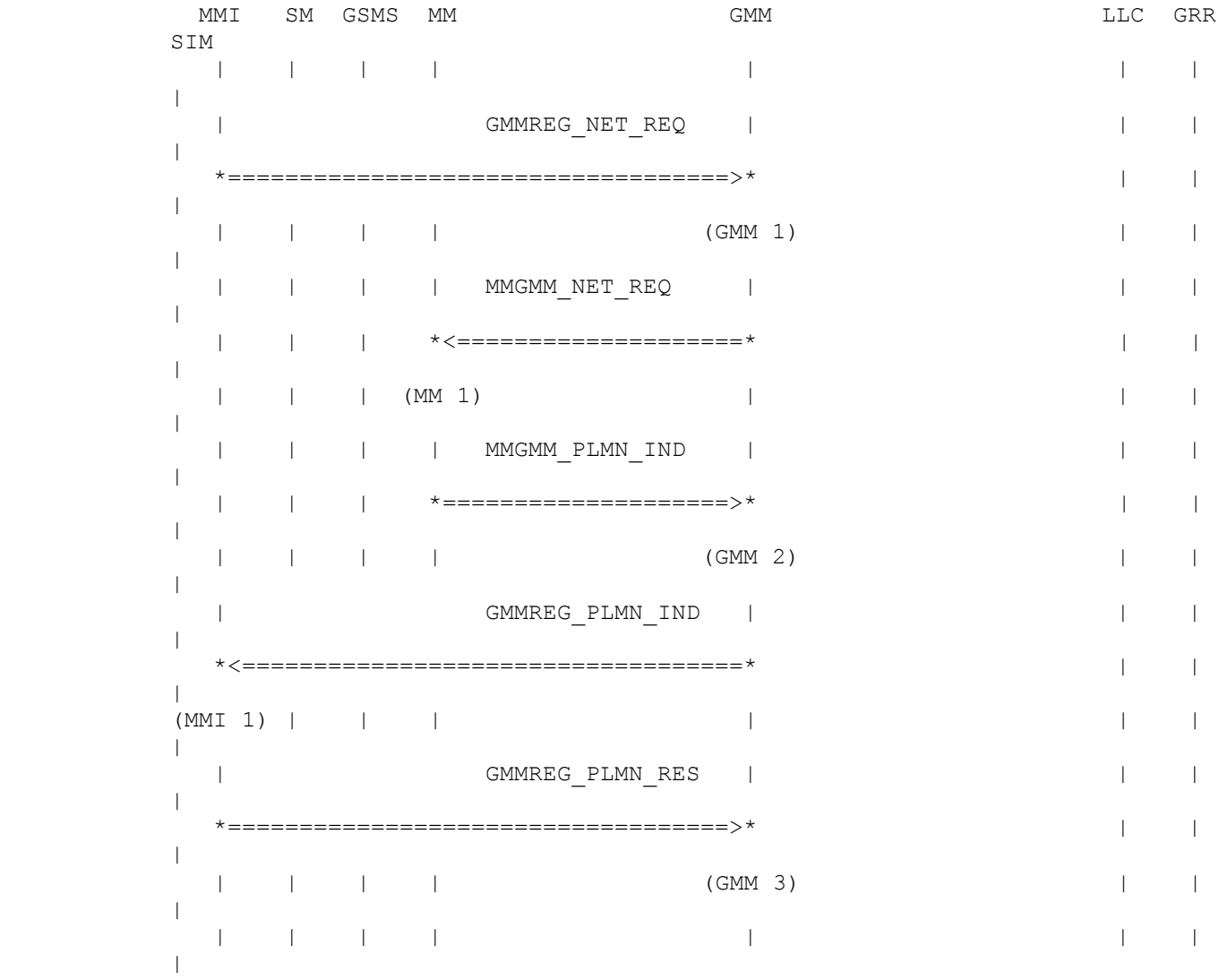
4.20.1 Change of PLMN Mode



(GMM 1)
It is possible to change between automatic and manual mode by the user. This leads to different behaviour during registration.

4.20.2 Network selection

4.20.2.1 Manual Mode



(GMM 1)
The Network selektion procedure is started by MMI.

<->

(MM 1)
The primitive is passed to MM

<->

(GMM 2)
MM returns the list of available PLMNs.

<->

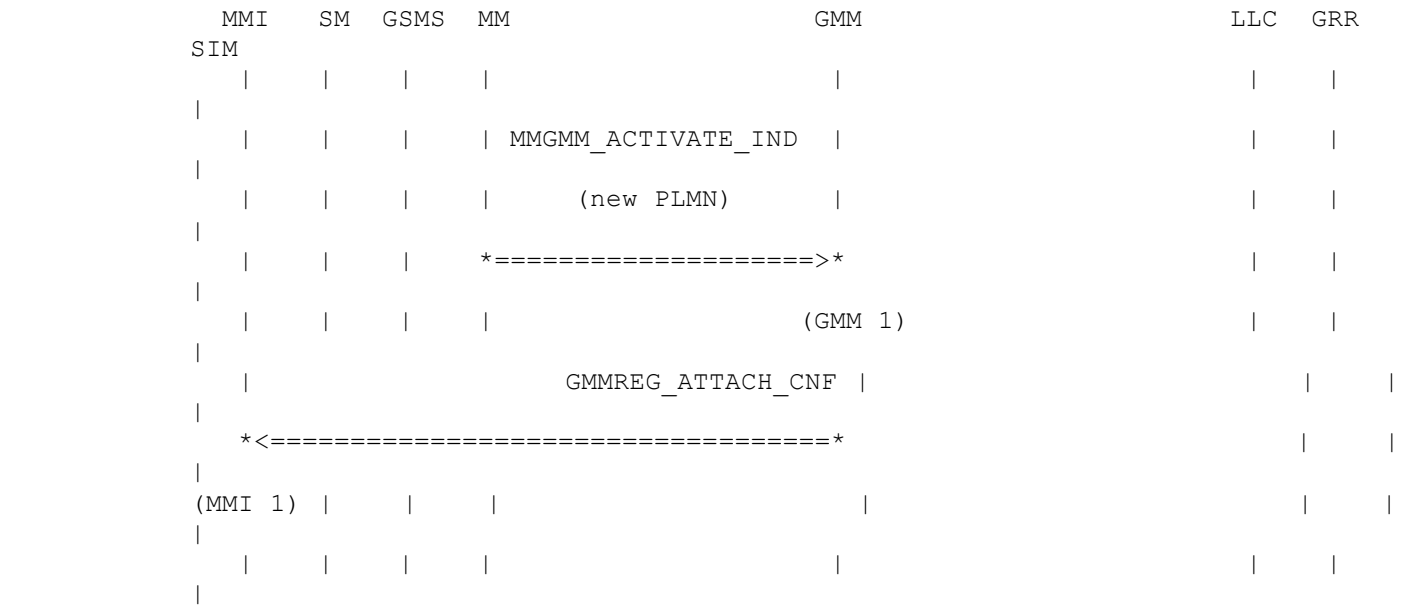
(MMI 1)
The PLMN list is forwarded to MMI.

<->

(GMM 3)
If manual network mode was selected, MMI has to responds with one of the given PLMNs.

<->

4.20.2.2 Automatic Mode



(GMM 1)
MM indicates GMM that the cell, and in this case the PLMN too, has chaged.

<->

(MMI 1)
If the PLMN was changed in state GMM-REGISTERED, MMI will be informed. (see RAU)

<->

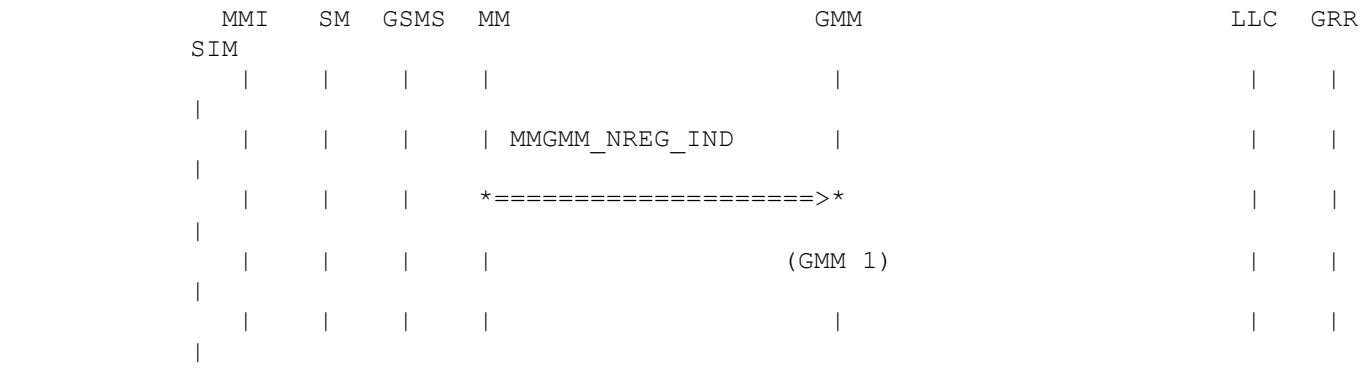
4.20.3 IMSI attach/detach

4.20.3.1 IMSI attach

(GMM 1)
MM informs that MM switch from state IMSI-DETACHED to IMSI-ATTACHED. GMM sets the variable imsi_attached.

<->

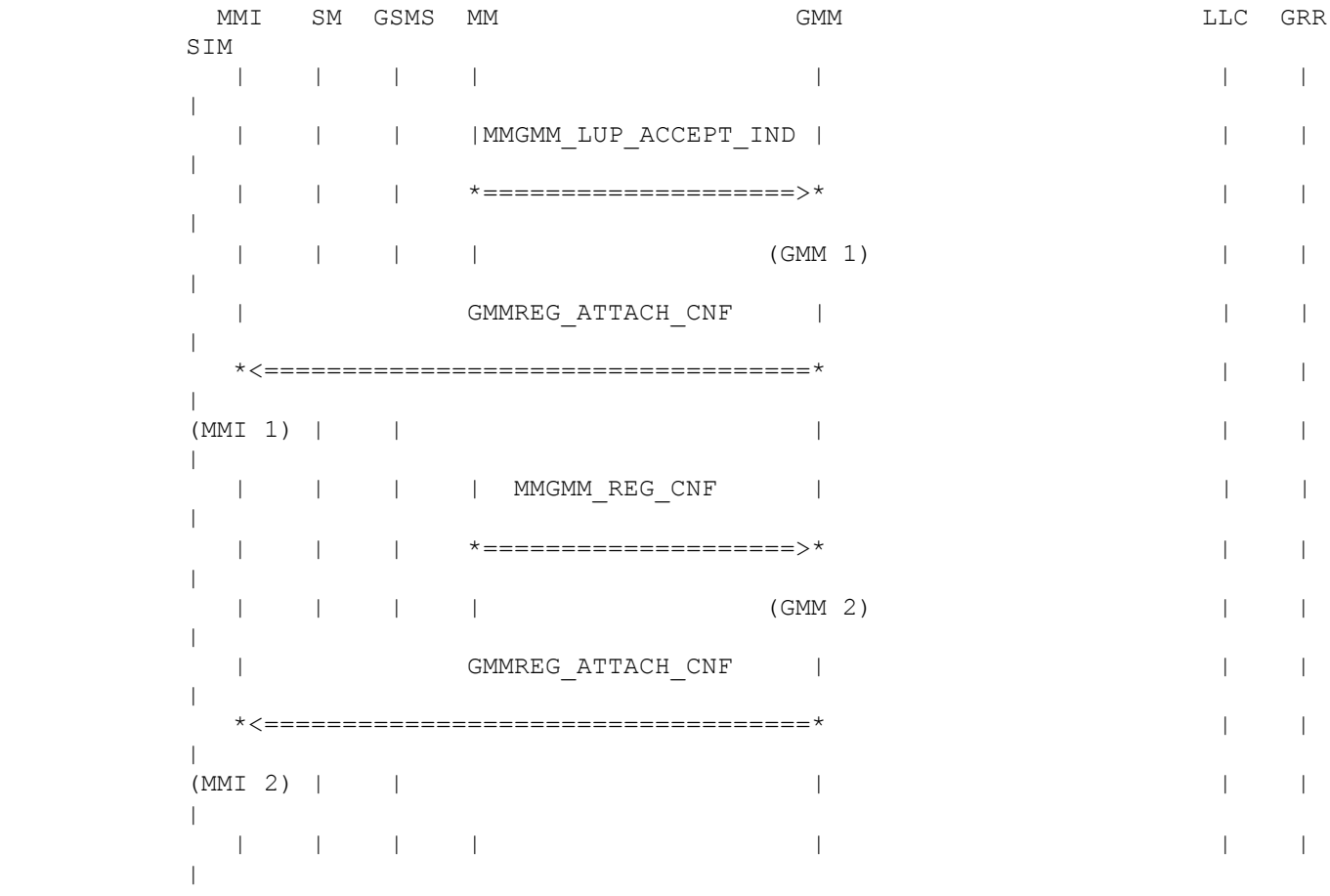
4.20.3.2 IMSI detach



(GMM 1)
MM informs that MM switch from state IMSI-ATTACHED to IMSI-DETACHED. GMM sets the variable imsi_attached to FALSE.

<->

4.20.4 LA updated



(GMM 1)
MM informs that the LAU will be performed on the forwarded PLMN.

<none>

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

<none>

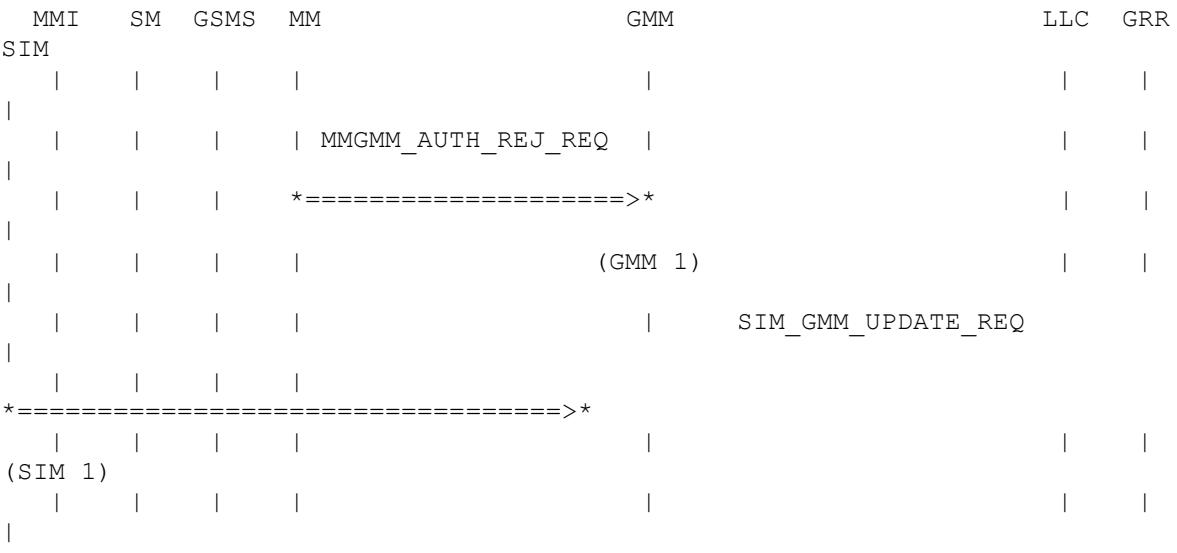
(GMM 2)
MM informs that the LAU was performed by MM.

<R.GMM.RCINIT.M.011>

(MMI 2)
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>

4.20.5 Authentication rejected in dedicated mode

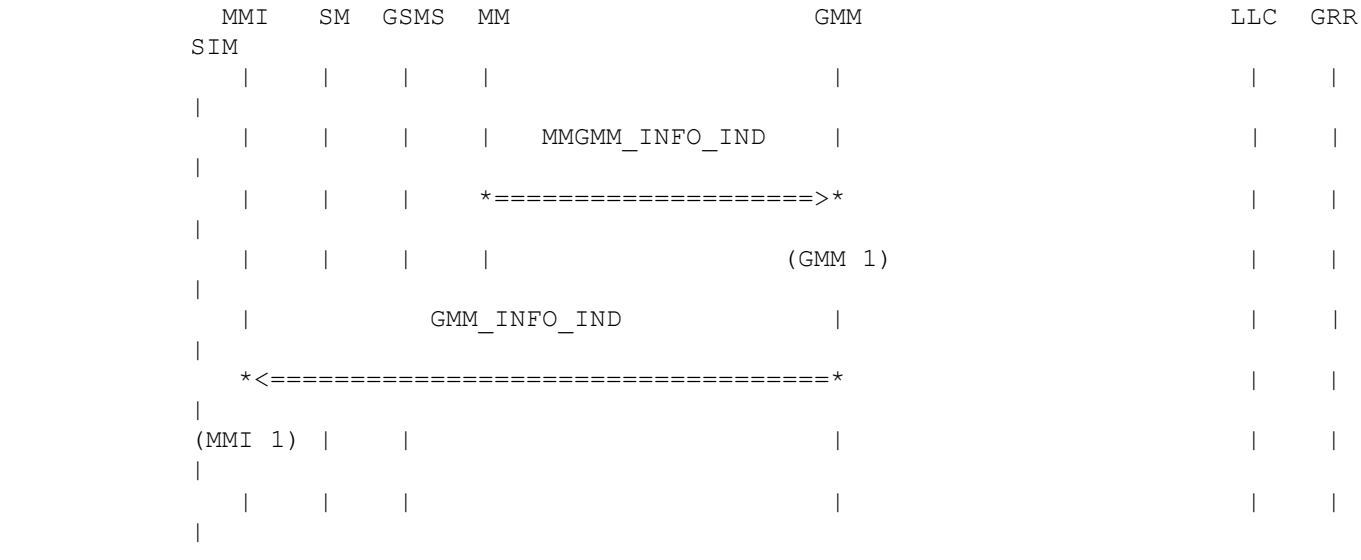


(GMM 1)
MM informs GMM that the auhentification procedure was rejected by the network. GMM enters state GMM-DEREGISTERED.

<R.GMM.MMGMMONE.M.005>, <R.GMM.MMGMMONE.M.006>, <R.GMM.MMGMMONE.M.006>, <R.GMM.MMGMMONE.M.008>

(SIM 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.

4.20.6 MM INFORMATION message



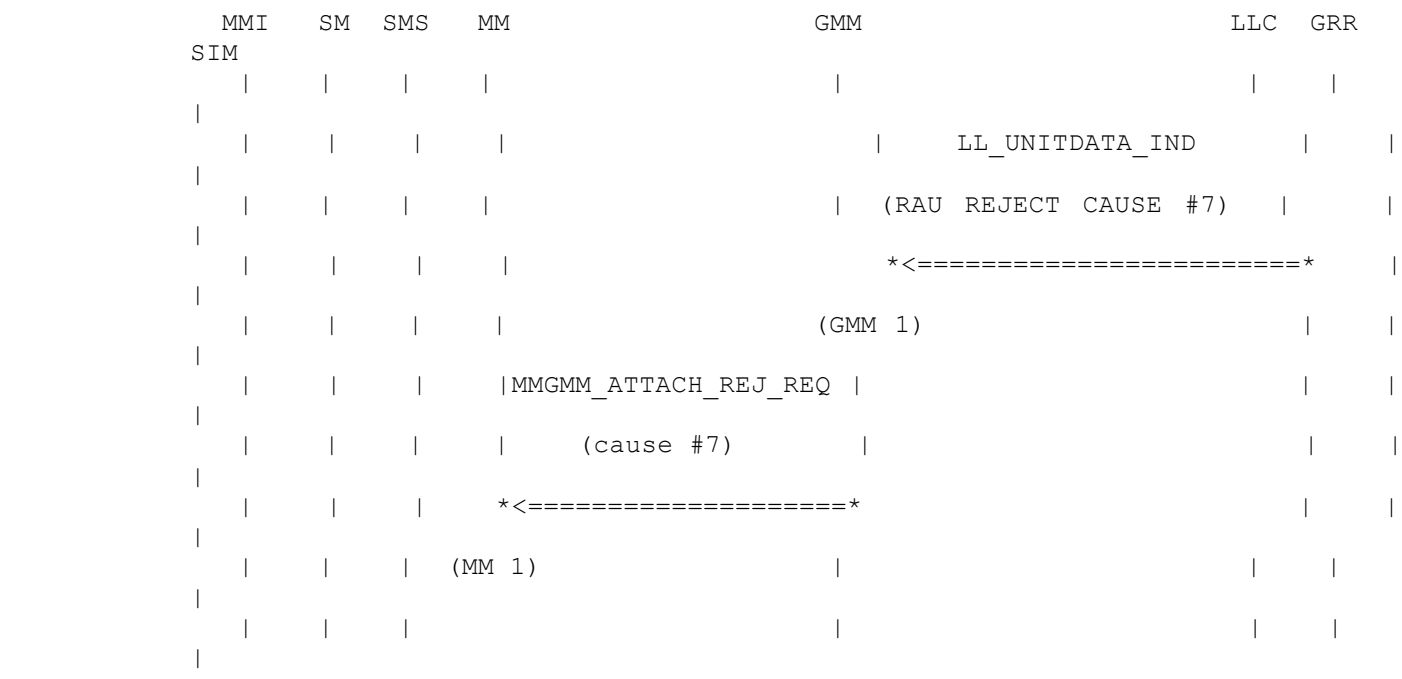
(GMM 1)
GMM receives the MM INFORMATION message parameters with the primitive MMGMM_INFO_IND.

<none>

(MMI 1)
The information data is passed throw MMI.

4.20.7 T3212 handling

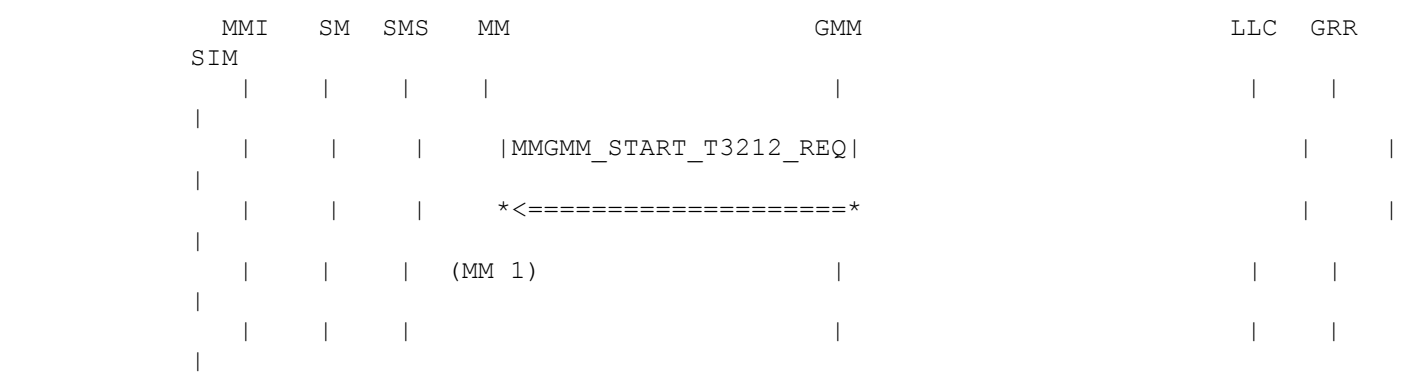
4.20.7.1 GPRS ATTACH rejected



(GMM 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.

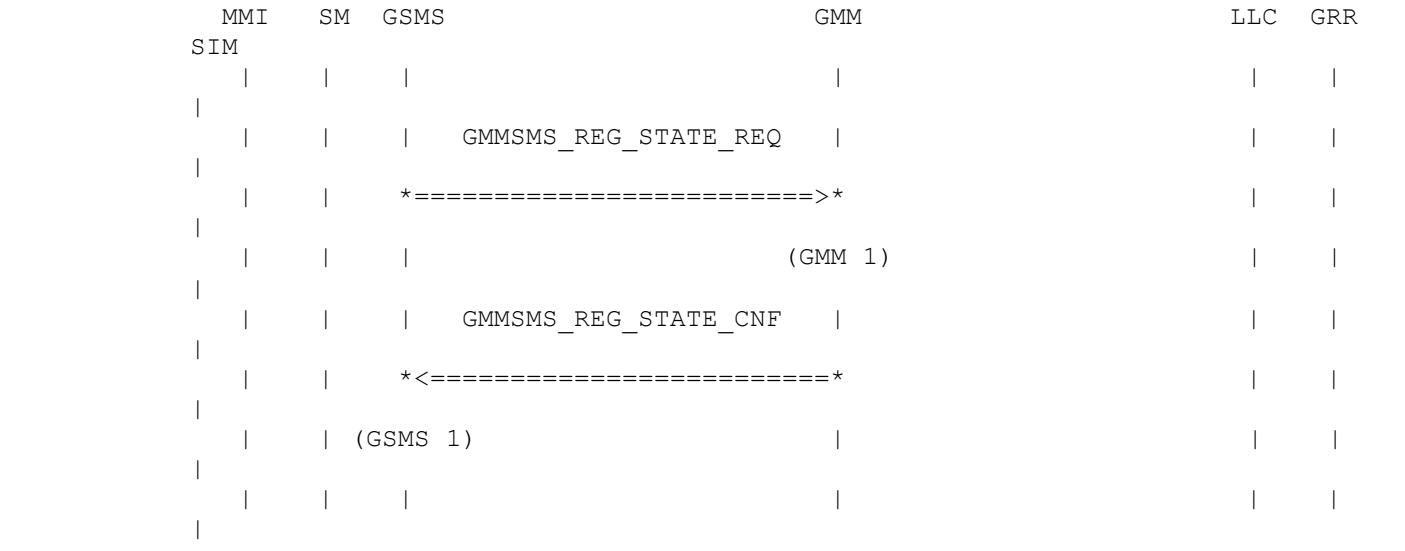
<R.GMM.RCREJECT.M.002>, <R.GMM.RCREJECT.M.012>

(MM 1)
The cause is forwarded to MM. If in MM the timer T3212 is not already running, the timer shall be set to its initial value and restarted. (Version 6.7.0)
<R.GMM.RCREJECT.M033>



(MM 1)
.
<none>

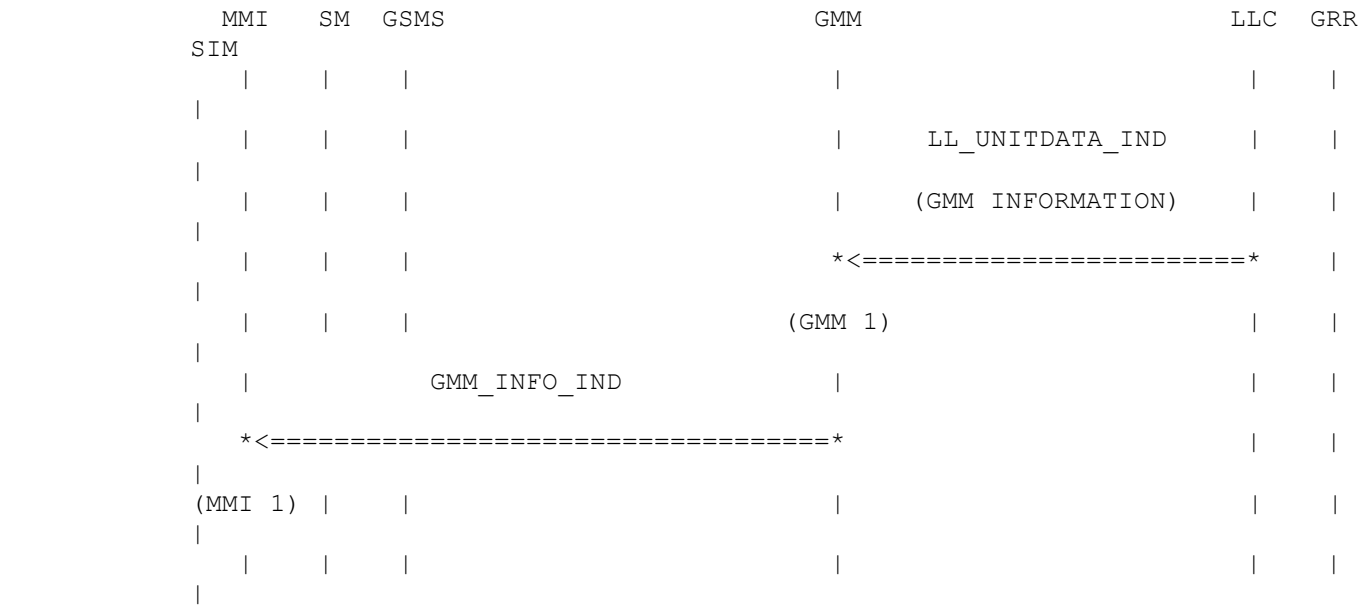
4.21 Interaction with GSMS



(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>

4.22 GMM INFORMATION message



(GMM 1)
GMM is in state GMM-REGISTERED. GMM receives the GMM INFORMATION message with the primitive LL_UNITDATA_IND.

<R.GMM.GMMINFO.M.001>

(MMI 1)
The information data is passed throw MMI.

4.22.1 MMGMM LUP NEEDED IND

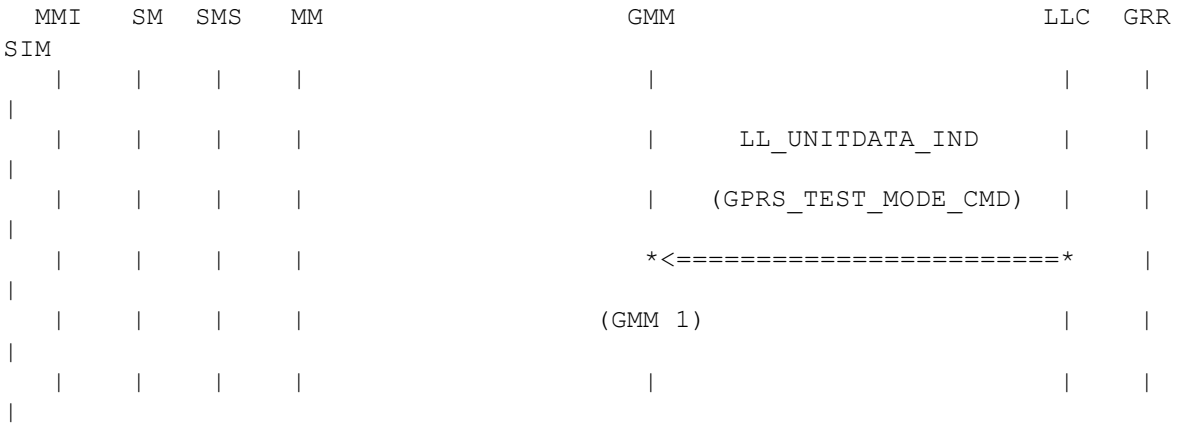
(GMM 1)
GMM receives the MMGMM LUP NEEDED IND primitive, i.e. timeout of timer T3212.

<none>

(GMM 2)
Depending on the state of GMM, GMM will start attach or RAU procedure or GMM requests MM to start LAU procedure.

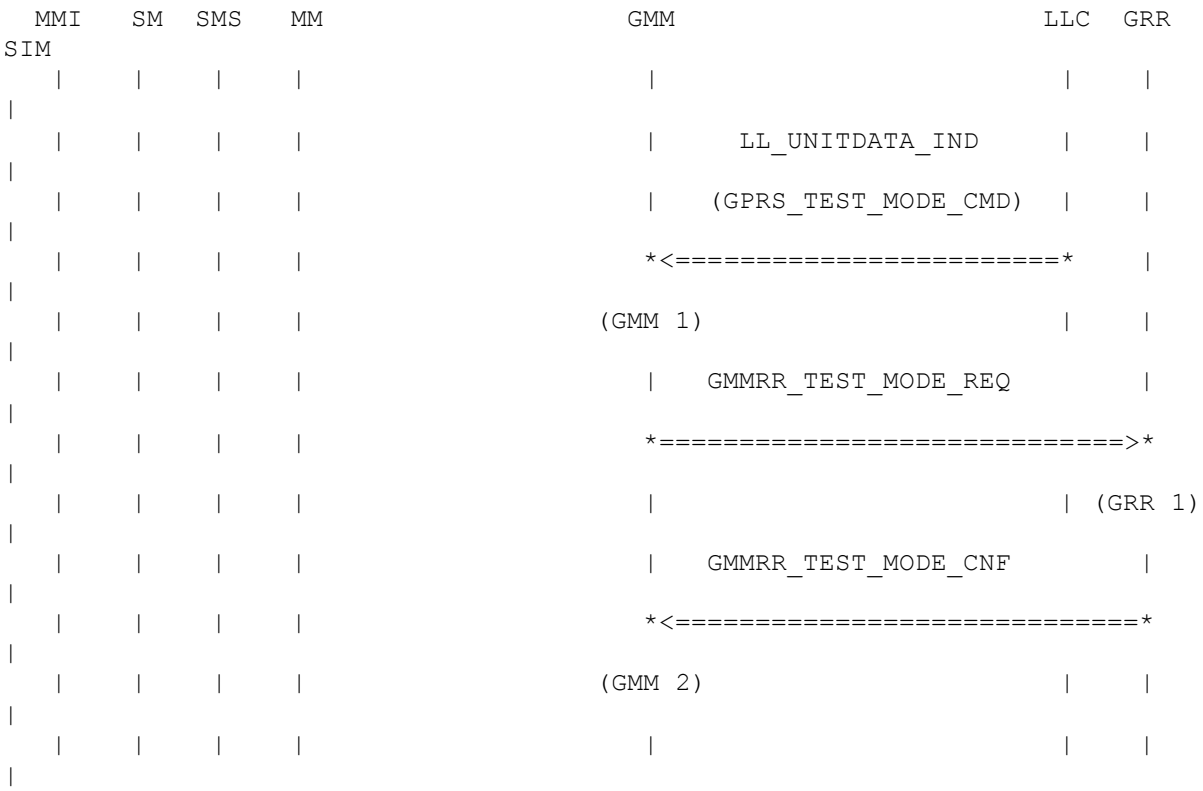
4.23 GPRS Test Mode

4.23.1 NO Test-SIM inserted



(GMM 1)
GMM is not in state GMM-REGISTERED.NORMAL-SERVICE or there is no TEST-SIM available. GMM receives the GPRS TEST MODE CMD message with the primitive LL_UNITDATA_IND. This Message is ignored.

4.23.2 Normal Test Mode



(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE. Test-SIM is inserted. GMM receives the GMM INFORMATION message with the primitive LL_UNITDATA_IND.

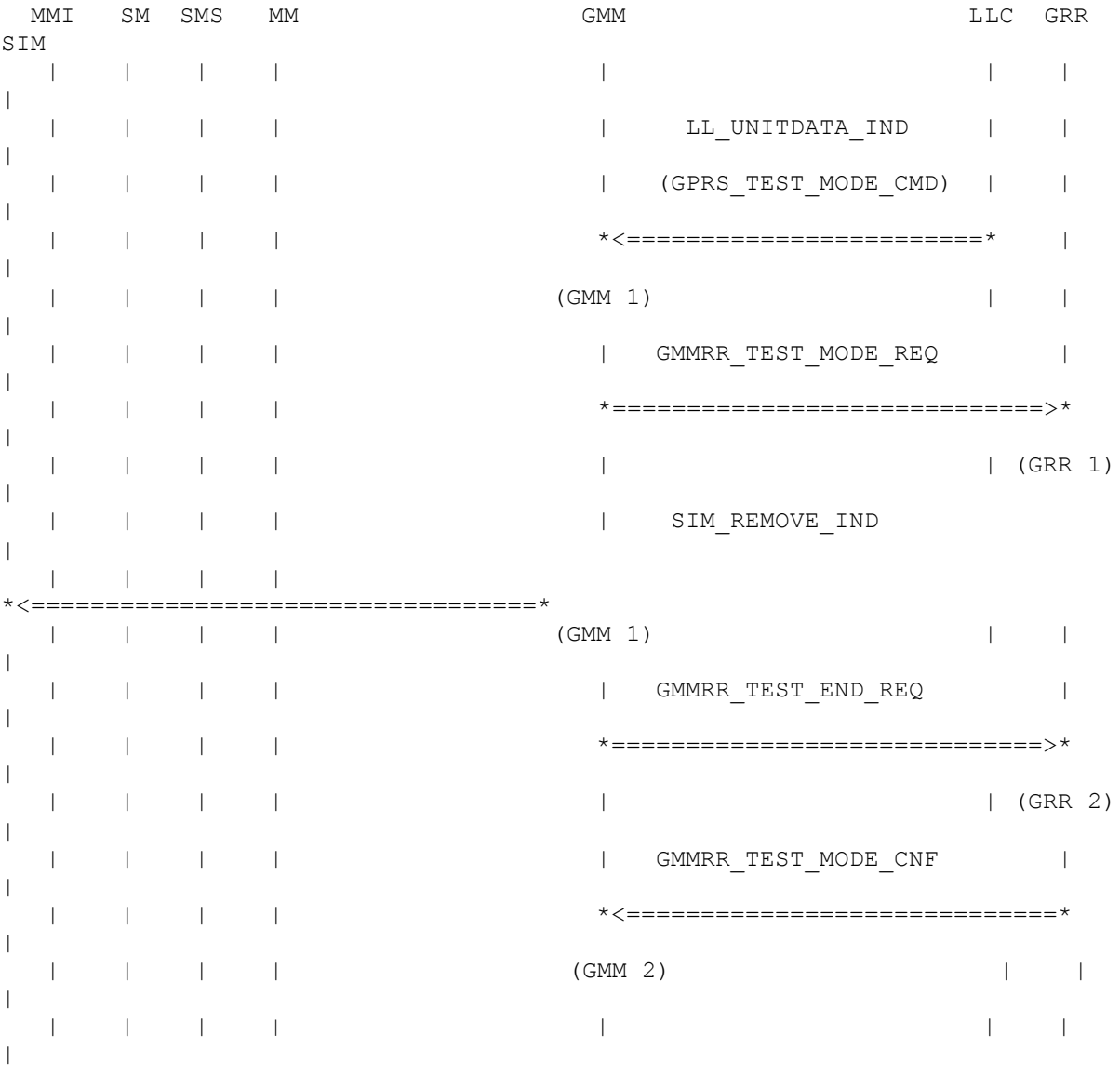
<R.GMM.GMMINFO.M.001>

(GRR)
The test mode message is forwarded zu GRR

<none>

(GMM 2)
GRR informs GMM when the test is finished.

4.23.3 Test-SIM removed



(GMM 1)
GMM is in state GMM-REGISTERED.NORMAL-SERVICE. GMM receives the GMM INFORMATION message with the primitive LL_UNITDATA_IND.
<R.GMM.GMMINFO.M.001>

(GRR 1)
The test mode message is forwarded zu GRR

(GRR 2)
Because of TEST-SIM was removed

(GMM 2)
GRR informs GMM when the test is finished.

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/>