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GSM PROTOCOL STACK

TEST SPECIFICATION

MM

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1.1 References

- [1] GSM 2.81, Line Identification Supplementary Services - Stage 1
ETS 300 514, ETSI, September 1994
- [2] GSM 2.82, Call Forwarding Supplementary Services - Stage 1
ETS 300 515, ETSI, September 1994
- [3] GSM 2.83, Call Waiting and Call Hold Supplementary Services - Stage 1
ETS 300 516, ETSI, September 1994
- [4] GSM 2.84, Multi Party Supplementary Services - Stage 1
ETS 300 517, ETSI, September 1994
- [5] GSM 2.85, Closed User Group Supplementary Services - Stage 1
ETS 300 518, ETSI, September 1994
- [6] GSM 2.86, Advice of Charge Supplementary Services - Stage 1
ETS 300 519, ETSI, September 1994
- [7] GSM 2.88, Call Barring Supplementary Services - Stage 1
ETS 300 520, ETSI, September 1994
- [8] GSM 3.14, Support of Dual Tone Multi Frequency Signalling via the GSM System
ETS 300 532, ETSI, April 1994
- [9] GSM 3.40, Technical Realization of the Short Message Service Point-to-Point
ETS 300 536, ETSI, January 1996
- [10] GSM 3.41, Technical Realization of Short Message Service Cell Broadcast
ETS 300 537, ETSI, June 1995
- [11] GSM 3.81, Line Identification Supplementary Services - Stage 2
ETS 300 542, ETSI, February 1995
- [12] GSM 3.82, Call Forwarding Supplementary Services - Stage 2
ETS 300 543, ETSI, February 1995
- [13] GSM 3.83, Call Waiting and Call Hold Supplementary Services - Stage 2
ETS 300 544, ETSI, November 1994
- [14] GSM 3.84, Multi Party Supplementary Services - Stage 2
ETS 300 545, ETSI, November 1994
- [15] GSM 3.85, Closed User Group Supplementary Services - Stage 2
ETS 300 546, ETSI, January 1996
- [16] GSM 3.86, Advice of Charge Supplementary Services - Stage 2
ETS 300 547, ETSI, March 1995
- [17] GSM 3.88, Call Barring Supplementary Services - Stage 2
ETS 300 548, ETSI, November 1994
- [18] GSM 4.01, MS-BSS Interface General Aspects and Principles
ETS 300 550, ETSI, September 1994
- [18a] GSM 4.03, MS-BSS Interface Channel Structures and Access Capabilities
ETS 300 552, ETSI, September 1994
- [19] GSM 4.05, Data Link Layer General Aspects
ETS 300 554, ETSI, September 1994
- [20] GSM 4.06, MS-BSS Interface Data Link Layer Specification
ETS 300 555, ETSI, September 1994
- [21] GSM 4.07, Mobile Radio Interface Signalling Layer 3 General Aspects
ETS 300 556, ETSI, February 1995

- [22] GSM 4.08, Mobile Radio Interface Layer 3 Specification
ETS 300 557, ETSI, January 1996
- [23] GSM 4.10, Mobile Radio Interface Layer 3 Supplementary Services Specification
General Aspects
ETS 300 558, ETSI, February 1995
- [24] GSM 4.11, Point-to-Point Short Message Service Support on Mobile Radio Interface
ETS 300 559, ETSI, October 1995
- [25] GSM 4.12, Short Message Service Cell Broadcast Support on Mobile Radio Interface
ETS 300 560, ETSI, January 1996
- [26] GSM 4.80, Mobile Radio Interface Supplementary Services Specification Formats and Coding
ETS 300 564, ETSI, February 1995
- [27] GSM 4.81, Line Identification Supplementary Services - Stage 3
ETS 300 565, ETSI, February 1995
- [28] GSM 4.82, Call Forwarding Supplementary Services - Stage 3
ETS 300 566, ETSI, February 1995
- [29] GSM 4.83, Call Waiting and Call Hold Supplementary Services - Stage 3
ETS 300 567, ETSI, February 1995
- [30] GSM 4.84, Multi Party Supplementary Services - Stage 3
ETS 300 568, ETSI, February 1995
- [31] GSM 4.85, Closed User Group Supplementary Services - Stage 3
ETS 300 569, ETSI, February 1995
- [32] GSM 4.86, Advice of Charge Supplementary Services - Stage 3
ETS 300 570, ETSI, February 1995
- [33] GSM 4.88, Call Barring Supplementary Services - Stage 3
ETS 300 571, ETSI, February 1995
- [34] GSM 5.01, Physical Layer on the Radio Path General Description
ETS 300 573, ETSI, October 1995
- [35] GSM 5.02, Multiplexing and Multiple Access on the Radio Path
ETS 300 574, ETSI, January 1996
- [36] GSM 5.08, Radio Sub-system Link Control
ETS 300 578, ETSI, January 1996
- [37] GSM 5.10, Radio Sub-system Synchronisation
ETS 300 579, ETSI, October 1995
- [38] Service Access Point MMREG
6147.100.96.100; Condat AG
- [39] Service Access Point MNCC
6147.101.96.100; Condat AG
- [40] Service Access Point MNSS
6147.102.96.100; Condat AG
- [41] Service Access Point MNSMS
6147.103.96.100; Condat AG
- [42] Service Access Point MMCC
6147.104.97.100; Condat AG
- [43] Service Access Point MMSS
6147.105.97.100; Condat AG
- [44] Service Access Point MMSMS
6147.106.97.100; Condat AG

- [45] Service Access Point RR
6147.107.97.100; Condat AG
- [46] Service Access Point SIM
6147.108.97.100; Condat AG
- [47] Service Access Point MPH
6147.109.96.100; Condat AG
- [48] Service Access Point DL
6147.110.96.100; Condat AG
- [49] Service Access Point MDL
6147.111.96.100; Condat AG
- [50] Service Access Point PH
6147.112.97.100; Condat AG
- [51] Service Access Point MMI
6147.113.96.100; Condat AG
- [52] Message Sequence Charts CC
6147.200.97.100; Condat AG
- [53] Message Sequence Charts SS
6147.201.97.100; Condat AG
- [54] Message Sequence Charts SMS
6147.202.97.100; Condat AG
- [55] Message Sequence Charts MM
6147.203.97.100; Condat AG
- [56] Message Sequence Charts RR
6147.204.96.100; Condat AG
- [57] Message Sequence Charts DL
6147.205.96.100; Condat AG
- [58] Users Guide
6147.300.96.100; Condat AG
- [59] Test Specification CC
6147.400.97.100; Condat AG
- [60] Test Specification SS
6147.401.97.100; Condat AG
- [61] Test Specification SMS
6147.402.97.100; Condat AG
- [62] Test Specification MM
6147.403.97.100; Condat AG
- [63] Test Specification RR
6147.404.97.100; Condat AG
- [64] Test Specification DL
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- [65] Test Specification CCD
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- [66] SDL Specification CC
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- [67] SDL Specification SS
6147.501.97.100; Condat AG

- [68] SDL Specification SMS
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- [69] SDL Specification MM
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- [74] Message Specification SMS
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- [76] Message Specification RR
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- [77] Message Specification DL
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- [78] Technical Documentation CC
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- [79] Technical Documentation SS
6147.701.97.100; Condat AG
- [80] Technical Documentation SMS
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- [81] Technical Documentation MM
6147.703.97.100; Condat AG
- [82] Technical Documentation RR
6147.704.97.100; Condat AG
- [83] Technical Documentation DL
6147.705.97.100; Condat AG
- [84] Technical Documentation CCD
6147.706.97.100; Condat AG

1.2 Abbreviations

| | |
|------|----------------------------------|
| AGCH | Access Grant Channel |
| BCCH | Broadcast Control Channel |
| BS | Base Station |
| BSIC | Base Station Identification Code |
| CBCH | Cell Broadcast Channel |
| CBQ | Cell Bar Qualify |
| CC | Call Control |
| CCCH | Common Control Channel |
| CCD | Condat Coder Decoder |
| CKSN | Ciphering Key Sequence Number |
| C/R | Command / Response |

| | |
|-------|--|
| C1 | Path Loss Criterion |
| C2 | Reselection Criterion |
| DCCH | Dedicated Control Channel |
| DISC | Disconnect Frame |
| DL | Data Link Layer |
| DM | Disconnected Mode Frame |
| 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 |
| GP | Guard Period |
| GSM | Global System for Mobile Communication |
| HPLMN | Home Public Land Mobile Network |
| I | Information Frame |
| IMEI | International Mobile Equipment Identity |
| IMSI | International Mobile Subscriber Identity |
| Kc | Authentication Key |
| L | Length Indicator |
| LAI | Location Area Information |
| LPD | Link Protocol Discriminator |
| M | More Data Bit |
| MCC | Mobile Country Code |
| MM | Mobility Management |
| MMI | Man Machine Interface |
| MNC | Mobile Network Code |
| MS | Mobile Station |
| NCC | National Colour Code |
| NECI | New Establishment Causes included |
| N(R) | Receive Number |
| N(S) | Send Number |
| OTD | Observed Time Difference |
| P | Poll Bit |
| PCH | Paging Channel |
| PDU | Protocol Description Unit |
| P/F | Poll / Final Bit |
| PL | Physical Layer |
| PLMN | Public Land Mobile Network |
| RACH | Random Access Channel |
| REJ | Reject Frame |
| RNR | Receive Not Ready Frame |
| RR | Radio Resource Management |
| RR | Receive Ready Frame |
| RTD | Real Time Difference |
| SABM | Set Asynchronous Balanced Mode |
| SACCH | Slow Associated Control Channel |
| SAP | Service Access Point |
| SAPI | Service Access Point Identifier |
| SDCCH | Slow Dedicated Control Channel |
| SIM | Subscriber Identity Module |
| SMS | Short Message Service |
| SMSCB | Short Message Service Cell Broadcast |
| SS | Supplementary Services |
| TCH | Traffic Channel |
| TCH/F | Traffic Channel Full Rate |
| TCH/H | Traffic Channel Half Rate |
| TDMA | Time Division Multiple Access |
| TMSI | Temporary Mobile Subscriber Identity |

| | |
|-------|-------------------------------------|
| UA | Unnumbered Acknowledgement Frame |
| UI | Unnumbered Information Frame |
| VPLMN | Visiting Public Land Mobile Network |
| V(A) | Acknowledgement State Variable |
| V(R) | Receive State Variable |
| V(S) | Send State Variable |

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 base of the Protocol Stack rests on the physical layer.

The Data Link Layer (DL) is used to handle an acknowledged connection between mobile and base station. The LAPDm protocol is used.

Radio Resource (RR) manages the resources of the air-interface. That means configuration of physical layer, cell selection and cell reselection, data transfer, RR-Connection handling.

Mobility Management (MM) handles registration aspects for the mobile station. It detects changes of location areas and updates a mobile station in the new location area.

Call Control (CC) provides the call functionality. This includes call establishment, call maintenance procedures like Hold, Retrieve or Modify, and call disconnection.

Supplementary Services (SS) handles all call independent supplementary services like call forwarding or call barring.

Short Message Services (SMS) is used for sending and receiving point-to-point short messages. Additionally the reception of cell broadcast short messages is included.

The man machine interface (MMI) is the interface to the user. Normally it is connected with a keypad as input device and a display as output device.

Between the several entities data interfaces are defined. These data interfaces are called Service Access Points (SAPs), indicating that an upper layer uses the services of a lower layer.

The GSM specification do not set out any implementation of the Protocol Stack. The following diagrams show the implementation described in all these documents for the mobile station. All entities except the Man Machine Interface and Physical Layer are implemented as part of the Protocol Stack.

Fehler! Es ist nicht möglich, durch die Bearbeitung von Feldfunktionen Objekte zu erstellen.

Figure 1: Mobile-station protocol architecture

This document describes the tests for Mobility Management.

3 Parameters

| | |
|--|---|
| FIELD (RXLEVEL_20) | 0x20 |
| ENDFIELD (RXLEVEL_20, 1) | |
| FIELD (RXLEVEL_20_A) | 12, /* Number of supported networks by SAPI*/ 0x20 |
| ENDFIELD (RXLEVEL_20_A, 1) | |
| FIELD (RXLEVEL_20_18) | 0x20, 0x18 |
| ENDFIELD (RXLEVEL_20_18, 2) | |
| FIELD (RXLEVEL_20_18_A) | 12, /* Number of supported networks by SAPI*/ 0x20, 0x18 |
| ENDFIELD (RXLEVEL_20_18_A, 3) | |
| FIELD (PLMN_LIST_FORB) | V_PLMN_PRES, 1,2,3, 3,2 |
| ENDFIELD (PLMN_LIST_FORB, 6) | |
| FIELD (PLMN_123_32_A) | V_PLMN_PRES, 1,2,3, 3,2 |
| ENDFIELD (PLMN_123_32_A, 6) | |
| FIELD (PLMN_LIST_LPLMN) | V_PLMN_PRES, 1,2,3, 3,1 |
| ENDFIELD (PLMN_LIST_LPLMN, 6) | |
| FIELD (PLMN_LIST_2_PLMN) | V_PLMN_PRES, 1,2,3, 3,3, V_PLMN_PRES, 1,2,3, 3,1, |
| ENDFIELD (PLMN_LIST_2_PLMN, 12) | |
| FIELD (PLMN_LIST_2_PLMN_1_NEW_FORB) | V_PLMN_PRES, 1,2,3, 4,4, V_PLMN_PRES, 1,2,3, 3,1, |
| ENDFIELD (PLMN_LIST_2_PLMN_1_NEW_FORB, 12) | |
| FIELD (PLMN_LIST_2_PLMN_A) | 12, /* Number of supported networks by SAPI*/ V_PLMN_PRES, 1,2,3, 3,3, V_PLMN_PRES, 1,2,3, 3,1, |
| ENDFIELD (PLMN_LIST_2_PLMN_A, 13) | |

```

FIELD (PLMN_LIST_2_PLMN_F)      V_PLMN_PRESENT,
                                1,2,3,
                                3,3,
                                V_PLMN_PRESENT,
                                1,2,3,
                                3,2,
ENDFIELD (PLMN_LIST_2_PLMN_F, 12)
FIELD (PLMN_LIST_2_PLMN_AF)     12, /* Number of supported networks by SAPI*/
                                V_PLMN_PRESENT,
                                1,2,3,
                                3,3,
                                V_PLMN_PRESENT,
                                1,2,3,
                                3,2,
ENDFIELD (PLMN_LIST_2_PLMN_AF, 13)
FIELD (PLMN_LIST_1_PLMN_A)     12, /* Number of supported networks by SAPI*/
                                V_PLMN_PRESENT,
                                1,2,3,
                                3,2,
ENDFIELD (PLMN_LIST_1_PLMN_A, 7)
FIELD (FORB_PLMN_ID)           12, /* Number of supported networks by SAPI*/
                                0,0
ENDFIELD (FORB_PLMN_ID, 3)
FIELD (FORB_PLMN_ID_F)         12, /* Number of supported networks by SAPI*/
                                0,1
ENDFIELD (FORB_PLMN_ID_F, 3)
FIELD (FORB_PLMN_ID_1F)       12, /* Number of supported networks by SAPI*/
                                0
ENDFIELD (FORB_PLMN_ID_1F, 2)
FIELD (CHM_NOT_PRESENT)        0xFF, 0xFF
ENDFIELD (CHM_NOT_PRESENT, 2)
FIELD (LOC_UPD_ACCEPT_2)       0x70, 0x00,
                                0x00, 0x00,
                                0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
                                0x17, 0x05, 0xf0, 0x12, 0x34, 0x56, 0x78
ENDFIELD (LOC_UPD_ACCEPT_2, 18)
FIELD (LOC_UPD_ACCEPT_3)       0x78, 0x00,
                                0x00, 0x00,
                                0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
                                0x17, 0x05, 0xf0, 0x12, 0x34, 0x56, 0x78,
                                0xA1
ENDFIELD (LOC_UPD_ACCEPT_3, 19)
FIELD (LOC_UPD_ACCEPT_4)       0x50, 0x00,
                                0x00, 0x00,
                                0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
                                0x17, 0x00, 0xA1
ENDFIELD (LOC_UPD_ACCEPT_4, 14)
FIELD (LOC_UPD_ACCEPT_5)       0x58, 0x00,
                                0x00, 0x00,
                                0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
                                0x17, 0x01, 0xF0, 0xA1
ENDFIELD (LOC_UPD_ACCEPT_5, 15)
FIELD (LOC_UPD_ACCEPT_6)       0x40, 0x00,
                                0x00, 0x00,
    
```

```
0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
0xA1
ENDFIELD (LOC_UPD_ACCEPT_6, 12)
FIELD (LOC_UPD_ACCEPT_3_B) 0x70, 0x00,
0x00, 0x00,
0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
0x17, 0x05, 0xf0, 0x12, 0x34, 0x56, 0x78
ENDFIELD (LOC_UPD_ACCEPT_3_B, 18)
FIELD (LOC_UPD_ACCEPT_4_B) 0x48, 0x00,
0x00, 0x00,
0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
0x17, 0x00
ENDFIELD (LOC_UPD_ACCEPT_4_B, 13)
FIELD (LOC_UPD_ACCEPT_5_B) 0x50, 0x00,
0x00, 0x00,
0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02,
0x17, 0x01, 0xF0
ENDFIELD (LOC_UPD_ACCEPT_5_B, 14)
FIELD (LOC_UPD_ACCEPT_6_B) 0x38, 0x00,
0x00, 0x00,
0x05, 0x02, 0x21, 0xf3, 0x33, 0x00, 0x02
ENDFIELD (LOC_UPD_ACCEPT_6_B, 11)
DECLARATION (BCCH_INF_2)
DECLARATION (EMPTY_IMSI)
DECLARATION (IMEI_DIGITS)
DECLARATION (IMEI_DIGITS_BCD)
DECLARATION (IMEISV_DIGITS)
DECLARATION (IMSI_1233347114912)
DECLARATION (INT_IMSI_001010123456789)
DECLARATION (PRI_IMSI_001010123456789)
DECLARATION (SIM_IMSI_001010123456789)
DECLARATION (MSG_IMSI_001010123456789)
DECLARATION (MIMSI_001010123456789)
DECLARATION (INT_IMSI_001010011223344)
DECLARATION (PRI_IMSI_001010011223344)
DECLARATION (SIM_IMSI_001010011223344)
DECLARATION (MSG_IMSI_001010011223344)
DECLARATION (MIMSI_001010011223344)
DECLARATION (INT_IMSI_001019876543210)
DECLARATION (PRI_IMSI_001019876543210)
DECLARATION (SIM_IMSI_001019876543210)
DECLARATION (MSG_IMSI_001019876543210)
DECLARATION (MIMSI_001019876543210)
DECLARATION (IE_FOLLOW_PROCEED)
DECLARATION (IMEI_DIGITS_CODED)
DECLARATION (KC_DELETED)
DECLARATION (KC_DELETED_SIM)
DECLARATION (KC_EMPTY)
DECLARATION (KC_VALUE_EMPTY)
DECLARATION (KC_11223344)
DECLARATION (KC_11223344_SIM)
DECLARATION (LOC_DELETED)
DECLARATION (LOC_INFO_123_33_FEFF)
DECLARATION (LOC_INFO_LAC_NOT_ALLOWED)
DECLARATION (LOC_INFO_PLMN_NOT_ALLOW)
DECLARATION (MCC_123)
DECLARATION (MCC_NONE)
DECLARATION (MIMSI_1233347114912)
DECLARATION (SRES_1)
```

DECLARATION (SRES_1_CODED)
DECLARATION (MNC_31)
DECLARATION (MNC_32)
DECLARATION (MNC_33)
DECLARATION (MNC_44)
DECLARATION (MNC_NONE)
DECLARATION (RAND_1)
DECLARATION (RAND_1_P)
DECLARATION (TMSI_34125708)

DECLARATION (AUTH_RAND_1)
DECLARATION (CC_MESSAGE)
DECLARATION (CIPH_KEY_NUM_01)
DECLARATION (CIPH_KEY_NUM_04)
DECLARATION (CIPH_KEY_NUM_RES)
DECLARATION (IDENT_TYPE_IMEI)
DECLARATION (IDENT_TYPE_IMEISV)
DECLARATION (IDENT_TYPE_IMSI)
DECLARATION (IDENT_TYPE_TMSI)
DECLARATION (LOC_AREA_ID_123_31_0002)
DECLARATION (LOC_AREA_ID_123_31_2147)
DECLARATION (LOC_AREA_ID_123_33_0001)
DECLARATION (LOC_AREA_ID_123_33_0002)
DECLARATION (LOC_AREA_ID_123_33_2147)
DECLARATION (LOC_AREA_ID_123_33_FEFF)
DECLARATION (LOC_AREA_ID_123_44_0002)
DECLARATION (LOC_UPD_TYPE_NORMAL)
DECLARATION (LOC_UPD_TYPE_NORMAL_FOL)
DECLARATION (LOC_UPD_TYPE_ATTACH)
DECLARATION (LOC_UPD_TYPE_PERIODIC)
DECLARATION (MOB_CLASS_1)
DECLARATION (MOB_CLASS_2)
DECLARATION (MOB_IDENT_IMEI)
DECLARATION (MOB_IDENT_IMEISV)
DECLARATION (MOB_IDENT_IMSI)
DECLARATION (MOB_IDENT_TMSI)
DECLARATION (MOB_IDENT_NEW_TMSI)

DECLARATION (ACC_CTRL_1)
DECLARATION (BCCH_INF_1)
DECLARATION (BCCH_INFO_1)
DECLARATION (BCCH_EMPTY_CHANNEL_LIST)
DECLARATION (BCCH_INFO_ECL)
DECLARATION (FORB_PLMN_NONE)
DECLARATION (FORB_PLMN_2)
DECLARATION (IMSI_FIELD_1)
DECLARATION (KCV_11223344)
DECLARATION (KCV_EMPTY)
DECLARATION (LOC_INFO_UPDATED_1)
DECLARATION (LOC_INFO_UPDATED_2)
DECLARATION (LOC_INFO_UPDATED_3)
DECLARATION (LOC_INFO_UPDATED_31_0002)
DECLARATION (LOC_INFO_UPDATED_31_2147)
DECLARATION (LOC_INFO_UPDATED_44)
DECLARATION (LOC_INFO_UPDATED_123_44_0002)
DECLARATION (LOC_INFO_UPDATED_4)
DECLARATION (LOC_INFO_UPDATED_5)
DECLARATION (LOC_INFO_DEL_SIM)
DECLARATION (LOC_INFO_DELETED)

DECLARATION (LOC_INFO_UPDATED_LPLMN)
DECLARATION (LOC_INFO_NOT_UPD_LPLMN)
DECLARATION (MM_INFO)
DECLARATION (MM_INFO_2)
DECLARATION (MM_INFO_ATT)
DECLARATION (MM_INFO_PER)
DECLARATION (MOB_ID_IMEI)
DECLARATION (MOB_ID_IMSI)
DECLARATION (MOB_ID_NEW_TMSI)
DECLARATION (MOB_ID_NO_ID)
DECLARATION (MS_CLASS_2)
DECLARATION (MS_CLASS_3_NOT_SET)
DECLARATION (OP_MODE_NO_SIM_NO_SERV)
DECLARATION (OP_MODE_NO_SIM_NO_SERV_M)
DECLARATION (OP_MODE_NO_SIM_LIM_SERV)
DECLARATION (OP_MODE_SIM_NO_SERV)
DECLARATION (OP_MODE_SIM_NO_SERV1)
DECLARATION (OP_MODE_SIM_NO_SERV4)
DECLARATION (OP_MODE_SIM_LIM_SERV4)
DECLARATION (OP_MODE_SIM_NO_SERV_M)
DECLARATION (OP_MODE_SIM_NO_SERV_M1)
DECLARATION (OP_MODE_SIM_NO_SERV_M2)
DECLARATION (OP_MODE_SIM_NO_SERV_A)
DECLARATION (OP_MODE_SIM_LIM_SERV_A)
DECLARATION (OP_MODE_SIM_SERV_A)
DECLARATION (OP_MODE_SIM_LIM_SERV)
DECLARATION (OP_MODE_SIM)
DECLARATION (OP_MODE_SIM_A)
DECLARATION (OP_MODE_SIM_M)
DECLARATION (OP_MODE_TEST_SIM)
DECLARATION (OP_MODE_TEST_SIM_NO_SERV)
DECLARATION (OP_MODE_NET_REQUEST)
DECLARATION (OP_MODE_SIM_1)
DECLARATION (OP_MODE_SIM_2)
DECLARATION (OP_MODE_SIM_3)
DECLARATION (OP_MODE_SIM_4)
DECLARATION (OP_SIM_MAN_MMI_SRCH_FS)
DECLARATION (OP_SIM_AUTO_MMI_SRCH_NS)
DECLARATION (OP_SIM_MAN_MMI_SRCH_NS)
DECLARATION (PLMN_123_33)
DECLARATION (PLMN_123_32)
DECLARATION (PLMN_123_31)
DECLARATION (PLMN_123_44)
DECLARATION (PLMN_NO_ID)
DECLARATION (PLMN_44)
DECLARATION (PREF_PLMN_NONE)
DECLARATION (PD_CC_AND_SAPI_0)
DECLARATION (FULL_NET_NAME)
DECLARATION (FULL_NAME)
DECLARATION (SHORT_NET_NAME)
DECLARATION (SHORT_NAME)
DECLARATION (NET_TEXT_A)
DECLARATION (NET_TZ)
DECLARATION (NTZ_MET)
DECLARATION (NET_TZ_AND_TIME)
DECLARATION (TIME)
DECLARATION (PLMN_SEL_NLPTT_PROX)
DECLARATION (EF_MSISDN)
DECLARATION (EF_PLMN_SEL)

```

DECLARATION (EF_PLMN_SEL_THPLMN)
DECLARATION (SIM_THPLMN_FF)
BYTE      NO_PLMN_FOUND      0
BYTE      ONE_PLMN_FOUND     1
BYTE      TWO_PLMN_FOUND     2
/*
 * accc (Access control)
 */
SHORT     ACC_2143            0x2143
SHORT     ACC_CLASS_0000     0x0000
/*
 * bcc (base station colour code)
 */
BYTE     BCC_0                0x00
/*
 * c_loc
 */
BYTE     C_LOC_LEN_11        0x0B
/*
 * cid (Cell identity)
 */
SHORT     CELL_ID_1122       0x1122
SHORT     CELL_ID_1123       0x1123
SHORT     CELL_ID_0045       0x0045
/*
 * cksn
 */
BYTE     CKSN_NO_KEY         0x07
BYTE     CKSN_00             0x00
BYTE     CKSN_01             0x01
BYTE     CKSN_04             0x04
/*
 * lac (Location area code)
 */
SHORT     LAC_0001           0x0001
SHORT     LAC_0002           0x0002
SHORT     LAC_2147           0x2147
SHORT     LAC_FEFF           0xFFFE
/*
 * c_loc (length of loc_info)
 */
BYTE     LOC_INFO_LEN_11    0x0B
/*
 * lut (Location updating type)
 */
BYTE     LUT_NORMAL          0x00
BYTE     LUT_ATTACH          0x02
BYTE     LUT_PERIODIC        0x01
/*
 * ncc (National colour code)
 */
BYTE     NCC_3               0x03
/*
 * nreg_cs

```

```

*/
SHORT    NREG_AUTH_FAIL          0x8439
/*
* Reject cause
*/
BYTE RC_RETRY_UPON_NEW_CELL      0x32
BYTE MMR_RC_RETRY_UPON_NEW_CELL 0x30 /* 0x30 - 0x3f => 0x30 */
/*
* prio (priority)
*/
BYTE PRIO_NORM_CALL              0x0
/*
* thplmn (HPLMN time)
*/
BYTE    THPLMN_01               0x01
BYTE    THPLMN_FF               0xFF
BEGINARRAY (SIM_THPLMN_FF, 1)
    0xFF
ENDARRAY
BYTE    LENGTH_THPLMN           0x01
/*
* ss (SS screening indicator)
*/
BYTE    SS_IND_3                 0x03
/*
* ti (Transaction identifier)
*/
BYTE TI_0 0x00
BYTE TI_2 0x02
BYTE TI_3 0x03
BYTE TI_4 0x04
BYTE TI_5 0x05
BYTE TI_6 0x06
/*
* ti (Transaction identifier)
*/
BYTE TMSI_34125708_ULONG        0x34125708
/*
* T3212 Periodic Time
*/
BYTE T3212_6_MIN                1
/*
* Definitions for MM INFORMATION
*/
BYTE    YEAR_00                 0x00
BYTE    MONTH_02                0x02
BYTE    DAY_08                  0x08
BYTE    HOUR_15                 0x15
BYTE    MINUTE_55               0x55
BYTE    SECOND_10               0x10
BYTE    TZ_MET                  0x01
BYTE    CS_UCS2                 0x00
BYTE    NUM_SPARE_0             0x00
/*
* Definitions for EM

```

```

*/
LONG  Bitm_1          0x1000
LONG  Bitm_2          0x2000
BYTE  EM_ENTITY      0x04

/*
 * Definitions for SAT
 */
SHORT  FILE_CHG_1      0x01  /* Number of changed files */
SHORT  FILE_CHG_2      0x02
BYTE   OFFSET_0        0x0000 /* Offset of data field */
BYTE   MAX_LEN_PREF_PLMN (96)
BYTE   PLMN_SEL_LENGTH 0x06
BEGINARRAY (PLMN_SEL_NLPTT_PROX, 6)
        0x02, 0xF4, 0x80,
        0x02, 0xF6, 0x10
ENDARRAY
BEGINARRAY (EF_MSISDN, 2)
        0x40, 0x6f
ENDARRAY
BEGINARRAY (EF_PLMN_SEL, 2)
        0x30, 0x6f
ENDARRAY
BEGINARRAY (EF_PLMN_SEL_THPLMN, 4)
        0x30, 0x6f,
        0x31, 0x6f
ENDARRAY
/*
 * empty IMSI
 */
BEGINARRAY (EMPTY_IMSI, 16)
        0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
        0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00
ENDARRAY

/*
 * imei (IMEI BCD)
 */
BEGINARRAY (IMEI_DIGITS_BCD, 16) 0x01, 0x03, 0x05, 0x07, 0x09, 0x00, 0x02, 0x04,
        0x06, 0x08, 0x01, 0x01, 0x02, 0x02, 0xFF, 0xFF ENDARRAY
BEGINARRAY (IMEI_DIGITS_CODED, 15) 0x0E, 0x01, 0x03, 0x05, 0x07, 0x09, 0x00, 0x02,
        0x04, 0x06, 0x08, 0x01, 0x01, 0x02, 0x02 ENDARRAY

/*
 * imei (IMEI - Mobile identity)
 */
BEGINARRAY (IMEISV_DIGITS, 16)
        0x01, 0x03, 0x05, 0x07, 0x09, 0x00, 0x02, 0x04,
        0x06, 0x08, 0x01, 0x01, 0x02, 0x02, 0x07, 0x08
ENDARRAY

BEGINARRAY (IMEI_DIGITS, 15)
        0x01, 0x03, 0x05, 0x07, 0x09, 0x00, 0x02, 0x04,
        0x06, 0x08, 0x01, 0x01, 0x02, 0x02, 0x00
ENDARRAY

/*
 * imsi
 */
BEGINARRAY (IMSI_1233347114912, 16) 0x01, 0x02, 0x03, 0x03, 0x03, 0x04, 0x07, 0x01,
        0x01, 0x04, 0x09, 0x01, 0x02, 0x0F, 0x0F, 0xFF ENDARRAY
    
```

```
BEGINARRAY (LOC_DELETED, 11) 0xFF, 0xFF, 0xFF, 0xFF, 0x21, 0xF3, 0x33,
    0x00, 0x02, 0x00, 0x00 ENDARRAY
BEGINARRAY (MIMSI_1233347114912, 13) 0x01, 0x02, 0x03, 0x03, 0x03, 0x04, 0x07, 0x01,
    0x01, 0x04, 0x09, 0x01, 0x02 ENDARRAY
/*
 * imsi "001010123456789" as of GSM 11.11 subclause 27.22.4.7.4.2
 */
BEGINARRAY (SIM_IMSI_001010123456789, 9)
    0x08, 0x09, 0x10, 0x10, 0x10, 0x32, 0x54, 0x76, 0x98
ENDARRAY
BEGINARRAY (INT_IMSI_001010123456789, 16)
    0x00, 0x00, 0x01, 0x00, 0x01,
    0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0xFF
ENDARRAY
BEGIN_PSTRUCT("imsi", PRI_IMSI_001010123456789)
    SET_COMP ("v_mid",          V_MID_PRES)
    SET_COMP ("id_type",        TYPE_IMSI)
    SET_COMP ("id",             INT_IMSI_001010123456789)
    SKIP_COMP ("tmsi_dig")
ENDSTRUCT
BEGINARRAY (MIMSI_001010123456789, 15)
    0x00, 0x00, 0x01, 0x00, 0x01,
    0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09
ENDARRAY
BEGIN_MSTRUCT("mob_id", MSG_IMSI_001010123456789)
    SET_COMP ("ident_type",      ID_TYPE_IMSI)
    SET_COMP ("odd_even",        ODD)
    SET_COMP ("ident_dig",       MIMSI_001010123456789)
    SKIP_COMP ("tmsi")
    SKIP_COMP ("dmy")
ENDSTRUCT
BEGIN_MSTRUCT("follow_proceed", IE_FOLLOW_PROCEED)
ENDSTRUCT
/*
 * imsi "001 01 00 11223344" as of GSM 11.11 subclause 27.22.4.7.4.2
 */
BEGINARRAY (SIM_IMSI_001010011223344, 9)
    0x08, 0x09, 0x10, 0x10, 0x00, 0x11, 0x22, 0x33, 0x44
ENDARRAY
BEGINARRAY (INT_IMSI_001010011223344, 16)
    0x00, 0x00, 0x01, 0x00, 0x01,
    0x00, 0x00, 0x01, 0x01, 0x02, 0x02, 0x03, 0x03, 0x04, 0x04, 0xFF
ENDARRAY
BEGIN_PSTRUCT("imsi", PRI_IMSI_001010011223344)
    SET_COMP ("v_mid",          V_MID_PRES)
    SET_COMP ("id_type",        TYPE_IMSI)
    SET_COMP ("id",             INT_IMSI_001010011223344)
    SKIP_COMP ("tmsi_dig")
ENDSTRUCT
BEGINARRAY (MIMSI_001010011223344, 15)
    0x00, 0x00, 0x01, 0x00, 0x01,
    0x00, 0x00, 0x01, 0x01, 0x02, 0x02, 0x03, 0x03, 0x04, 0x04
ENDARRAY
BEGIN_MSTRUCT("mob_id", MSG_IMSI_001010011223344)
    SET_COMP ("ident_type",      ID_TYPE_IMSI)
    SET_COMP ("odd_even",        ODD)
    SET_COMP ("ident_dig",       MIMSI_001010011223344)
    SKIP_COMP ("tmsi")
```

```
        SKIP_COMP ("dmy")
    ENDSTRUCT

/*
 * imsi "001 01 9876543210" as of GSM 11.11 subclause 27.22.4.7.4.2
 */
    BEGINARRAY (SIM_IMSI_001019876543210, 9)
        0x08, 0x09, 0x10, 0x10, 0x89, 0x67, 0x45, 0x23, 0x01
    ENDARRAY
    BEGINARRAY (INT_IMSI_001019876543210, 16)
        0x00, 0x00, 0x01, 0x00, 0x01,
        0x09, 0x08, 0x07, 0x06, 0x05, 0x04, 0x03, 0x02, 0x01, 0x00, 0xFF
    ENDARRAY
    BEGIN_PSTRUCT("imsi", PRI_IMSI_001019876543210)
        SET_COMP ("v_mid",          V_MID_PRES)
        SET_COMP ("id_type",        TYPE_IMSI)
        SET_COMP ("id",             INT_IMSI_001019876543210)
        SKIP_COMP ("tmsi_dig")
    ENDSTRUCT
    BEGINARRAY (MIMSI_001019876543210, 15)
        0x00, 0x00, 0x01, 0x00, 0x01,
        0x09, 0x08, 0x07, 0x06, 0x05, 0x04, 0x03, 0x02, 0x01, 0x00, 0xFF
    ENDARRAY
    BEGIN_MSTRUCT("mob_id", MSG_IMSI_001019876543210)
        SET_COMP ("ident_type",     ID_TYPE_IMSI)
        SET_COMP ("odd_even",       ODD)
        SET_COMP ("ident_dig",      MIMSI_001019876543210)
        SKIP_COMP ("tmsi")
        SKIP_COMP ("dmy")
    ENDSTRUCT

/*
 * sres (authentication parameter sres)
 */
    BEGINARRAY (SRES_1, 4) 0x01, 0x02, 0x03, 0x04 ENDARRAY
    BEGINARRAY (SRES_1_CODED, 8) 0x20, 0x00, 0x00, 0x00, 0x01, 0x02, 0x03, 0x04 ENDARRAY

/*
 * tmsi
 */
    BEGINARRAY (TMSI_34125708, 8) 0x20, 0x00, 0x00, 0x00, 0x34, 0x12, 0x57, 0x08 ENDARRAY

/*
 * kc (KC value)
 */
    BEGINARRAY (KC_DELETED, 8)
        0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00
    ENDARRAY
    BEGINARRAY (KC_DELETED_SIM, 9)
        0x08, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF
    ENDARRAY
    BEGINARRAY (KC_11223344, 8)
        0x01, 0x01, 0x02, 0x02, 0x03, 0x03, 0x04, 0x04
    ENDARRAY
    BEGINARRAY (KC_11223344_SIM, 9)
        0x08, 0x01, 0x01, 0x02, 0x02, 0x03, 0x03, 0x04, 0x04
    ENDARRAY

/*
 * mcc (Mobile country code)
 */
```

```
BEGINARRAY (MCC_NONE, 3)      0x0F, 0x0F, 0x0F ENDARRAY
BEGINARRAY (MCC_123, 3) 0x01, 0x02, 0x03 ENDARRAY
/*
 * mnc (Mobile network code)
 */
BEGINARRAY (MNC_NONE, 3) 0x0F, 0x0F, 0x0F ENDARRAY
BEGINARRAY (MNC_33, 2) 0x03, 0x03 ENDARRAY
BEGINARRAY (MNC_32, 2) 0x02, 0x03 ENDARRAY
BEGINARRAY (MNC_31, 2) 0x03, 0x01 ENDARRAY
BEGINARRAY (MNC_44, 2) 0x04, 0x04 ENDARRAY
/*
 * imsi_field (International mobile subscriber identity - GSM 11.11)
 */
BEGINARRAY (IMSI_FIELD_1, 9)
    0x08, /* Length */
    0x19, 0x32, 0x33, /* MCC=123, MNC=33 is HPLMN*/
    0x74, 0x11, 0x94, 0x21, 0xFF
ENDARRAY
/*
 * loc_info (Location Info - GSM 11.11)
 */
BEGINARRAY (LOC_INFO_UPDATED_1, 12)
    0x0B, /* Length */
    0xFF, 0xFF, 0xFF, 0xFF, /* TMSI */
    0x21, 0xF3, 0x33, 0x21, 0x47, /* LAI: MCC=123, MNC=33, LAI=2147 */
    0x00, /* TMSI TIME */
    0x00 /* Location update status */
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_2, 12)
    0x0B,
    0xFF, 0xFF, 0xFF, 0xFF,
    0x21, 0xF3, 0x33, 0x00, 0x02, /* LAI: MCC=123, MNC=33, LAI=0002 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_3, 12)
    0x0B,
    0x34, 0x12, 0x57, 0x08,
    0x21, 0xF3, 0x33, 0x00, 0x02, /* LAI: MCC=123, MNC=33, LAI=0002 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_31_2147, 12)
    0x0B,
    0x34, 0x12, 0x57, 0x08,
    0x21, 0xF3, 0x13, 0x21, 0x47, /* LAI: MCC=123, MNC=31, LAI=2147 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_31_0002, 12)
    0x0B,
    0x34, 0x12, 0x57, 0x08,
    0x21, 0xF3, 0x13, 0x00, 0x02, /* LAI: MCC=123, MNC=31, LAI=0002 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_44, 12)
    0x0B,
    0x34, 0x12, 0x57, 0x08,
```

```
    0x21, 0xF3, 0x44, 0x00, 0x02,      /* LAI: MCC= 123, MNC=44, LAI=0002 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_123_44_0002, 12)
    0x0B,
    0xFF, 0xFF, 0xFF, 0xFF,
    0x21, 0xF3, 0x44, 0x00, 0x02,      /* LAI: MCC= 123, MNC=44, LAI=0002 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_4, 12)
    0x0B,
    0x34, 0x12, 0x57, 0x08,
    0x21, 0xF3, 0x33, 0x00, 0x01,      /* LAI: MCC= 123, MNC=33, LAI=0001 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_5, 12)
    0x0B,
    0x34, 0x12, 0x57, 0x08,
    0x21, 0xF3, 0x33, 0x21, 0x47,      /* LAI: MCC= 123, MNC=33, LAI=2147 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_DELETED, 12)
    0x0B,
    0xFF, 0xFF, 0xFF, 0xFF,
    0x21, 0xF3, 0x33, 0x00, 0x02,      /* LAI: MCC= 123, MNC=33, LAI=0002 */
    0x00,
    0x00
ENDARRAY
BEGINARRAY (LOC_INFO_123_33_FEFF, 12)
    0x0B,
    0xFF, 0xFF, 0xFF, 0xFF,
    0x21, 0xF3, 0x33, 0xFF, 0xFE,      /* LAI: MCC= 123, MNC=33, LAI=deleted */
    0x00,
    0x01
ENDARRAY
BEGINARRAY (LOC_INFO_LAC_NOT_ALLOWED, 12)
    0x0B,
    0xFF, 0xFF, 0xFF, 0xFF,
    0xFF, 0xFF, 0xFF, 0xFF, 0xFE,      /* LAI deleted */
    0x00,
    0x03
ENDARRAY
BEGINARRAY (LOC_INFO_PLMN_NOT_ALLOW, 12)
    0x0B,
    0xFF, 0xFF, 0xFF, 0xFF,
    0x21, 0xF3, 0x33, 0xFF, 0xFE,      /* LAI: MCC= 123, MNC=33, LAI=deleted */
    0x00,
    0x03
ENDARRAY
BEGINARRAY (LOC_INFO_UPDATED_LPLMN, 12)
    0x0B, /* Length */
    0xFF, 0xFF, 0xFF, 0xFF,           /* TMSI */
    0x21, 0xF3, 0x13, 0x21, 0x47,      /* LAI: MNC= 123, MCC=31, LAI= 2147 */
    0x00, /* TMSI TIME */
    0x00 /* Location update status */
```

```
ENDARRAY
BEGINARRAY (LOC_INFO_NOT_UPD_LPLMN, 12)
    0x0B,
    0xFF, 0xFF, 0xFF, 0xFF,
    0x21, 0xF3, 0x32, 0x00, 0x02,      /* LAI: MNC= 123, MCC=32, LAI=0002 */
    0x00,
    0x01
ENDARRAY
```

```
/*
 * pref_plmn (Preferred plmns)
 */
BEGINARRAY (PREF_PLMN_NONE, 25)
    0x18,
    0xFF, 0xFF, 0xFF,
    0xFF, 0xFF, 0xFF
ENDARRAY
```

```
/*
 * forb_plmn (Forbidden plmns)
 */
BEGINARRAY (FORB_PLMN_NONE, 13)
    0x0C,
    0xFF, 0xFF, 0xFF,
    0xFF, 0xFF, 0xFF,
    0xFF, 0xFF, 0xFF,
    0xFF, 0xFF, 0xFF
ENDARRAY
```

```
ENDARRAY
BEGINARRAY (FORB_PLMN_2, 13)
    0x0C,
    0x21, 0xF3, 0x23,
    0xFF, 0xFF, 0xFF,
    0xFF, 0xFF, 0xFF,
    0xFF, 0xFF, 0xFF
ENDARRAY
```

```
ENDARRAY
/*
 * acc_ctrl (Access control)
 */
BEGINARRAY (ACC_CTRL_1, 3) 0x02, 0x21, 0x43 ENDARRAY
```

```
/*
 * bcch_inf (BCCH information from SIM card)
 */
BEGINARRAY (BCCH_INF_1, 17) 0x10, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
    0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
    0x00 ENDARRAY
```

```
BEGINARRAY (BCCH_INF_2, 17) 0x10, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
    0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
    0x00 ENDARRAY
```

```
/*
 * rand (Authentication parameter RAND)
 */
BEGINARRAY (RAND_1, 16) 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08,
    0x09, 0x0A, 0x0B, 0x0C, 0x0D, 0x0E, 0x0F, 0x10 ENDARRAY
```

BEGINARRAY (RAND_1_P, 17) 0x10, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08,
 0x09, 0x0A, 0x0B, 0x0C, 0x0D, 0x0E, 0x0F, 0x10 ENDARRAY

```

/*
 * CC Message
 *
 *      0x10, 0x00,          length in bits
 *      0x18, 0x00,          offset in bits
 *      0x00, 0x00, 0x00,    not used
 *      0x23,                ti = 2, pd = CC
 *      0x01                 msg_type = CC_ALERTING
 */
    
```

```

BEGINARRAY (CC_MESSAGE, 9)      0x10, 0x00,
    0x18, 0x00,
    0x00, 0x00, 0x00,
    0x23,
    0x01
ENDARRAY
    
```

```

BEGINARRAY (NET_TEXT_A, 20)
    0x00, 0x01,
    0x00, 0x02,
    0x00, 0x03,
    0x00, 0x04,
    0x00, 0x05,
    0x00, 0x06,
    0x00, 0x07,
    0x00, 0x08,
    0x00, 0x09,
    0x00, 0x0a
    
```

```

ENDARRAY
BYTE      NET_TEXT_LEN_A      20
    
```

```

/*
 * auth_rand (Ciphering key sequence number)
 */
    
```

```

BEGIN_MSTRUCT ("auth_rand", AUTH_RAND_1)
    SET_COMP ("rand",          RAND_1)
    
```

```

ENDSTRUCT
    
```

```

/*
 * ciph_key_num (Ciphering key sequence number)
 */
    
```

```

BEGIN_MSTRUCT ("ciph_key_num", CIPH_KEY_NUM_RES)
    SET_COMP ("key_seq",      CKSN_RES)
    
```

```

ENDSTRUCT
    
```

```

BEGIN_MSTRUCT ("ciph_key_num", CIPH_KEY_NUM_01)
    SET_COMP ("key_seq",      CKSN_01)
    
```

```

ENDSTRUCT
    
```

```

BEGIN_MSTRUCT ("ciph_key_num", CIPH_KEY_NUM_04)
    SET_COMP ("key_seq",      CKSN_04)
    
```

```

ENDSTRUCT
    
```

```

/*
 * ident (identity type)
 */
    
```

```

BEGIN_MSTRUCT ("ident", IDENT_TYPE_IMEI)
    SET_COMP ("ident_type",   ID_TYPE_IMEI)
    
```

```

ENDSTRUCT
    
```

```
BEGIN_MSTRUCT("ident", IDENT_TYPE_IMEISV)
    SET_COMP ("ident_type",          ID_TYPE_IMEISV)
ENDSTRUCT
BEGIN_MSTRUCT("ident", IDENT_TYPE_IMSI)
    SET_COMP ("ident_type",          ID_TYPE_IMSI)
ENDSTRUCT
BEGIN_MSTRUCT("ident", IDENT_TYPE_TMSI)
    SET_COMP ("ident_type",          ID_TYPE_TMSI)
ENDSTRUCT
/*
 * loc_upd_type(Location updating type)
 */
BEGIN_MSTRUCT ("loc_upd_type", LOC_UPD_TYPE_NORMAL)
    SET_COMP ("follow",              FOR_PENDING_NO)
    SET_COMP ("lut",                  LUT_NORMAL)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_upd_type", LOC_UPD_TYPE_NORMAL_FOL)
    SET_COMP ("follow",              FOR_PENDING_YES)
    SET_COMP ("lut",                  LUT_NORMAL)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_upd_type", LOC_UPD_TYPE_ATTACH)
    SET_COMP ("follow",              FOR_PENDING_NO)
    SET_COMP ("lut",                  LUT_ATTACH)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_upd_type", LOC_UPD_TYPE_PERIODIC)
    SET_COMP ("follow",              FOR_PENDING_NO)
    SET_COMP ("lut",                  LUT_PERIODIC)
ENDSTRUCT
/*
 * loc_area_ident (Location area identification)
 */
BEGIN_MSTRUCT ("loc_area_ident", LOC_AREA_ID_123_33_0001)
    SET_COMP ("mcc",                  MCC_123)
    SET_COMP ("mnc",                  MNC_33)
    SET_COMP ("lac",                  LAC_0001)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_area_ident", LOC_AREA_ID_123_33_0002)
    SET_COMP ("mcc",                  MCC_123)
    SET_COMP ("mnc",                  MNC_33)
    SET_COMP ("lac",                  LAC_0002)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_area_ident", LOC_AREA_ID_123_31_0002)
    SET_COMP ("mcc",                  MCC_123)
    SET_COMP ("mnc",                  MNC_31)
    SET_COMP ("lac",                  LAC_0002)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_area_ident", LOC_AREA_ID_123_31_2147)
    SET_COMP ("mcc",                  MCC_123)
    SET_COMP ("mnc",                  MNC_31)
    SET_COMP ("lac",                  LAC_2147)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_area_ident", LOC_AREA_ID_123_33_2147)
    SET_COMP ("mcc",                  MCC_123)
    SET_COMP ("mnc",                  MNC_33)
    SET_COMP ("lac",                  LAC_2147)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_area_ident", LOC_AREA_ID_123_33_FEFF)
    SET_COMP ("mcc",                  MCC_123)
    SET_COMP ("mnc",                  MNC_33)
```

```
        SET_COMP ("lac",                LAC_FEFF)
ENDSTRUCT
BEGIN_MSTRUCT ("loc_area_ident", LOC_AREA_ID_123_44_0002)
        SET_COMP ("mcc",                MCC_123)
        SET_COMP ("mnc",                MNC_44)
        SET_COMP ("lac",                LAC_0002)
ENDSTRUCT

/*
 * mob_ident (Mobile identity)
 */
BEGIN_MSTRUCT ("mob_id", MOB_IDENT_IMSI)
        SET_COMP ("ident_type",        ID_TYPE_IMSI)
        SET_COMP ("odd_even",          ODD)
        SET_COMP ("ident_dig",         MIMSI_1233347114912)
        SKIP_COMP ("tmsi")
        SKIP_COMP ("dmy")
ENDSTRUCT
BEGIN_MSTRUCT ("mob_id", MOB_IDENT_TMSI)
        SET_COMP ("ident_type",        ID_TYPE_TMSI)
        SET_COMP ("odd_even",          EVEN)
        SKIP_COMP ("ident_dig")
        SET_COMP ("tmsi", TMSI_34125708)
        SKIP_COMP ("dmy")
ENDSTRUCT
BEGIN_MSTRUCT ("mob_id", MOB_IDENT_IMEI)
        SET_COMP ("ident_type",        ID_TYPE_IMEI)
        SET_COMP ("odd_even",          ODD)
        SET_COMP ("ident_dig",         IMEI_DIGITS)
        SKIP_COMP ("tmsi")
        SKIP_COMP ("dmy")
ENDSTRUCT
BEGIN_MSTRUCT ("mob_id", MOB_IDENT_IMEISV)
        SET_COMP ("ident_type",        ID_TYPE_IMEISV)
        SET_COMP ("odd_even",          EVEN)
        SET_COMP ("ident_dig",         IMEISV_DIGITS)
        SKIP_COMP ("tmsi")
        SKIP_COMP ("dmy")
ENDSTRUCT
/*
 * mob_class_1 (Mobile station Classmark 1)
 */
BEGIN_MSTRUCT ("mob_class_1", MOB_CLASS_1)
        SET_COMP ("rev_lev",           PHASE_2)
        SET_COMP ("es_ind",            ES_IMPL_YES)
        SET_COMP ("a5_1",              A5_1_YES)
        SET_COMP ("rf_pow_cap",        RF_CLASS_2)
ENDSTRUCT
/*
 * mob_class_2 (Mobile station Classmark 2)
 */
BEGIN_MSTRUCT ("mob_class_2", MOB_CLASS_2)
        SET_COMP ("rev_lev",           PHASE_2)
        SET_COMP ("es_ind",            ES_IMPL_YES)
        SET_COMP ("a5_1",              A5_1_YES)
        SET_COMP ("rf_pow_cap",        RF_CLASS_2)
        SET_COMP ("ps_cap",            PS_CAP_YES)
        SET_COMP ("ss_screen",         SS_IND_3)
        SET_COMP ("sm_cap",            SM_CAP_YES)
```

```

        SET_COMP ("freq_cap",      FREQ_CAP_NO)
        SET_COMP ("class_3",      MC2_CLASS_3_NO)
        SET_COMP ("cmstp",       CMSP_SUPPORTED_YES)
        SET_COMP ("a5_3",        A5_3_NO)
        SET_COMP ("a5_2",        A5_2_NO)
    ENDSTRUCT
    BEGIN_MSTRUCT("pd_and_sapi", PD_CC_AND_SAPI_0)
        SET_COMP ("sapi",        SAPI_0)
        SET_COMP ("pd",          PD_CC)
    ENDSTRUCT
/*
 * mob_id (Mobile identity)
 */
    BEGIN_MSTRUCT("mob_id", MOB_IDENT_NEW_TMSI)
        SET_COMP ("ident_type",  ID_TYPE_TMSI)
        SKIP_COMP ("odd_even")
        SKIP_COMP ("ident_dig")
        SET_COMP ("tmsi",        TMSI_34125708)
        SKIP_COMP ("dmy")
    ENDSTRUCT
    BEGIN_MSTRUCT("full_net_name", FULL_NET_NAME)
        SET_COMP ("cs",          CS_UCS2)
        SET_COMP ("add_ci",      ADD_CI_NO)
        SET_COMP ("num_spare",   NUM_SPARE_0)
        SET_COMP ("text",        NET_TEXT_A)
    ENDSTRUCT
    BEGIN_MSTRUCT("short_net_name", SHORT_NET_NAME)
        SET_COMP ("cs",          CS_UCS2)
        SET_COMP ("add_ci",      ADD_CI_NO)
        SET_COMP ("num_spare",   NUM_SPARE_0)
        SET_COMP ("text",        NET_TEXT_A)
    ENDSTRUCT
    BEGIN_MSTRUCT("net_tz", NET_TZ)
        SET_COMP ("tz",          TZ_MET)
    ENDSTRUCT
    BEGIN_MSTRUCT("net_tz_and_time", NET_TZ_AND_TIME)
        SET_COMP ("year",        YEAR_00)
        SET_COMP ("month",       MONTH_02)
        SET_COMP ("day",         DAY_08)
        SET_COMP ("hour",        HOUR_15)
        SET_COMP ("minute",      MINUTE_55)
        SET_COMP ("second",      SECOND_10)
        SET_COMP ("tz",          TZ_MET)
    ENDSTRUCT
/*
 * bcch_info(BCCH information - RR)
 */
    BEGIN_PSTRUCT("bcch_info", BCCH_INFO_1)
        SET_COMP ("v_bcch",      V_BCCH_NOT_PRES)
        SKIP_COMP ("bcch")
    ENDSTRUCT
    BEGINARRAY (BCCH_EMPTY_CHANNEL_LIST, 16)
        BCCH_CH_NOT_INCL,
        BCCH_CH_NOT_INCL,

```



```

        SET_COMP ("c_loc",          LOC_INFO_LEN_11)
        SET_COMP ("loc",           LOC_DELETED)
    ENDSTRUCT
/*
 * mm_info (MM information)
 */
BEGIN_PSTRUCT("mm_info", MM_INFO)
    SET_COMP ("valid",            MM_INFO_PRESENT)
    SET_COMP ("la",              LA_NOT_IN_FRBD_LST_INCL)
    SET_COMP ("att",             ATT_NOT_ALLOW)
    SET_COMP ("re",              RE_NOT_ALLOW)
    SKIP_COMP ("band")
    SET_COMP ("ncc",             NCC_3)
    SET_COMP ("bcc",             BCC_0)
    SET_COMP ("t3212",           T3212_NO_PRD_UPDAT)
ENDSTRUCT
BEGIN_PSTRUCT("mm_info", MM_INFO_2)
    SET_COMP ("valid",            MM_INFO_PRESENT)
    SET_COMP ("la",              LA_NOT_IN_FRBD_LST_INCL)
    SET_COMP ("att",             ATT_NOT_ALLOW)
    SET_COMP ("re",              RE_ALLOW)
    SKIP_COMP ("band")
    SET_COMP ("ncc",             NCC_3)
    SET_COMP ("bcc",             BCC_0)
    SET_COMP ("t3212",           T3212_NO_PRD_UPDAT)
ENDSTRUCT
BEGIN_PSTRUCT("mm_info", MM_INFO_ATT)
    SET_COMP ("valid",            MM_INFO_PRESENT)
    SET_COMP ("la",              LA_NOT_IN_FRBD_LST_INCL)
    SET_COMP ("att",             ATT_ALLOW)
    SET_COMP ("re",              RE_NOT_ALLOW)
    SKIP_COMP ("band")
    SET_COMP ("ncc",             NCC_3)
    SET_COMP ("bcc",             BCC_0)
    SET_COMP ("t3212",           T3212_NO_PRD_UPDAT)
ENDSTRUCT
BEGIN_PSTRUCT("mm_info", MM_INFO_PER)
    SET_COMP ("valid",            MM_INFO_PRESENT)
    SET_COMP ("la",              LA_NOT_IN_FRBD_LST_INCL)
    SET_COMP ("att",             ATT_NOT_ALLOW)
    SET_COMP ("re",              RE_NOT_ALLOW)
    SKIP_COMP ("band")
    SET_COMP ("ncc",             NCC_3)
    SET_COMP ("bcc",             BCC_0)
    SET_COMP ("t3212",           T3212_6_MIN)
ENDSTRUCT
/*
 * op (Operation mode)
 */
BEGIN_PSTRUCT ("op", OP_MODE_SIM)
    SET_COMP ("v_op",            V_OP_PRESENT)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_AUTO)
    SET_COMP ("sim_ins",         SIM_INSERT)
    SET_COMP ("func",            FUNC_PLMN_SRCH)
    SET_COMP ("service",         FULL_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_A)
    SET_COMP ("v_op",            V_OP_PRESENT)

```

```

        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_AUTO)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SET_COMP ("func",      FUNC_NET_SRCH_BY_MMI)
        SET_COMP ("service",    NO_SERVICE)
    ENDSTRUCT
    BEGIN_PSTRUCT ("op", OP_MODE_SIM_M)
        SET_COMP ("v_op",      V_OP_PRES)
        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_MAN)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SET_COMP ("func",      FUNC_PLMN_SRCH)
        SET_COMP ("service",    FULL_SERVICE)
    ENDSTRUCT
    BEGIN_PSTRUCT ("op", OP_MODE_SIM_SERV_A)
        SET_COMP ("v_op",      V_OP_PRES)
        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_AUTO)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SET_COMP ("func",      FUNC_NET_SRCH_BY_MMI)
        SET_COMP ("service",    FULL_SERVICE)
    ENDSTRUCT
    BYTE      NORMAL_SIM_INS    0x00
    /* The following byte is documented in SIM.DOC as 0x01, to be corrected sometime */
    BYTE      TEST_SIM_INS      0x81
    BEGIN_PSTRUCT ("op", OP_MODE_SIM_NO_SERV)
        SET_COMP ("v_op",      V_OP_PRES)
        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_AUTO)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SET_COMP ("func",      FUNC_PLMN_SRCH)
        SET_COMP ("service",    NO_SERVICE)
    ENDSTRUCT
    BEGIN_PSTRUCT ("op", OP_MODE_SIM_NO_SERV1)
        SET_COMP ("v_op",      V_OP_PRES)
        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_AUTO)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SKIP_COMP ("func")
        SET_COMP ("service",    NO_SERVICE)
    ENDSTRUCT
    BEGIN_PSTRUCT ("op", OP_MODE_SIM_NO_SERV4)
        SET_COMP ("v_op",      V_OP_PRES)
        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_AUTO)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SET_COMP ("func",      FUNC_NET_SRCH_BY_MMI)
        SET_COMP ("service",    NO_SERVICE)
    ENDSTRUCT
    BEGIN_PSTRUCT ("op", OP_MODE_SIM_LIM_SERV4)
        SET_COMP ("v_op",      V_OP_PRES)
        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_AUTO)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SET_COMP ("func",      FUNC_NET_SRCH_BY_MMI)
        SET_COMP ("service",    LIMITED_SERVICE)
    ENDSTRUCT
    BEGIN_PSTRUCT ("op", OP_MODE_SIM_NO_SERV_M)
        SET_COMP ("v_op",      V_OP_PRES)
    
```

```
        SET_COMP ("ts",          TS_NO_AVAIL)
        SET_COMP ("m",          M_MAN)
        SET_COMP ("sim_ins",    SIM_INSRT)
        SET_COMP ("func",      FUNC_NET_SRCH_BY_MMI)
        SET_COMP ("service",    NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_NO_SERV_M1)
    SET_COMP ("v_op",          V_OP_PRES)
    SET_COMP ("ts",          TS_NO_AVAIL)
    SET_COMP ("m",          M_MAN)
    SET_COMP ("sim_ins",    SIM_INSRT)
    SKIP_COMP ("func")
    SET_COMP ("service",    NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_NO_SERV_M2)
    SET_COMP ("v_op",          V_OP_PRES)
    SET_COMP ("ts",          TS_NO_AVAIL)
    SET_COMP ("m",          M_MAN)
    SET_COMP ("sim_ins",    SIM_INSRT)
    SET_COMP ("func",      FUNC_PLMN_SRCH)
    SET_COMP ("service",    NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_NO_SERV_A)
    SET_COMP ("v_op",          V_OP_PRES)
    SET_COMP ("ts",          TS_NO_AVAIL)
    SET_COMP ("m",          M_AUTO)
    SET_COMP ("sim_ins",    SIM_INSRT)
    SET_COMP ("func",      FUNC_NET_SRCH_BY_MMI)
    SET_COMP ("service",    NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_LIM_SERV_A)
    SET_COMP ("v_op",          V_OP_PRES)
    SET_COMP ("ts",          TS_NO_AVAIL)
    SET_COMP ("m",          M_AUTO)
    SET_COMP ("sim_ins",    SIM_INSRT)
    SET_COMP ("func",      FUNC_NET_SRCH_BY_MMI)
    SET_COMP ("service",    LIMITED_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_LIM_SERV)
    SET_COMP ("v_op",          V_OP_PRES)
    SET_COMP ("ts",          TS_NO_AVAIL)
    SET_COMP ("m",          M_AUTO)
    SET_COMP ("sim_ins",    SIM_INSRT)
    SET_COMP ("func",      FUNC_PLMN_SRCH)
    SET_COMP ("service",    LIMITED_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_TEST_SIM)
    SET_COMP ("v_op",          V_OP_PRES)
    SET_COMP ("ts",          TS_AVAIL)
    SET_COMP ("m",          M_AUTO)
    SET_COMP ("sim_ins",    SIM_INSRT)
    SET_COMP ("func",      FUNC_PLMN_SRCH)
    SET_COMP ("service",    FULL_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_TEST_SIM_NO_SERV)
    SET_COMP ("v_op",          V_OP_PRES)
    SET_COMP ("ts",          TS_AVAIL)
    SET_COMP ("m",          M_AUTO)
    SET_COMP ("sim_ins",    SIM_INSRT)
```

```
        SET_COMP ("func",          FUNC_PLMN_SRCH)
        SET_COMP ("service",       NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_NO_SIM_NO_SERV)
    SET_COMP ("v_op",             V_OP_PRES)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_AUTO)
    SET_COMP ("sim_ins",         SIM_NO_INSRT)
    SET_COMP ("func",           FUNC_LIM_SERV_ST_SRCH)
    SET_COMP ("service",        NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_NO_SIM_NO_SERV_M)
    SET_COMP ("v_op",             V_OP_PRES)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_MAN)
    SET_COMP ("sim_ins",         SIM_NO_INSRT)
    SET_COMP ("func",           FUNC_LIM_SERV_ST_SRCH)
    SET_COMP ("service",        NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_NO_SIM_LIM_SERV)
    SET_COMP ("v_op",             V_OP_PRES)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_AUTO)
    SET_COMP ("sim_ins",         SIM_NO_INSRT)
    SET_COMP ("func",           FUNC_LIM_SERV_ST_SRCH)
    SET_COMP ("service",        LIMITED_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_NET_REQUEST)
    SET_COMP ("v_op",             V_OP_PRES)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_AUTO)
    SET_COMP ("sim_ins",         SIM_INSRT)
    SET_COMP ("func",           FUNC_NET_SRCH_BY_MMI)
    SET_COMP ("service",        NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_1)
    SET_COMP ("v_op",             V_OP_PRES)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_MAN)
    SET_COMP ("sim_ins",         SIM_INSRT)
    SET_COMP ("func",           FUNC_NET_SRCH_BY_MMI)
    SET_COMP ("service",        NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_2)
    SET_COMP ("v_op",             V_OP_PRES)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_MAN)
    SET_COMP ("sim_ins",         SIM_INSRT)
    SET_COMP ("func",           FUNC_PLMN_SRCH)
    SET_COMP ("service",        NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_MODE_SIM_3)
    SET_COMP ("v_op",             V_OP_PRES)
    SET_COMP ("ts",              TS_NO_AVAIL)
    SET_COMP ("m",               M_MAN)
    SET_COMP ("sim_ins",         SIM_INSRT)
    SET_COMP ("func",           FUNC_PLMN_SRCH)
    SET_COMP ("service",        FULL_SERVICE)
ENDSTRUCT
```

```

BEGIN_PSTRUCT ("op", OP_MODE_SIM_4)
    SET_COMP ("v_op", V_OP_PRESENT)
    SET_COMP ("ts", TS_NO_AVAILABLE)
    SET_COMP ("m", M_MANUAL)
    SET_COMP ("sim_ins", SIM_INSERT)
    SET_COMP ("func", FUNC_PLMN_SEARCH)
    SET_COMP ("service", LIMITED_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_SIM_AUTO_MMI_SEARCH_NS)
    SET_COMP ("v_op", V_OP_PRESENT)
    SET_COMP ("ts", TS_NO_AVAILABLE)
    SET_COMP ("m", M_AUTO)
    SET_COMP ("sim_ins", SIM_INSERT)
    SET_COMP ("func", FUNC_NET_SEARCH_BY_MMI)
    SET_COMP ("service", NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_SIM_MAN_MMI_SEARCH_NS)
    SET_COMP ("v_op", V_OP_PRESENT)
    SET_COMP ("ts", TS_NO_AVAILABLE)
    SET_COMP ("m", M_MANUAL)
    SET_COMP ("sim_ins", SIM_INSERT)
    SET_COMP ("func", FUNC_NET_SEARCH_BY_MMI)
    SET_COMP ("service", NO_SERVICE)
ENDSTRUCT
BEGIN_PSTRUCT ("op", OP_SIM_MAN_MMI_SEARCH_FS)
    SET_COMP ("v_op", V_OP_PRESENT)
    SET_COMP ("ts", TS_NO_AVAILABLE)
    SET_COMP ("m", M_MANUAL)
    SET_COMP ("sim_ins", SIM_INSERT)
    SET_COMP ("func", FUNC_NET_SEARCH_BY_MMI)
    SET_COMP ("service", FULL_SERVICE)
ENDSTRUCT
/*
 * plmn (PLMN identification - RR)
 */
BEGIN_PSTRUCT ("plmn", PLMN_123_33)
    SET_COMP ("v_plmn", V_PLMN_PRESENT)
    SET_COMP ("mcc", MCC_123)
    SET_COMP ("mnc", MNC_33)
ENDSTRUCT
BEGIN_PSTRUCT ("plmn", PLMN_123_32)
    SET_COMP ("v_plmn", V_PLMN_PRESENT)
    SET_COMP ("mcc", MCC_123)
    SET_COMP ("mnc", MNC_32)
ENDSTRUCT
BEGIN_PSTRUCT ("plmn", PLMN_123_31)
    SET_COMP ("v_plmn", V_PLMN_PRESENT)
    SET_COMP ("mcc", MCC_123)
    SET_COMP ("mnc", MNC_31)
ENDSTRUCT
BEGIN_PSTRUCT ("plmn", PLMN_123_44)
    SET_COMP ("v_plmn", V_PLMN_PRESENT)
    SET_COMP ("mcc", MCC_123)
    SET_COMP ("mnc", MNC_44)
ENDSTRUCT
BEGIN_PSTRUCT ("plmn", PLMN_NO_ID)
    SET_COMP ("v_plmn", V_PLMN_NOT_PRESENT)
    SET_COMP ("mcc", MCC_NONE)
    
```

```
        SET_COMP ("mnc",           MNC_NONE)
ENDSTRUCT
BEGIN_PSTRUCT ("plmn", PLMN_44)
    SET_COMP ("v_plmn",           V_PLMN_PRES)
    SET_COMP ("mcc",             MCC_123)
    SET_COMP ("mnc",             MNC_44)
ENDSTRUCT
BEGIN_PSTRUCT ("full_name", FULL_NAME)
    SET_COMP ("v_name",           TRUE)
    SET_COMP ("cs",               CS_UCS2)
    SET_COMP ("add_ci",           ADD_CI_NO)
    SET_COMP ("num_spare",        NUM_SPARE_0)
    SET_COMP ("c_text",           NET_TEXT_LEN_A)
    SET_COMP ("text",             NET_TEXT_A)
ENDSTRUCT
BEGIN_PSTRUCT ("short_name", SHORT_NAME)
    SET_COMP ("v_name",           TRUE)
    SET_COMP ("cs",               CS_UCS2)
    SET_COMP ("add_ci",           ADD_CI_NO)
    SET_COMP ("num_spare",        NUM_SPARE_0)
    SET_COMP ("c_text",           NET_TEXT_LEN_A)
    SET_COMP ("text",             NET_TEXT_A)
ENDSTRUCT
BEGIN_PSTRUCT ("ntz", NTZ_MET)
    SET_COMP ("v_tz",             TRUE)
    SET_COMP ("tz",               TZ_MET)
ENDSTRUCT
BEGIN_PSTRUCT ("time", TIME)
    SET_COMP ("v_time",           TRUE)
    SET_COMP ("year",             YEAR_00)
    SET_COMP ("month",            MONTH_02)
    SET_COMP ("day",              DAY_08)
    SET_COMP ("hour",             HOUR_15)
    SET_COMP ("minute",           MINUTE_55)
    SET_COMP ("second",           SECOND_10)
ENDSTRUCT
```

4 TEST CASES

4.1 Internal Routing

4.1.1 MM001: Configure internal routing and PCO view

Description: Internal routing is configured and the duplication of primitives for performing the component tests with TAP and PCO view is carried out

Preamble: None

| MMI / CM / SIM | MM | RR / DL |
|---------------------------------|----|---------|
| | | |
| COMMAND (TAP RESET) | | |
| COMMAND (MMI RESET) | | |
| COMMAND (CC RESET) | | |
| COMMAND (SS RESET) | | |
| COMMAND (SMS RESET) | | |
| COMMAND (MM RESET) | | |
| COMMAND (RR RESET) | | |
| COMMAND (DL RESET) | | |
| COMMAND (SIM RESET) | | |
| COMMAND (PL RESET) | | |
| | | |
| COMMAND (TAP REDIRECT CLEAR) | | |
| COMMAND (MMI REDIRECT CLEAR) | | |
| COMMAND (CC REDIRECT CLEAR) | | |
| COMMAND (SS REDIRECT CLEAR) | | |
| COMMAND (SMS REDIRECT CLEAR) | | |
| COMMAND (MM REDIRECT CLEAR) | | |
| COMMAND (RR REDIRECT CLEAR) | | |
| COMMAND (DL REDIRECT CLEAR) | | |
| COMMAND (SIM REDIRECT CLEAR) | | |
| COMMAND (PL REDIRECT CLEAR) | | |
| | | |
| COMMAND (MMI REDIRECT MM NULL) | | |
| COMMAND (MMI REDIRECT CC NULL) | | |
| COMMAND (MMI REDIRECT SS NULL) | | |
| COMMAND (MMI REDIRECT SMS NULL) | | |
| COMMAND (MMI REDIRECT PL NULL) | | |
| | | |
| COMMAND (CC REDIRECT MMI NULL) | | |
| COMMAND (CC REDIRECT MM NULL) | | |
| | | |
| COMMAND (SS REDIRECT MMI NULL) | | |
| COMMAND (SS REDIRECT MM NULL) | | |
| | | |
| COMMAND (SMS REDIRECT MMI NULL) | | |
| COMMAND (SMS REDIRECT MM NULL) | | |
| | | |
| COMMAND (MM REDIRECT MMI TAP) | | |
| COMMAND (MM REDIRECT CC TAP) | | |
| COMMAND (MM REDIRECT SS TAP) | | |
| COMMAND (MM REDIRECT SMS TAP) | | |
| COMMAND (MM REDIRECT SIM TAP) | | |
| COMMAND (MM REDIRECT RR TAP) | | |
| COMMAND (MM REDIRECT DL TAP) | | |
| | | |
| COMMAND (RR REDIRECT MM NULL) | | |

```

COMMAND (RR REDIRECT DL NULL)
COMMAND (RR REDIRECT PL NULL)
COMMAND (RR CONFIG NO_SYS_TIME)
|
COMMAND (DL REDIRECT RR NULL)
COMMAND (DL REDIRECT MM NULL)
COMMAND (DL REDIRECT PL NULL)
|
COMMAND (PL REDIRECT RR NULL)
COMMAND (PL REDIRECT DL NULL)
COMMAND (PL REDIRECT MMI NULL)
|
COMMAND (SIM REDIRECT MM NULL)
|
COMMAND (TAP REDIRECT TAP MM)
|
    
```

Parametrization

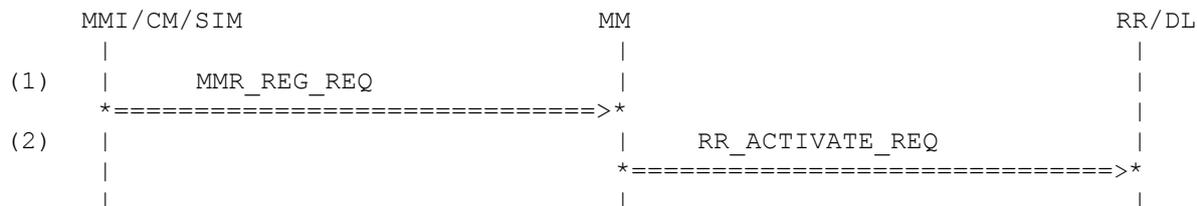
| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------------------|------------------|----------------------|
| History: | 04.07.97 | PZ |
| | | Initial Registration |

4.2 Registration

4.2.1 MM021: Registration without SIM card

Description: The reaction of MM to a request for registration with unplugged SIM card is tested. MM receives a MMR-REG request primitive and responds by issuing a RR-ACTIVATE request primitive in which the op field is set to 'limited service, no SIM'.

Preamble: MM001



Parametrization

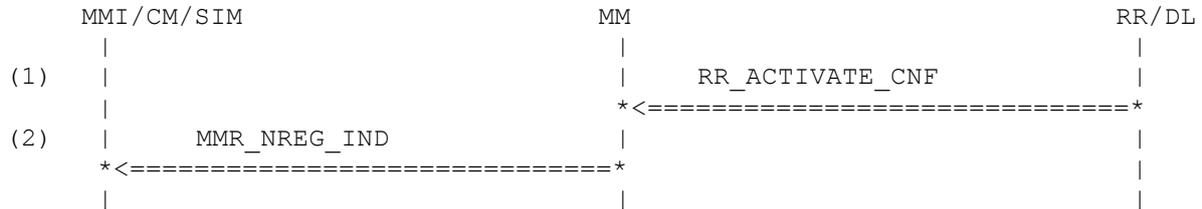
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|------------------------|--------------|
| (1) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (2) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_NO_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KC_DELETED | |
| | acc | ACC_CLASS_0000 | |
| | imsi | MOB_ID_NO_ID | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_FF | |
| | bcch_info | NOT_USED | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.2.2 MM022: Mobile station is synchronous to a Cell

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. The network identification is forwarded to MMI as part of a MMR-NREG indication primitive.

Preamble: MM021



Parametrization

| | Primitive | Parameter | Value |
|-----|-----------------|-------------------------|-------|
| (1) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_NO_SIM_LIM_SERV | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_44 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_NOSIM | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.2.3 MM023: SIM inserted - initiate cell selection

Description: MM receives a SIM-INSERT indication primitive and initiates cell selection by issuing a RR-ACTIVATE request primitive.

Preamble: MM022

Variants: <A>....



Parametrization

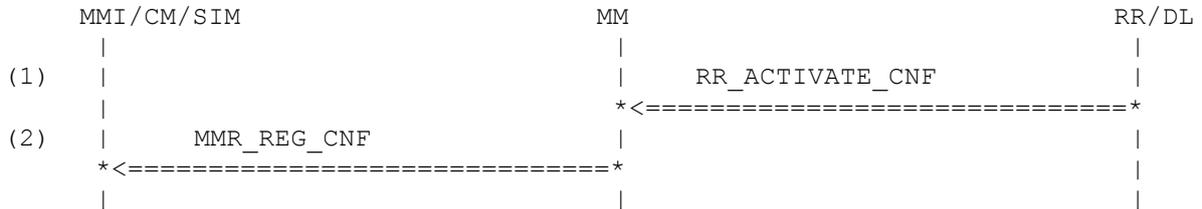
| | Primitive | Parameter | Value |
|-----|-------------------|--------------------------|-------|
| (1) | SIM_MM_INSERT_IND | | |
| | <A> op_mode | NORMAL_SIM_INS | |
| | op_mode | TEST_SIM_INS | |
| | imsi_field | IMSI_FIELD_1 | |
| | loc_info | LOC_INFO_UPDATED_1 | |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | forb_plmn | FORB_PLMN_NONE | |
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (2) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (3) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | <A> op | OP_MODE_SIM_NO_SERV | |
| | op | OP_MODE_TEST_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | <A> bcch_info | BCCH_INFO_ECL | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 24.02.00 | HM | Revised |
| | 12.04.00 | HM | Revised |

4.2.4 MM024: Successful conclusion of cell selection - cell with same LAI

Description: Successful conclusion of cell selection is signalled by the receipt of a RR-ACTIVATE confirmation primitive. MM forwards the PLMN identification to MMI in the form of a MMR-REG confirmation primitive.

Preamble: MM023A



Parametrization

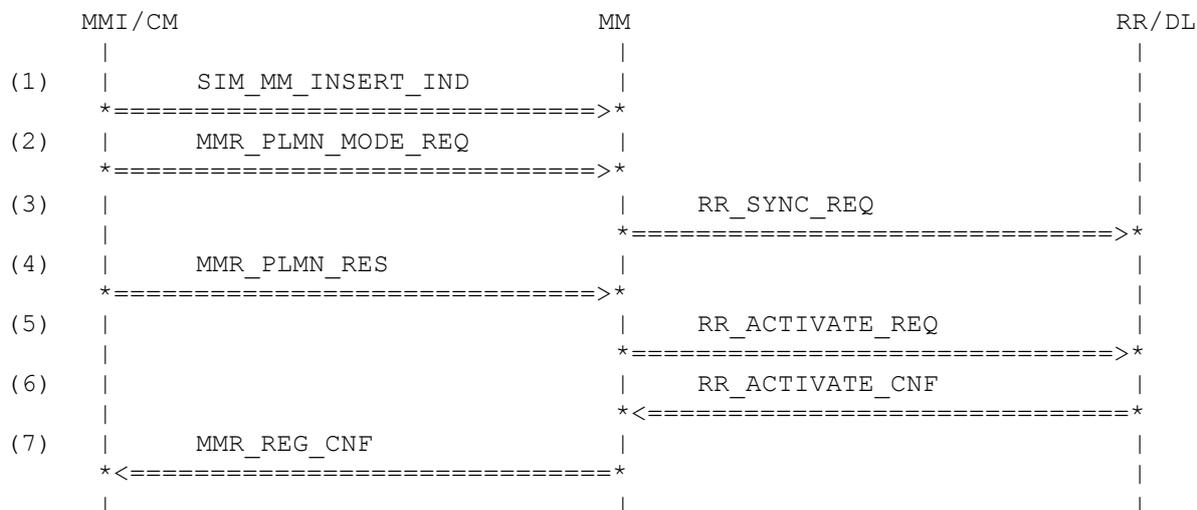
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|------------------|--------------|
| (1) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO_2 | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |

History: 09.07.97 HK Initial

4.2.5 MM025: SIM inserted - Search for specific network (no LUP)

Description: MM receives a SIM-INSERT indication primitive and initiates cell selection by issuing a RR-ACTIVATE request primitive after receiving a start trigger of MMI.

Preamble: MM022



Parametrization

| | Primitive | Parameter | Value |
|-----|-------------------|------------------------|-------|
| (1) | SIM_MM_INSERT_IND | | |
| | op_mode | NORMAL_SIM_INS | |
| | imsi_field | IMSI_FIELD_1 | |
| | loc_info | LOC_INFO_UPDATED_1 | |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | forb_plmn | FORB_PLMN_NONE | |
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (2) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_MAN | |
| (3) | RR_SYNC_REQ | | |
| | op | OP_MODE_SIM_NO_SERV_M1 | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_PRESENT_16BIT | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (4) | MMR_PLMN_RES | | |
| | plmn | PLMN_123_33 | |
| (5) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV_M2 | |
| | cksn | CKSN_RES | |

| | | |
|-----|-----------------|-------------------|
| | kcv | KCV_EMPTY |
| | acc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_1 |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (6) | RR_ACTIVATE_CNF | |
| | op | OP_MODE_SIM_M |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (7) | MMR_REG_CNF | |
| | plmn | PLMN_123_33 |

History: 23.04.99 LE Initial

| | |
|----------------------|-------------------------|
| (3) RR_SYNC_REQ | |
| op | OP_MODE_SIM_NO_SERV_M1 |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | NOT_PRESENT_16BIT |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (4) MMR_PLMN_RES | |
| plmn | PLMN_123_44 |
| (5) RR_ACTIVATE_REQ | |
| plmn | PLMN_123_44 |
| op | OP_MODE_SIM_NO_SERV_M2 |
| cksn | CKSN_RES |
| kcv | KCV_EMPTY |
| accc | ACC_2143 |
| imsi | MOB_ID_IMSI |
| tmsi | MOB_ID_NO_ID |
| thplmn | THPLMN_01 |
| bcch_info | BCCH_INFO_1 |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |
| (6) RR_ACTIVATE_CNF | |
| op | OP_MODE_SIM |
| mm_info | MM_INFO |
| cid | CELL_ID_1122 |
| plmn | PLMN_123_44 |
| lac | LAC_0002 |
| power | RF_CLASS_2 |
| gprs_indic | GPRS_NO |
| (7) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti_TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_2147 |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (8) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (9) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_ACCEPT |

| | | |
|------|-------------------|-------------------------|
| | tiTI_0 | |
| | loc_area_ident | LOC_AREA_ID_123_44_0002 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | NOT_USED |
| | } | |
| (10) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | tiTI_0 | |
| | } | |
| (11) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | MOB_ID_NEW_TMSI |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_USED |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (12) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | PLMN_123_44 |
| | lac | LAC_0002 |
| | synccs | SYNCCS_LAI_ALLOW |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | MMR_REG_CNF | |
| | plmn | PLMN_123_44 |
| (14) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_44 |
| | bcch_inf | BCCH_INF_1 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |

History: 23.04.99 LE Initial

4.2.7 MM027: Mobile station is synchronous to a Cell (reestablish allowed in cell)

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. The network identification is forwarded to MMI as part of a MMR-NREG indication primitive. This testcase is equivalent to testcase MM022 with the difference that call reestablishment is allowed in the cell (MM_INFO -> MM_INFO_2).

Preamble: MM021

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | | |
| | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | | | |
| | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|---------------------|-------------------------|-------|
| (1) RR_ACTIVATE_CNF | | |
| op | OP_MODE_NO_SIM_LIM_SERV | |
| mm_info | MM_INFO_2 | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_44 | |
| lac | LAC_0002 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (2) MMR_NREG_IND | | |
| nreg_cs | NREG_LIMITED_SERVICE | |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_SIM_INVALID_NOSIM | |

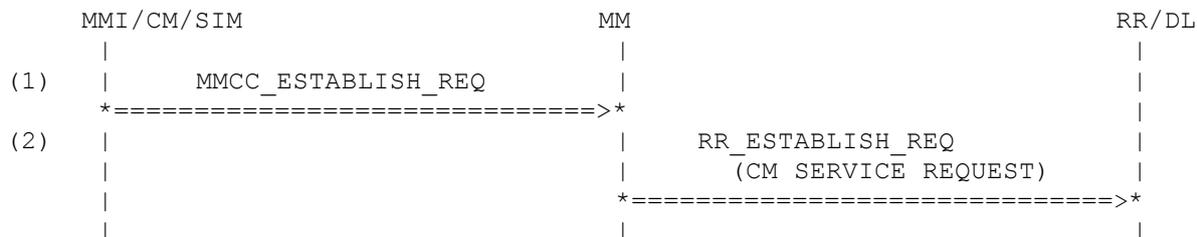
History: 16.02.00 HM Initial
 02.03.00 HM Revised (search_running)

4.3 Connection Establishment

4.3.1 MM041: Establish request prior to existing RR Connection

Description: MM receives a MMCC-ESTABLISH request primitive from CC and requests a RR connection by sending a CM SERVICE REQUEST message to RR as part of a RR-ESTABLISH request primitive.

Preamble: MM024



Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------------------------|-------------------------------|--------------|
| (1) MMCC_ESTABLISH_REQ | | |
| ti | TI_2 | |
| prio | PRIO_NORM_CALL | |
| estcs | ESTCS_MOB_ORIG_SPCH | |
| (2) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_MOB_ORIG_SPCH_CAL_BY_CC | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_CM_SERV_REQ | |
| ti | TI_0 | |
| cm_serv_type | ST_MOC | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| mob_class_2 | MOB_CLASS_2 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 08.07.97 HK Initial

4.3.2 MM042: Mobile terminated MM Connection

Description: MM is alerted of a mobile-terminated call by the receipt of a RR- ESTABLISH indication primitive followed by a CC message as part of a RR-DATA indication primitive. MM enters State 6 (MM Connection Active) and issues a MMCC-ESTABLISH indication primitive.

Preamble: MM024

| | MMI / CM / SIM | MM | RR / DL |
|-----|--------------------|------------------|---------|
| (1) | | RR_ESTABLISH_IND | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (CC message) | |
| | | *<=====* | |
| (3) | MMCC_ESTABLISH_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value | |
|------------------------|-----------|------------|---------|
| (1) RR_ESTABLISH_IND | param | NOT_USED | |
| (2) RR_DATA_IND | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |
| (3) MMCC_ESTABLISH_IND | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |
| History: | 09.07.97 | HK | Initial |
| | 17.09.97 | DL | revised |

4.3.3 MM043: Acknowledgement of MM Connection

Description: The MM connection is confirmed by the network in the form of a RR-ESTABLISH primitive followed by with a CM SERVICE ACCEPT message. MM changes to State 6 (MM Connection Active) and informs CC by issuing a MMCC-ESTABLISH confirmation primitive.

Preamble: MM041

| | MMI / CM / SIM | MM | RR / DL |
|-----|--------------------|---------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (CM SERVICE ACCEPT) | |
| | | *<=====* | |
| (3) | MMCC_ESTABLISH_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|--|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti } | NOT_USED NOT_USED MM DOWNLINK D_CM_SERV_ACCEPT TI_0 | |
| (3) | MMCC_ESTABLISH_CNF ti | TI_2 | |

History: 08.07.97 HK Initial

4.3.4 MM044: Identity Request in State 5

Description: MM changes to State 5 (Wait for Outgoing MM Connection) on receipt of a RR-ESTABLISH confirmation primitive. An IDENTITY REQUEST message is received from the network, to which MM responds by issuing an IDENTITY RESPONSE message.

Preamble: MM041

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (IDENTITY REQUEST IMSI) | |
| | | *<=====* | |
| (3) | | RR_DATA_REQ | |
| | | (IDENTITY RESPONSE) | |
| | | *=====>* | |
| (4) | | RR_DATA_IND | |
| | | (IDENTITY REQUEST IMEI) | |
| | | *<=====* | |
| (5) | | RR_DATA_REQ | |
| | | (IDENTITY RESPONSE) | |
| | | *=====>* | |
| (6) | | RR_DATA_IND | |
| | | (ID REQUEST IMEISV) | |
| | | *<=====* | |
| (7) | | RR_DATA_REQ | |
| | | (IDENTITY RESPONSE) | |
| | | *=====>* | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|-----------------|-------|
| (1) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (2) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_IDENT_REQ | |
| ti | TI_0 | |
| ident | IDENT_TYPE_IMSI | |
| } | | |
| (3) RR_DATA_REQ | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_IDENT_RES | |
| ti | TI_0 | |

```
        mob_id                MOB_IDENT_IMSI
    }
(4) RR_DATA_IND
    d1                NOT_USED
    d2                NOT_USED
    sdu
    {
    component          MM
    direction          DOWNLINK
    pd                 D_IDENT_REQ
    ti                 TI_0
    ident              IDENT_TYPE_IMEI
    }
(5) RR_DATA_REQ
    d1                NOT_USED
    d2                NOT_USED
    sdu
    {
    component          MM
    direction          UPLINK
    pd                 U_IDENT_RES
    ti                 TI_0
    mob_id             MOB_IDENT_IMEI
    }
(6) RR_DATA_IND
    d1                NOT_USED
    d2                NOT_USED
    sdu
    {
    component          MM
    direction          DOWNLINK
    pd                 D_IDENT_REQ
    ti                 TI_0
    ident              IDENT_TYPE_IMEISV
    }
(7) RR_DATA_REQ
    d1                NOT_USED
    d2                NOT_USED
    sdu
    {
    component          MM
    direction          UPLINK
    pd                 U_IDENT_RES
    ti                 TI_0
    mob_id             MOB_IDENT_IMEISV
    }
```

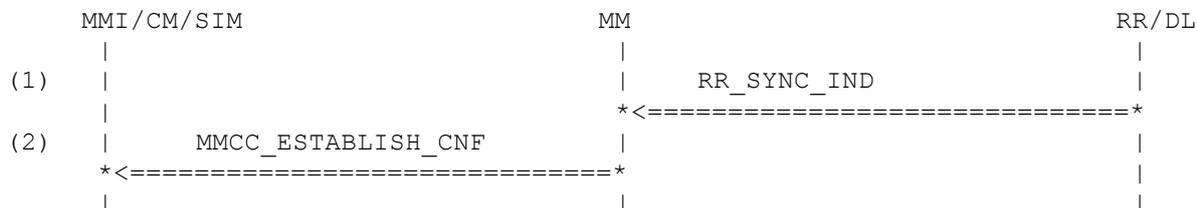
History: 08.07.97 HK Initial
 07.11.00 HM Revised

4.3.5 MM045: RR-MM Synchronization

Description: Synchronization by RR is signalled in the form of a RR-SYNC indication primitive. MM issues a MNCC-ESTABLISH confirmation primitive to CC.

Preamble: MM044

Variants: <A>....



Parametrization

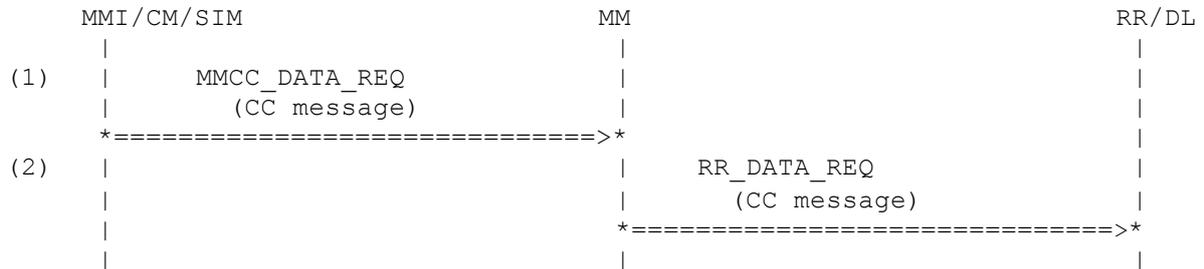
| Primitive | Parameter | Value |
|------------------------|-----------------|-------|
| (1) RR_SYNC_IND | | |
| <A> ciph | CIPH_ON | |
| ciph | CIPH_OFF | |
| mm_info | MM_INFO_2 | |
| bcch_info | BCCH_INFO_1 | |
| synccs | NOT_USED | |
| chm | CHM_NOT_PRESENT | |
| (2) MMCC_ESTABLISH_CNF | | |
| ti | TI_2 | |

History: 09.07.97 HK Initial

4.3.6 MM047: Data Transfer from Mobile Station in State 6

Description: In State 6 (MM Connection Active) MM receives a CC message and forwards this to the network as part of a RR-DATA request primitive.

Preamble: MM043



Parametrization

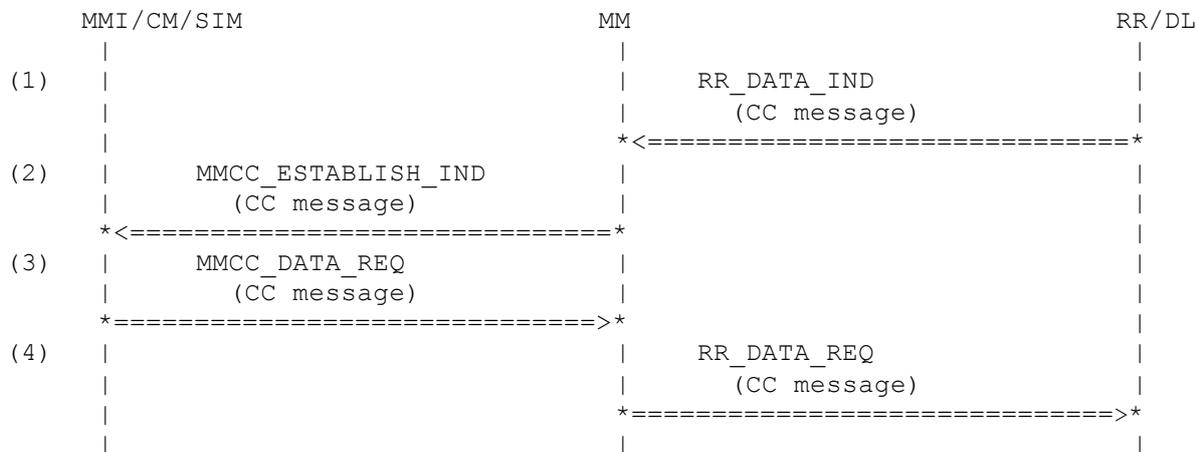
| Primitive | Parameter | Value |
|-------------------|-----------|------------|
| (1) MMCC_DATA_REQ | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | CC_MESSAGE |
| (2) RR_DATA_REQ | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | CC_MESSAGE |

History: 09.07.97 HK Initial

4.3.7 MM048: Data Transfer in both directions in State 6

Description: In State 6 (MM Connection Active) MM receives a CC message both from CC and the network. MM forwards the message from the network to CC as part of a MMCC-DATA indication primitive and to the network as part of a RR-DATA request primitive.

Preamble: MM043



Parametrization

| Primitive | Parameter | Value | |
|------------------------|-----------|------------|---------|
| (1) RR_DATA_IND | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |
| (2) MMCC_ESTABLISH_IND | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |
| (3) MMCC_DATA_REQ | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |
| (4) RR_DATA_REQ | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |
| History: | 09.07.97 | HK | Initial |

4.3.8 MM049: Random Access Failed, internal auto redial

Description: RR responses with RR-RELEASE-IND to MM indicating a random access failure. MM starts one internal redialling.

Preamble: MM041

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------------|----------------------|-------|
| (1) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (3) | | RR_ESTABLISH_REQ | |
| | | (CM SERVICE REQUEST) | |
| | | *=====>* | |
| (4) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (5) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (6) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------------|-------|
| (1) | RR_RELEASE_IND | | |
| | relcs | RELCS_RND_ACC_FAIL | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_MOB_ORIG_SPCH_CAL_BY_CC | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_CM_SERV_REQ | |
| | ti | TI_0 | |
| | cm_serv_type | ST_MOC | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | mob_class_2 | MOB_CLASS_2 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (4) | RR_RELEASE_IND | | |
| | relcs | RELCS_RND_ACC_FAIL | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (5) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (6) | MMCC_RELEASE_IND | | |
| | ti | TI_2 | |
| | relcs | RELCS_RND_ACC_FAIL | |

History: 08.07.97 HK Initial

4.3.9 MM050: Initiation of CCBS call back

Description: Network sends CM SERVICE PROMPT for CM entity CC and SAPI = 0. MM notifies CC by MMCC_PROMPT_IND and enters state MM_PROCESS_PROMPT. CC assigns a transaction identifier for the new MM connection by MMCC_PROMPT_RSP, from now CC is allowed to send CM messages. The first CM message for CCBS is a START CC message, this will be forwarded by MM to RR.

Preamble: MM024

| | MMI / CM / SIM | MM | RR / DL |
|-----|---------------------|---------------------|---------|
| (1) | | RR_ESTABLISH_IND | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (CM SERVICE PROMPT) | |
| | | *<=====* | |
| (3) | MMCC_PROMPT_IND | | |
| | *<=====* | | |
| (4) | MMCC_PROMPT_RSP | | |
| | (newly assigned ti) | | |
| | *=====>* | | |
| (5) | MMCC_DATA_REQ | | |
| | (START CC) | | |
| | *=====>* | | |
| (6) | | RR_DATA_REQ | |
| | | (START CC) | |
| | | *=====>* | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|------------------------------------|----------|
| (1) | RR_ESTABLISH_IND param | NOT_USED | |
| (2) | RR_DATA_IND d2 sdu { component direction pd pd_and_sapi } | d1 NOT_USED | NOT_USED |
| (3) | MMCC_PROMPT_IND | | |
| (4) | MMCC_PROMPT_RSP ti | TI_5 | |
| (5) | MMCC_DATA_REQ d1 d2 sdu | NOT_USED NOT_USED CC_MESSAGE | |
| (6) | RR_DATA_REQ d1 d2 sdu | NOT_USED NOT_USED CC_MESSAGE | |

History: 15.02.00 HM Initial

4.3.10 MM051: Initiation of CCBS call back, out of ti

Description: Network sends CM SERVICE PROMPT for CM entity CC and SAPI = 0. MM notifies CC by MMCC_PROMPT_IND and enters state MM_PROCESS_PROMPT. CC doesn't assign a transaction identifier for the new MM connection e.g. due to a lack of transaction identifiers. MM shall return to state MM_WAIT_FOR_NW_CMD and release the connection after timeout if no further messages are received by the network.

Preamble: MM024

| | MMI / CM / SIM | MM | RR / DL |
|-----|-----------------|---------------------|---------|
| (1) | | RR_ESTABLISH_IND | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (CM SERVICE PROMPT) | |
| | | *<=====* | |
| (3) | MMCC_PROMPT_IND | | |
| | *<=====* | | |
| (4) | MMCC_PROMPT_REJ | | |
| | *=====>* | | |
| (5) | | RR_DATA_REQ | |
| | | (MM_STATUS) | |
| | | *=====>* | |
| | | | |

Parametrization

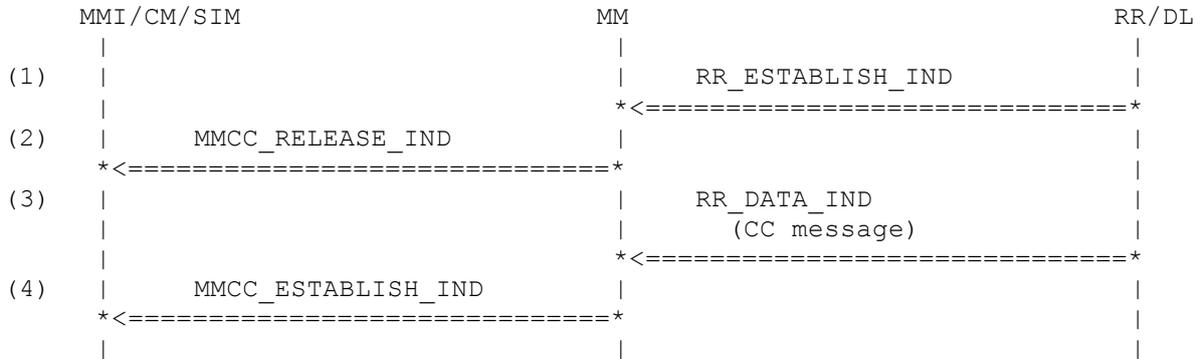
| | Primitive | Parameter | Value |
|------|---|---|----------|
| (7) | RR_ESTABLISH_IND param | NOT_USED | |
| (8) | RR_DATA_IND d2 sdu { component direction pd pd_and_sapi } | d1 NOT_USED | NOT_USED |
| (9) | MMCC_PROMPT_IND | | |
| (10) | MMCC_PROMPT_REJ | | |
| (11) | RR_DATA_REQ d1 d2 sdu { component direction pd rej_cause } | NOT_USED NOT_USED | |
| | | MM UPLINK B_MM_STATUS RC_SERVICE_ORDER | |

History: 15.02.00 HM Initial

4.3.11 MM055: RR_ESTABLISH_IND in state MM_WAIT_FOR_RR_CONN_MM

Description: MM receives a RR_ESTABLISH_IND in state MM_WAIT_FOR_RR_CONN_MM. This is a clash case. The MT connection has precedence, a MMCC_RELEASE_IND is sent for the MO connection and the MT connection is going to be established.

Preamble: MM041



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|---------------------------------------|------------------------------------|--------------|
| (1) | RR_ESTABLISH_IND param | NOT_USED | |
| (2) | MMCC_RELEASE_IND ti relcs | TI_2 RELCS_PREEMPT | |
| (3) | RR_DATA_IND d1 d2 sdu | NOT_USED NOT_USED CC_MESSAGE | |
| (4) | MMCC_ESTABLISH_IND d1 d2 sdu | NOT_USED NOT_USED CC_MESSAGE | |
| History: | 19.04.00 | HM | Initial |

4.3.12 MM056: RR_RELEASE_IND in state MM_WAIT_FOR_RR_CONN_MM

Description: MM receives a RR_RELEASE_IND in state MM_WAIT_FOR_RR_CONN_MM. This is a clash case. There is an incoming MT call already in RR, the MT connection has precedence, RR sends a RR_RELEASE_IND for the MO connection and then the MT connection is going to be established.

Preamble: MM041

| | MMI/CM/SIM | MM | RR/DL |
|-----|--------------------|------------------|-------|
| (1) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_IND | |
| | | *<=====* | |
| (3) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (4) | | RR_DATA_IND | |
| | | (CC message) | |
| | | *<=====* | |
| (5) | MMCC_ESTABLISH_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

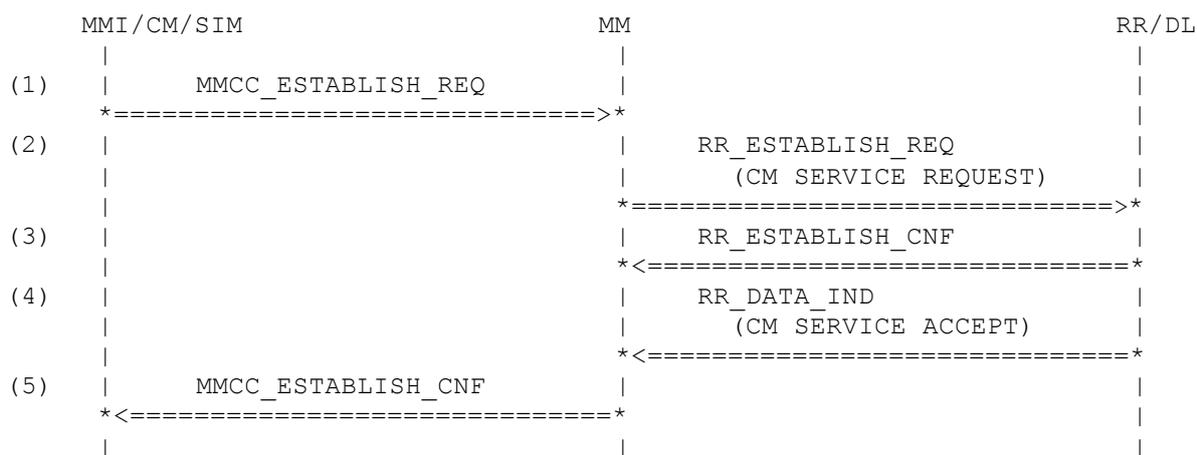
| Primitive | Parameter | Value |
|------------------------|-------------------------|------------|
| (5) RR_RELEASE_IND | | |
| relcs | RELCS_MO_MT_COLL | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (6) RR_ESTABLISH_IND | | |
| param | NOT_USED | |
| (7) MMCC_RELEASE_IND | | |
| ti | TI_2 | |
| relcs | RELCS_MO_MT_COLL | |
| (8) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | CC_MESSAGE | |
| (9) MMCC_ESTABLISH_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | CC_MESSAGE | |
| History: | 19.04.00 | HM Initial |

4.4 Emergency Call

4.4.1 MM061: Emergency Call in Idle State 19.2

Description: MM receives an establishment request from CC while in State 19.2 (Idle Attempting to Update). It then sends a CM SERVICE REQUEST message to the network. On receipt of a RR-ESTABLISH confirmation primitive from the network followed by a CM SERVICE ACCEPT message, MM issues as MMCC-ESTABLISH confirmation primitive.

Preamble: MM103



Parametrization

| | Primitive | Parameter | Value |
|-----|--------------------|---------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| | prio | PRIO_EMERG_CALL | |
| | estcs | ESTCS_MOB_ORIG_DATA | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_EMERG_CAL | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_CM_SERV_REQ | |
| | ti | TI_0 | |
| | cm_serv_type | ST_EMERGENCY | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | mob_class_2 | MOB_CLASS_2 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (3) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |
| (4) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |

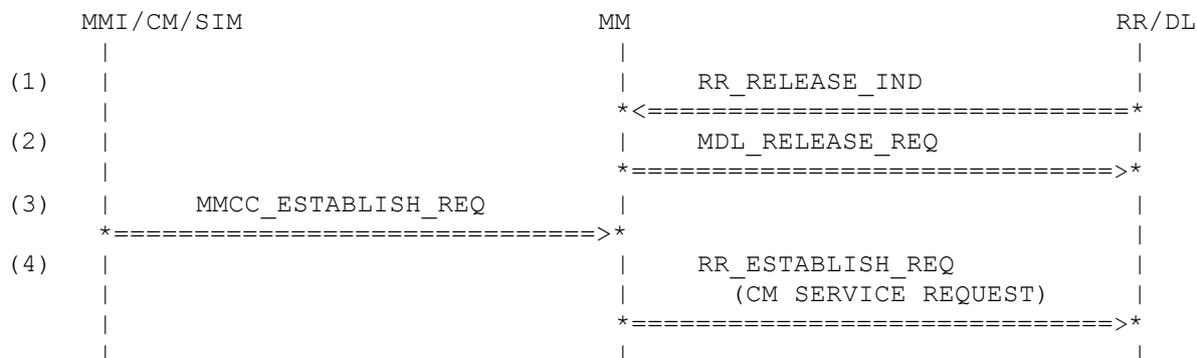
```
sdu
{
  component          MM
  direction          DOWNLINK
  pd                 D_CM_SERV_ACCEPT
  ti                 TL_0
}
(5) MMCC_ESTABLISH_CNF
    ti                 TL_3
```

History: 09.07.97 HK Initial

4.4.2 MM062: RR Release followed by Call Establishment Request

Description: Release of the RR connection is followed by an establishment request for an emergency call.

Preamble: MM101



Parametrization

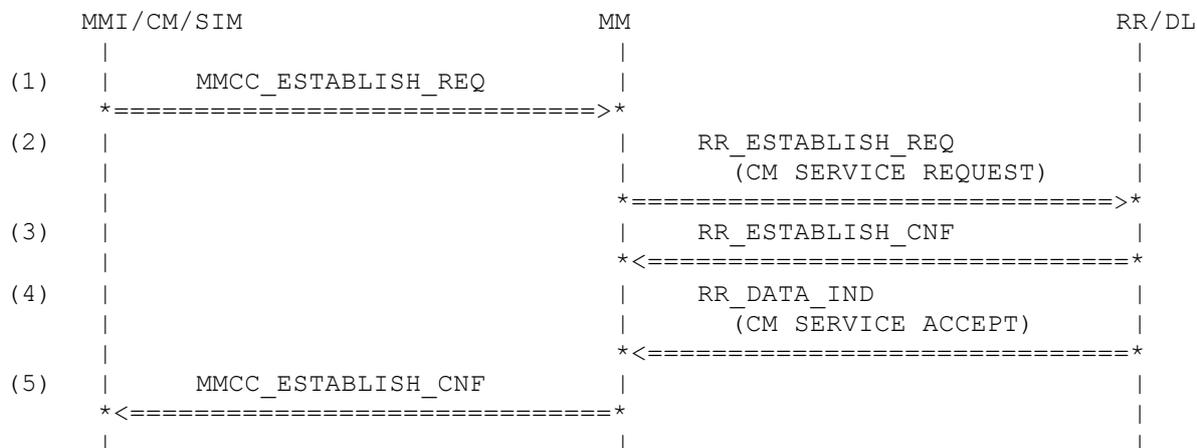
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--------------------|------------------|-------------------------|
| (1) | RR_RELEASE_IND | | |
| | relcs | | RELCS_ACCESS_BARRED |
| | sapi | | SAPI_0 |
| | gprs_resumption | | GPRS_RESUMPTION_NOT_ACK |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | | NOT_PRESENT_8BIT |
| | sapi | | SAPI_0 |
| (3) | MMCC_ESTABLISH_REQ | | |
| | ti | | TI_6 |
| | prio | | PRIO_EMERG_CALL |
| | estcs | | ESTCS_EMERG_CAL |
| (4) | RR_ESTABLISH_REQ | | |
| | estcs | | ESTCS_EMERG_CAL |
| | sdu | | |
| | { | | |
| | component | | MM |
| | direction | | UPLINK |
| | pd | | U_CM_SERV_REQ |
| | ti | | TI_0 |
| | cm_serv_type | | ST_EMERGENCY |
| | ciph_key_num | | CIPH_KEY_NUM_RES |
| | mob_class_2 | | MOB_CLASS_2 |
| | mob_id | | MOB_IDENT_IMSI |
| | } | | |

History: 09.07.97 HK Initial

4.4.3 MM063: Emergency Call in Idle State 19.4

Description: MM receives an establishment request from CC while in State 19.4 (Idle No IMSI). It then sends a CM SERVICE REQUEST message to the network. On receipt of a RR-ESTABLISH confirmation primitive from the network followed by a CM SERVICE ACCEPT message, MM issues as MMCC-ESTABLISH confirmation primitive.

Preamble: MM022



Parametrization

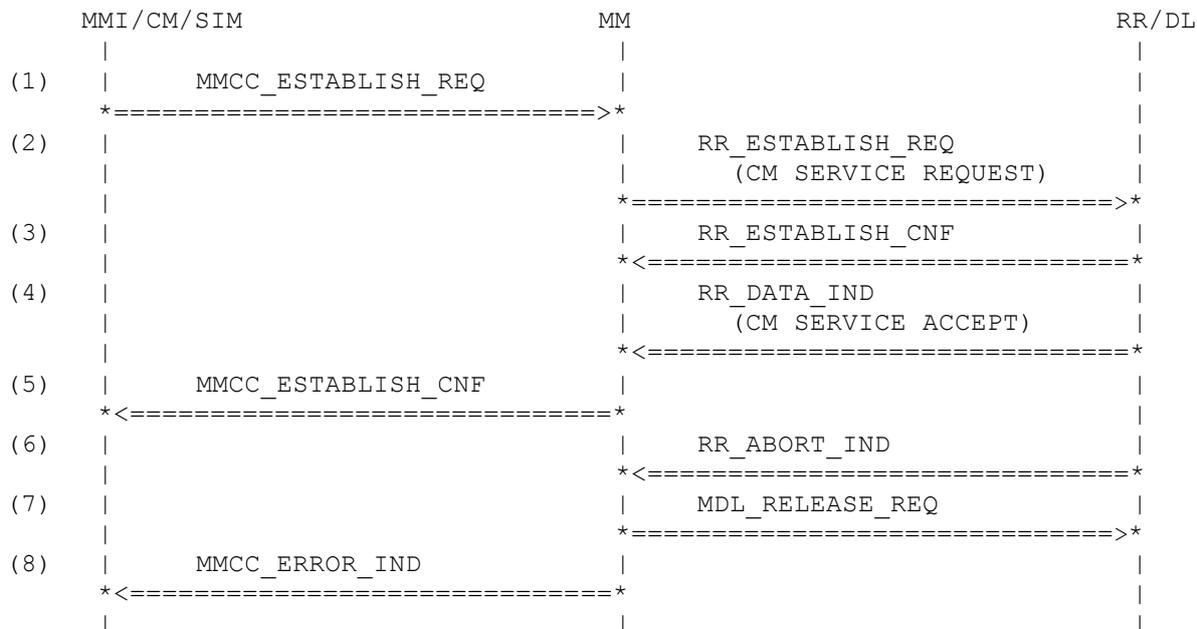
| Primitive | Parameter | Value |
|------------------------|------------------|-------|
| (1) MMCC_ESTABLISH_REQ | | |
| ti | TL_3 | |
| prio | PRIO_EMERG_CALL | |
| estcs | ESTCS_EMRG_CAL | |
| (2) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_EMRG_CAL | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_CM_SERV_REQ | |
| ti | TI_0 | |
| cm_serv_type | ST_EMERGENCY | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| mob_class_2 | MOB_CLASS_2 | |
| mob_id | MOB_IDENT_IMEI | |
| } | | |
| (3) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (4) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_CM_SERV_ACCEPT | |

| | | | | |
|----------|--------------------|----|------|---------|
| | ti | | TI_0 | |
| | } | | | |
| (5) | MMCC_ESTABLISH_CNF | | | |
| | ti | | TI_3 | |
| History: | 09.07.97 | HK | | Initial |
| | 19.09.97 | DL | | revised |

4.4.4 MM064: Reestablishment during EC (Emergency Call)

Description: MM receives an establishment request from CC while in State 19.2 (Idle Attempting to Update). It then sends a CM SERVICE REQUEST message to the network. On receipt of a RR-ESTABLISH confirmation primitive from the network followed by a CM SERVICE ACCEPT message, MM issues as MMCC-ESTABLISH confirmation. On receipt of a RR-ABORT indication primitive MDL_RELEASE_REQ MMCC_ERROR_IND.

Preamble: MM027



Parametrization

| Primitive | Parameter | Value |
|------------------------|--------------|---------------------|
| (1) MMCC_ESTABLISH_REQ | ti | TL_3 |
| | prio | PRIO_EMERG_CALL |
| | estcs | ESTCS_MOB_ORIG_SPCH |
| (2) RR_ESTABLISH_REQ | estcs | ESTCS_EMERG_CAL |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_CM_SERV_REQ |
| | ti | TI_0 |
| | cm_serv_type | ST_EMERGENCY |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | mob_class_2 | MOB_CLASS_2 |
| | mob_id | MOB_IDENT_IMEI |
| | } | |
| (3) RR_ESTABLISH_CNF | param | NOT_USED |
| (4) RR_DATA_IND | d1 | NOT_USED |

| | | | |
|------------------------|-----------------------|----|---------|
| d2 | NOT_USED | | |
| sdu | | | |
| { | | | |
| component | MM | | |
| direction | DOWNLINK | | |
| pd | D_CM_SERV_ACCEPT | | |
| ti | TI_0 | | |
| } | | | |
| (5) MMCC_ESTABLISH_CNF | | | |
| ti | TI_3 | | |
| (6) RR_ABORT_IND | | | |
| op | OP_MODE_TEST_SIM | | |
| abcs | ABCS_RAD_LNK_FAIL | | |
| plmn_avail | NOT_USED | | |
| plmn | NOT_USED | | |
| rxlevel | NOT_USED | | |
| power | RF_CLASS_2 | | |
| (7) MDL_RELEASE_REQ | | | |
| ch_type | NOT_PRESENT_8BIT | | |
| sapi | SAPI_0 | | |
| (8) MMCC_ERROR_IND | | | |
| ti | TI_3 | | |
| reest | REEST_ALLOW | | |
| errcs | ERRCS_RADIO_LINK_FAIL | | |
| History: | | | |
| | 21.07.97 | HK | Initial |
| | 19.09.97 | DL | revised |
| | 16.02.00 | HM | revised |

4.4.5 MM065: Emergency Call in State 19.3

Description: An emergency call is started following an establishment request in State 19.3 (Idle, Limited Service).

Preamble: MM108

| | MMI/CM/SIM | MM | RR/DL |
|-----|--------------------|--|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | *=====>* | | |
| (2) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |
| | | *=====>* | |
| (3) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (4) | | RR_DATA_IND (CM SERVICE ACCEPT) | |
| | | *<=====* | |
| (5) | MMCC_ESTABLISH_CNF | | |
| | *<=====* | | |
| (6) | MMCC_RELEASE_REQ | | |
| | *=====>* | | |
| (7) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|------------------|-------|
| (1) MMCC_ESTABLISH_REQ | | |
| ti | TI_3 | |
| prio | PRIO_EMERG_CALL | |
| estcs | ESTCS_EMERG_CAL | |
| (2) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_EMERG_CAL | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_CM_SERV_REQ | |
| ti | TI_0 | |
| cm_serv_type | ST_EMERGENCY | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| mob_class_2 | MOB_CLASS_2 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (3) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (4) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |

| | | | |
|-----------------|--------------------|-------------------------|---------|
| { | | | |
| component | | MM | |
| direction | | DOWNLINK | |
| pd | | D_CM_SERV_ACCEPT | |
| ti | | TI_0 | |
| } | | | |
| (5) | MMCC_ESTABLISH_CNF | | |
| ti | | TI_3 | |
| (6) | MMCC_RELEASE_REQ | | |
| ti | | TI_3 | |
| (7) | RR_RELEASE_IND | | |
| relcs | | RELCS_NORM | |
| sapi | | SAPI_0 | |
| gprs_resumption | | GPRS_RESUMPTION_NOT_ACK | |
| (8) | MDL_RELEASE_REQ | | |
| ch_type | | NOT_PRESENT_8BIT | |
| sapi | | SAPI_0 | |
| History: | 09.07.97 | HK | Initial |

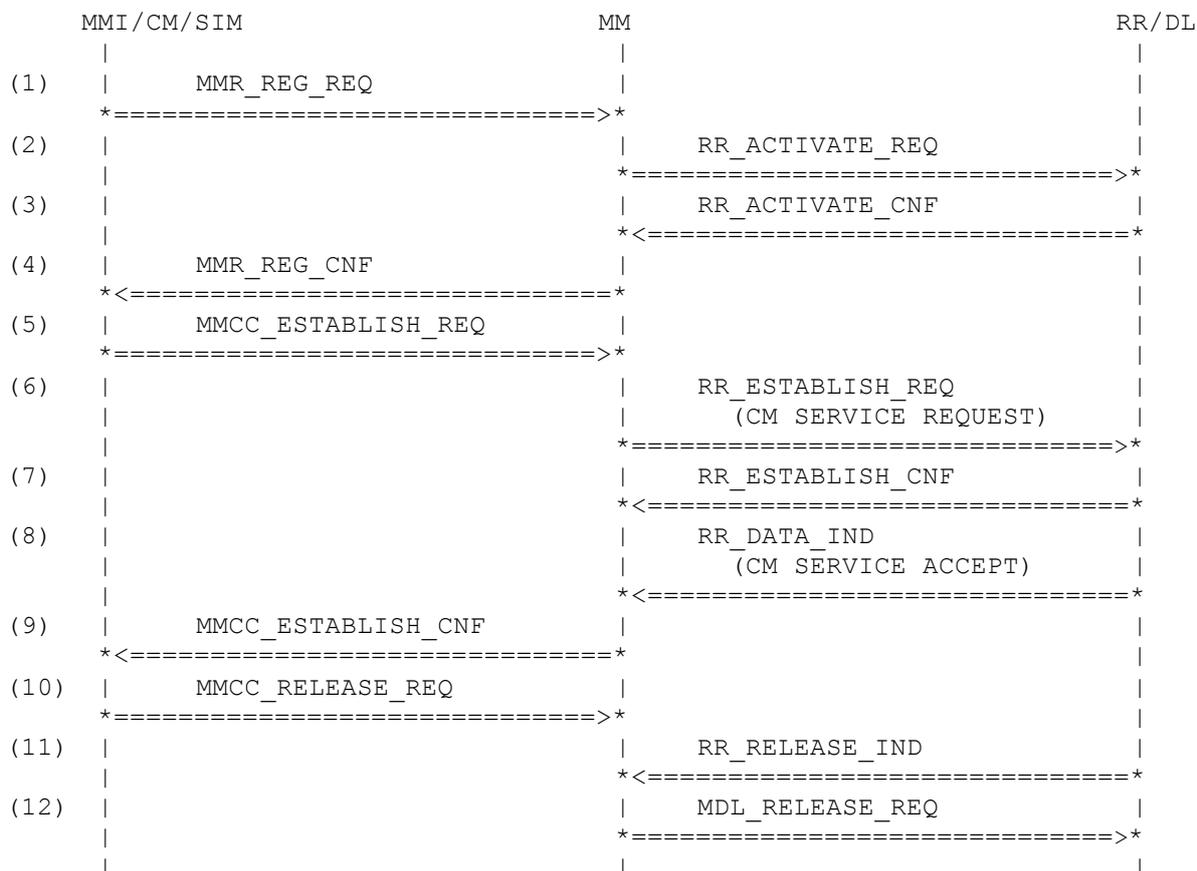
4.4.6 MM066: Calls after power cycle without SIM Remove

Description: Following a power off the mobile station the mobile station is reactivated in a cell where the mobile is updated, an IMSI ATTACH is not allowed by the network, a call is started.

- <A> Emergency call
- Normal call

Preamble: MM202

Variants: <A>....



Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|---------------------|---------------------|--------------|
| (1) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (2) RR_ACTIVATE_REQ | | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_ECL | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (3) RR_ACTIVATE_CNF | | |
| op | OP_MODE_SIM | |

| | | |
|-------------------------------|-------------------------|------------------|
| mm_info | MM_INFO_2 | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (4) MMR_REG_CNF | | |
| plmn | PLMN_123_33 | |
| (5) MMCC_ESTABLISH_REQ | | |
| ti | TI_3 | |
| <A> | prio | PRIO_EMERG_CALL |
| <A> | estcs | ESTCS_EMERG_CALL |
| | prio | PRIO_NORM_CALL |
| | estcs | |
| ESTCS_MOB_ORIG_SPCH_CAL_BY_CC | | |
| (6) RR_ESTABLISH_REQ | | |
| <A> | estcs | ESTCS_EMERG_CALL |
| | estcs | |
| ESTCS_MOB_ORIG_SPCH_CAL_BY_CC | | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_CM_SERV_REQ | |
| ti | TI_0 | |
| <A> | cm_serv_type | ST_EMERGENCY |
| | cm_serv_type | ST_MOC |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| mob_class_2 | NOT_USED | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (7) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (8) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_CM_SERV_ACCEPT | |
| ti | TI_0 | |
| } | | |
| (9) MMCC_ESTABLISH_CNF | | |
| ti | TI_3 | |
| (10) MMCC_RELEASE_REQ | | |
| ti | TI_3 | |
| (11) RR_RELEASE_IND | | |
| relcs | RELCS_NORM | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (12) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |

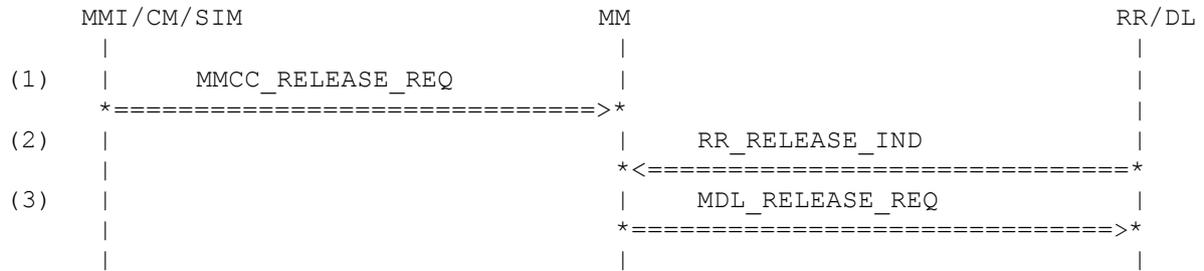
| | | | |
|----------|----------|----|-------------------------------|
| History: | 22.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 11.04.01 | HM | Revised, now 2 subcases after |
| CFUN=4 | | | |

4.5 Connection Release

4.5.1 MM081: Release of Connection via MS

Description: Following the release of a connection M issues a MDL-RELEASE request primitive and returns to State 1 Idle Updated.

Preamble: MM043



Parametrization

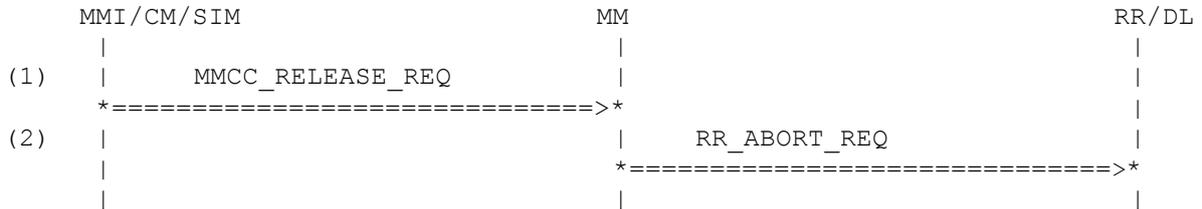
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|-------------------------|--------------|
| (1) | MMCC_RELEASE_REQ | | |
| | ti | TI_2 | |
| (2) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (3) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |

History: 09.07.97 HK Initial

4.5.2 MM082: MMCC_REL_REQ in State 14

Description: MM receives a MMCC-RELEASE request primitive from CC before a RR connection has been made. MM issues a RR-ABORT request.

Preamble: MM041



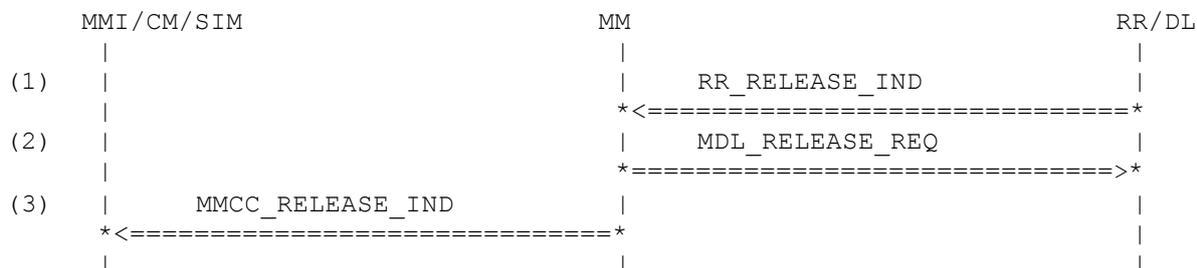
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------------|------------------|--------------|
| (1) | MMCC_RELEASE_REQ ti | TI_2 | |
| (2) | RR_ABORT_REQ abcs | ABCS_NORM | |
| History: | 10.07.97 | HK | Initial |

4.5.3 MM083: Release of Connection via BS

Description: MM receives a RR-RELEASE request primitive from RR. MM issues a a MDL-RELEASE request primitive to DL followed by a MMCC-RELEASE request primitive.

Preamble: MM043



Parametrization

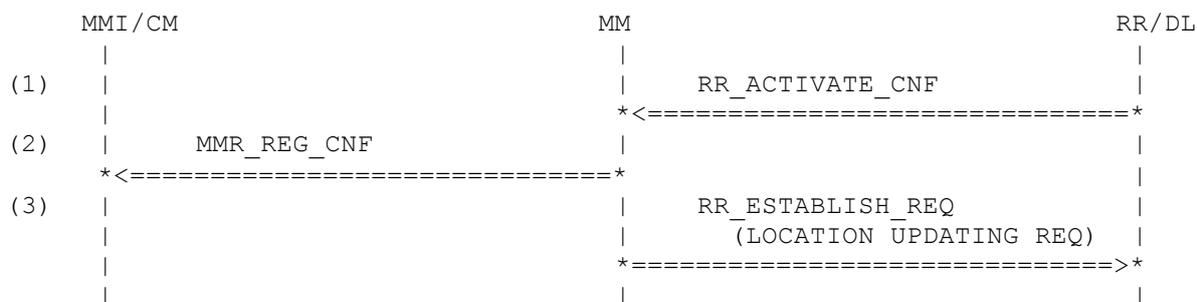
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------|-------------------------|--------------|
| (1) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | MMCC_RELEASE_IND | | |
| | ti | TI_2 | |
| | relcs | RELCS_NORM | |
| History: | 09.07.97 | HK | Initial |

4.6 Location Updating

4.6.1 MM101: MS in new Location Area

Description: A new location area is signalled to MM in the form of a RR-ACTIVATE confirmation primitive. MM starts normal Location Updating by issuing a LOCATION UPDATING REQ message as part of a RR-ESTABLISH request primitive and enters State 13 (Wait for RR-Connection - Location Updating).

Preamble: MM023A



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|-------------------------|--------------|
| (1) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |
| (3) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

History: 07.07.97 HK Initial

4.6.2 MM102: New LAI with Periodic Updating

Description: A new location area is signalled to MM in the form of a RR-ACTIVATE confirmation primitive. MM starts normal Location Updating by issuing a LOCATION UPDATING REQ message as part of a RR-ESTABLISH request primitive and enters State 13 (Wait for RR-Connection - Location Updating).

Preamble: MM023A

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-------------------------|---------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | MMR_REG_CNF | | |
| | *<=====* | | |
| (3) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|----------------------|
| (1) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_TEST_SIM | |
| | mm_info | MM_INFO_2 | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0001 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |
| (3) | RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

| | | | |
|----------|----------|----|---------|
| History: | 08.07.97 | HK | Initial |
| | 04.08.97 | DL | Revised |

4.6.3 MM103: Access classes barred in State 13

Description: MM receives a RR-RELEASE indication primitive from RR; normal Location Updating cannot be carried out because the access classes in the chosen cell are barred. MM issues a MDL-RELEASE request primitive and changes to State 19.2 (Idle Attempting to Update).

Preamble: MM101



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|-------------------------|------------------|
| (1) | RR_RELEASE_IND | | |
| | relcs | RELCS_ACCESS_BARRED | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (2) | MDL_RELEASE_REQ | | |
| | | ch_type | NOT_PRESENT_8BIT |
| | | sapi | SAPI_0 |

History: 09.07.97 HK Initial

4.6.4 MM104: Random access delayed in State 13

Description: MM receives a RR-RELEASE indication primitive from RR; Normal Location Updating cannot be carried out because of random access delay. MM issues a MDL-RELEASE request primitive.

Preamble: MM101

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====*> | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|---------------------|-----------------|-------------------------|
| (1) RR_RELEASE_IND | relcs | RELCS_RND_ACC_DELAY |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (2) MDL_RELEASE_REQ | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |

History: 09.07.97 HK Initial

4.6.5 MM105: Successful Location Updating

Description: Successful registration of the mobile station is signalled by the base station in the form of a RR-ESTABLISH confirmation primitive and the receipt of a LOCTION UPDATING ACC message. MM changes to State 9 (Wait for Network Command) and issues a TMSI REALLOC COMPLETE message followed by a RR-SYNC request, a MMR-REG confirmation and a SIM-MM-UPDATE request primitive.

Preamble: MM101

| | MMI / CM / SIM | MM | RR / DL |
|-----|-------------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCTION UPDATING ACC) | |
| | | *<=====* | |
| (3) | | RR_DATA_REQ | |
| | | (TMSI REALLOC COMPLETE) | |
| | | *=====>* | |
| (4) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (7) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|----------------|-------------------------|
| (1) RR_ESTABLISH_CNF | param | NOT_USED |
| (2) RR_DATA_IND | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_33_0002 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | NOT_USED |
| | } | |
| (3) RR_DATA_REQ | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |

| | | | |
|-----------------------|--|-------------------------|--|
| (4) RR_SYNC_REQ | | | |
| op | | NOT_USED | |
| cksn | | NOT_USED | |
| kcv | | NOT_USED | |
| tmsi | | MOB_ID_NEW_TMSI | |
| plmn | | NOT_USED | |
| lac | | NOT_USED | |
| synccs | | NOT_USED | |
| accc | | NOT_USED | |
| thplmn | | NOT_USED | |
| (5) RR_SYNC_REQ | | | |
| op | | NOT_USED | |
| cksn | | NOT_USED | |
| kcv | | NOT_USED | |
| tmsi | | NOT_USED | |
| plmn | | PLMN_123_33 | |
| lac | | LAC_0002 | |
| synccs | | SYNCCS_LAI_ALLOW | |
| accc | | NOT_USED | |
| thplmn | | NOT_USED | |
| (6) SIM_MM_UPDATE_REQ | | | |
| loc_info | | LOC_INFO_UPDATED_3 | |
| bcch_inf | | BCCH_INF_1 | |
| forb_plmn | | NOT_USED | |
| cksn | | CKSN_RES | |
| kc | | KC_DELETED_SIM | |
| cell_identity | | CELL_ID_1122 | |
| (7) RR_RELEASE_IND | | | |
| relcs | | RELCS_NORM | |
| sapi | | SAPI_0 | |
| gprs_resumption | | GPRS_RESUMPTION_NOT_ACK | |
| (8) MDL_RELEASE_REQ | | | |
| ch_type | | NOT_PRESENT_8BIT | |
| sapi | | SAPI_0 | |

| | | | |
|----------|----------|----|---------|
| History: | 08.07.97 | HK | Initial |
| | 31.07.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 30.05.00 | HM | Revised |

4.6.6 MM106: Location Accept without Mobile Identity

Description: Successful registration of the mobile station is signalled by the base station in the form of a RR-ESTABLISH confirmation primitive. MM changes to State 9 (Wait for Network Command) and issues a LOCTION UPDATING ACC message (without Mobile Identity) followed by a RR-SYNC request, a MMR-REG confirmation and a SIM-MM-UPDATE request primitive. Following receipt of a RR-RELEASE indication primitive, MM issues a MDL-RELEASE request primitive.

Preamble: MM101

| | MMI / CM / SIM | MM | RR / DL |
|-----|-------------------|------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCTION UPDATING ACC) | |
| | | *<=====* | |
| (3) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (4) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (5) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (6) | MDL_RELEASE_REQ | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|--|---|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_DATA_IND d1 d2 sdu { component direction pd ti loc_area_ident mob_id follow_proceed } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_ACCEPT TI_0 LOC_AREA_ID_123_33_0002 NOT_USED NOT_USED | |
| (3) RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED PLMN_123_33 LAC_0002 SYNCCS_LAI_ALLOW NOT_USED NOT_USED | |
| (4) SIM_MM_UPDATE_REQ loc_info | LOC_INFO_UPDATED_2 | |

| | |
|-----------------------|-------------------------|
| bcch_inf | BCCH_INF_1 |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (5) RR_RELEASE_IND | |
| relcs | RELCS_NORM |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (6) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |

History: 10.07.97 HK Initial

4.6.7 MM606: Location Accept with empty Mobile Identity

Description: Same testcase as 106, but uses special coding of Anite-System, which shall be accepted by MM.

Preamble: MM101

| | MMI/CM/SIM | MM | RR/DL |
|-----|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING ACC) | |
| | | *<=====* | |
| (3) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (4) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (5) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (6) | MDL_RELEASE_REQ | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu | NOT_USED NOT_USED LOC_UPD_ACCEPT_2 | |
| (3) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED PLMN_123_33 LAC_0002 SYNCCS_LAI_ALLOW NOT_USED NOT_USED | |
| (4) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_UPDATED_2 BCCH_INF_1 NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 | |
| (5) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (6) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |

History: 10.07.97 HK Initial

4.6.8 MM907: Location Updating triggered by Normal Call in Idle State 19.2

Description: MM receives an establishment request from CC while in State 19.2 (Idle Attempting to Update). It starts a location updating. The location updating accept does contain the follow on proceed indication and the call attempt is started.

Preamble: MM112

Variants: <A>...<D>

| | MMI/CM/SIM | MM | RR/DL |
|-----|--------------------|-------------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | *=====>* | | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (3) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (4) | | RR_DATA_IND | |
| | | (LOCATION UPDATING ACC) | |
| | | *<=====* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | MMR_REG_CNF | | |
| | *<=====* | | |
| (7) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (8) | | RR_DATA_REQ | |
| | | (CM SERVICE REQ) | |
| | | *=====>* | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--------------------|-------------------------|-------|
| (7) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| | prio | PRIO_NORM_CALL | |
| | estcs | ESTCS_MOB_ORIG_DATA | |
| (8) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (9) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |

| | | | |
|------|---------------|--------------------|------------------|
| (10) | | RR_DATA_IND | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | <A> | sdu | LOC_UPD_ACCEPT_3 |
| | | sdu | LOC_UPD_ACCEPT_4 |
| | <C> | sdu | LOC_UPD_ACCEPT_5 |
| | <D> | sdu | LOC_UPD_ACCEPT_6 |
| (11) | | RR_SYNC_REQ | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0002 | |
| | synccs | SYNCCS_LAI_ALLOW | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (12) | | MMR_REG_CNF | |
| | plmn | PLMN_123_33 | |
| (13) | | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_2 | |
| | bcch_inf | BCCH_INF_1 | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_RES | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (14) | | RR_DATA_REQ | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_CM_SERV_REQ | |
| | ti | TI_0 | |
| | cm_serv_type | ST_MOC | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | mob_class_2 | MOB_CLASS_2 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

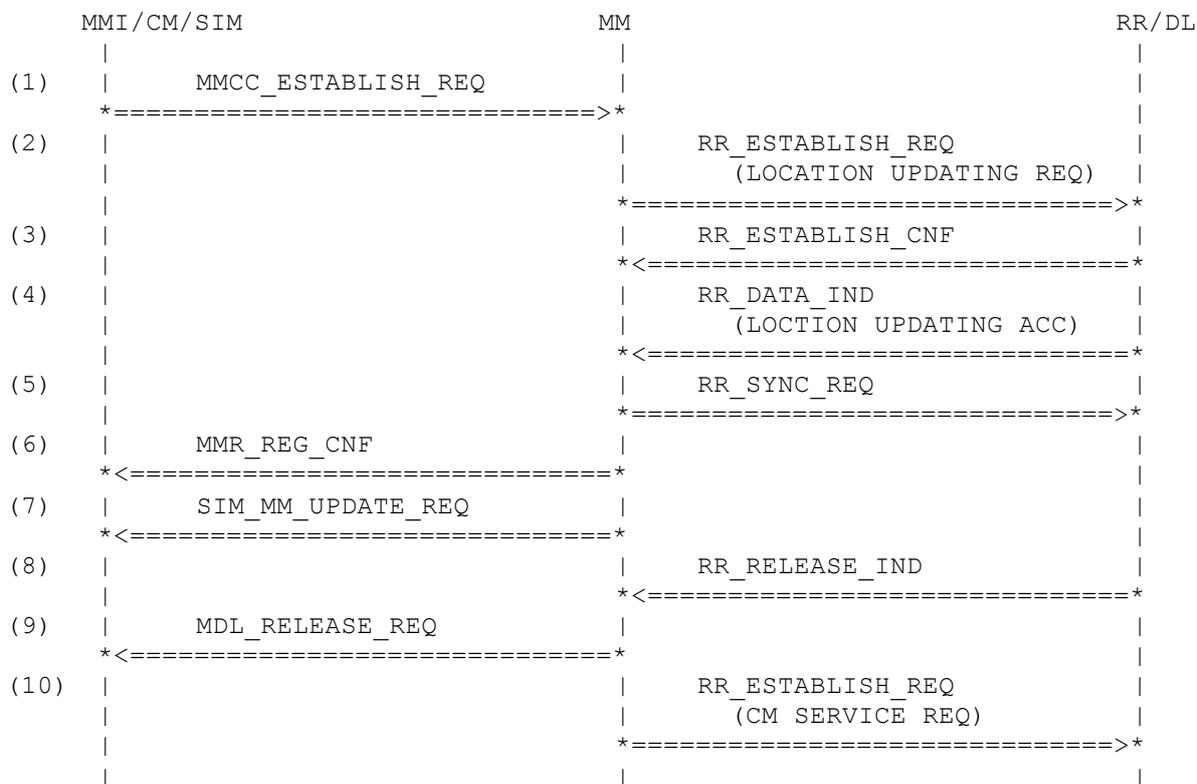
History: 09.07.97 HK Initial

4.6.9 MM908: Location Updating triggered by Normal Call in Idle State 19.2

Description: MM receives an establishment request from CC while in State 19.2 (Idle Attempting to Update). It starts a location updating. The location updating accept does not contain the follow on proceed indication and the call attempt is released.

Preamble: MM112

Variants: <A>...<D>



Parametrization

| | Primitive | Parameter | Value |
|-----|--------------------|-------------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| | prio | PRIO_NORM_CALL | |
| | estcs | ESTCS_MOB_ORIG_DATA | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

| | | | |
|--------|---|---|--|
| (3) | RR_ESTABLISH_CNF param | NOT_USED | |
| (4) | RR_DATA_IND d1 d2 <A> <C> <D> | NOT_USED NOT_USED sdu sdu sdu sdu | LOC_UPD_ACCEPT_3_B LOC_UPD_ACCEPT_4_B LOC_UPD_ACCEPT_5_B LOC_UPD_ACCEPT_6_B |
| (5) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED PLMN_123_33 LAC_0002 SYNCCS_LAI_ALLOW NOT_USED NOT_USED | |
| (6) | MMR_REG_CNF plmn | PLMN_123_33 | |
| (7) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_UPDATED_2 BCCH_INF_1 NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 | |
| (8) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (10) | estcs sdu { component direction pd ti cm_serv_type ciph_key_num mob_class_2 mob_id } | RR_ESTABLISH_REQ ESTCS_MOB_ORIG_DATA MM UPLINK U_CM_SERV_REQ TI_0 ST_MOC CIPH_KEY_NUM_RES MOB_CLASS_2 MOB_IDENT_IMSI | |

History: 09.07.97 HK Initial

4.6.10 MM107: Connection request stored until Location Updating complete

Description: MM receives a MMCC-ESTABLISH request primitive from MM and a RR-ESTABLISH confirmation primitive from RR. MM stores the connection request until Location Updating has been completed. The mobile-terminated call is then processed (RR-SYNC request, MMR-REG confirmation primitive). Following completion of the MOT in the form of a RR-RELEASE indication primitive, RR releases the requested connection. After having completely released the RR connection, this is reestablished immediately to satisfy the pending connection request. For this test, a TEST SIM is inserted into the mobile.

Preamble: MM115

| MMI/CM/SIM | MM | RR/DL |
|--------------------------|-------------------------|-------|
| (1) MMCC_ESTABLISH_REQ | | |
| *=====>* | | |
| (2) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (3) | RR_DATA_IND | |
| | (LOCATION UPDATING ACC) | |
| | *<=====* | |
| (4) | RR_DATA_REQ | |
| | (TMSI REALLOC COMPLETE) | |
| | *=====>* | |
| (5) | RR_SYNC_REQ | |
| | *=====>* | |
| (6) | RR_SYNC_REQ | |
| | *=====>* | |
| (7) MMR_REG_CNF | | |
| *<=====* | | |
| (8) SIM_MM_UPDATE_REQ | | |
| *<=====* | | |
| (9) | RR_RELEASE_IND | |
| | *<=====* | |
| (10) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (11) | RR_ESTABLISH_REQ | |
| | (CM SERVICE REQUEST) | |
| | *=====>* | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|---------------------|-------|
| (1) MMCC_ESTABLISH_REQ | | |
| ti | TI_4 | |
| prio | PRIO_NORM_CALL | |
| estcs | ESTCS_MOB_ORIG_SPCH | |
| (2) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (3) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_LOC_UPD_ACCEPT | |

| | |
|-----------------------|-------------------------------|
| ti | TI_0 |
| loc_area_ident | LOC_AREA_ID_123_33_0002 |
| mob_id | MOB_IDENT_NEW_TMSI |
| follow_proceed | NOT_USED |
| } | |
| (4) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_TMSI_REALLOC_COMP |
| ti | TI_0 |
| } | |
| (5) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | MOB_ID_NEW_TMSI |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | NOT_USED |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (6) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | PLMN_123_33 |
| lac | LAC_0002 |
| synccs | SYNCCS_LAI_ALLOW |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (7) MMR_REG_CNF | |
| plmn | PLMN_123_33 |
| (8) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_UPDATED_3 |
| bcch_inf | BCCH_INF_1 |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (9) RR_RELEASE_IND | |
| relcs | RELCS_UNSPECIFIED |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (10) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (11) RR_ESTABLISH_REQ | |
| estcs | ESTCS_MOB_ORIG_SPCH_CAL_BY_CC |
| sdu | |
| { | |

```
component      MM
direction      UPLINK
pd             U_CM_SERV_REQ
ti             TI_0
cm_serv_type   ST_MOC
cip_key_num    CIPH_KEY_NUM_RES
mob_class_2    MOB_CLASS_2
mob_id         MOB_IDENT_TMSI
}
```

| | | | |
|----------|----------|----|---------|
| History: | 15.09.97 | DL | Initial |
| | 16.02.00 | HM | Revised |

4.6.11 MM108: Location Updating Reject (PLMN not allowed)

Description: A request for a RR connection for Location Updating is confirmed in the form of a RR-ESTABLISH confirmation primitive. MM changes to State 3 (Location Updating initiated). MM is then notified in the form of a LOCATION-UPDATING-REJECT message that PLMN roaming is not allowed for the mobile station. MM releases the RR connection by issuing a MDL-RELEASE request primitive and changes to State 11 (Idle Roaming not allowed). The PLMN for which the LOCATION UPDATING REJECT with cause PLMN NOT ALLOWED received is the HPLMN, thus it will *not* be added to the forbidden list.

Preamble: MM101

| | MMI / CM / SIM | MM | RR / DL |
|-----|-------------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (7) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|--|-------|
| (4) | RR_ESTABLISH_CNF param | NOT_USED | |
| (5) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_PLMN_NOT_ALLOWED | |
| (6) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (7) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (8) | RR_SYNC_REQ op | NOT_USED | |

| | | | | |
|----------|-------------------|-----------------------------|--------------------------|--|
| | cksn | NOT_USED | | |
| | kcv | NOT_USED | | |
| | tmsi | NOT_USED | | |
| | plmn | NOT_USED | | |
| | lac | NOT_USED | | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID | | |
| | acc | NOT_USED | | |
| | thplmn | NOT_USED | | |
| (9) | SIM_MM_UPDATE_REQ | | | |
| | loc_info | LOC_INFO_PLMN_NOT_ALLOW | | |
| | bcch_inf | NOT_USED | | |
| | forb_plmn | NOT_USED | | |
| | cksn | CKSN_RES | | |
| | kc | KC_DELETED_SIM | | |
| | cell_identity | CELL_ID_1122 | | |
| (10) | MMR_NREG_IND | | | |
| | nreg_cs | NREG_LIMITED_SERVICE | | |
| | search_running | SEARCH_NOT_RUNNING | | |
| | new_forb_plmn | PLMN_NO_ID | | |
| | limited_cause | RC_PLMN_NOT_ALLOWED | | |
| History: | 09.07.97 | HK | Initial | |
| | 04.08.97 | DL | Revised | |
| | 02.03.00 | HM | Revised (search_running) | |
| | 22.05.00 | HM | Revised | |

4.6.12 MM109: Change of Area in Update Status U3

Description: MM receives a RR-ACTIVATE indication primitive indicating a change of location area while in Update Status U3 (Roaming not allowed). MM starts Location Updating by sending a LOCATION UPDATING REQ message. After completion of the Location Updating, MM is in State 1 (Idle updated).

Preamble: MM108

| MMI / CM / SIM | MM | RR / <DL |
|----------------|---|----------|
| (1) | RR_ACTIVATE_IND | |
| (2) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (3) | RR_ESTABLISH_CNF | |
| (4) | RR_DATA_IND (LOCATION UPDATING ACC) | |
| (5) | RR_DATA_REQ (TMSI REALLOC COMPLETE) | |
| (6) | RR_SYNC_REQ | |
| (7) | RR_SYNC_REQ | |
| (8) | MMR_REG_CNF | |
| (9) | SIM_MM_UPDATE_REQ | |
| (10) | RR_RELEASE_IND | |
| (11) | MDL_RELEASE_REQ | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|----------------|-------------------------|
| (1) RR_ACTIVATE_IND | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_44 |
| | lac | LAC_0002 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (2) RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | { |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |

| | |
|-----------------------|-------------------------|
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (3) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (4) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_ACCEPT |
| ti | TI_0 |
| loc_area_ident | LOC_AREA_ID_123_44_0002 |
| mob_id | MOB_IDENT_NEW_TMSI |
| follow_proceed | NOT_USED |
| } | |
| (5) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_TMSI_REALLOC_COMP |
| ti | TI_0 |
| } | |
| (6) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | MOB_ID_NEW_TMSI |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | NOT_USED |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (7) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | LAC_0002 |
| synccs | SYNCCS_LAI_ALLOW |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (8) MMR_REG_CNF | |
| plmn | PLMN_44 |
| (9) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_UPDATED_44 |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |

| | | |
|------|-----------------|-------------------------|
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 05.08.97 | DL | Revised |

4.6.13 MM110: Location Updating Reject (LAI roaming not allowed)

Description: While in Update Status U3 (Roaming not allowed) MM receives a RR-ESTABLISH confirmation primitive followed by a LOCATION UPDATING REJECT message indicating that LAI roaming is not permitted for the mobile station. MM releases the RR connection and then issues a SIM-MM-UPDATE request primitive.

Preamble: MM101

| | MMI/CM/SIM | MM | RR/DL |
|-----|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (7) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (8) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|------|---|--|-------|
| (12) | RR_ESTABLISH_CNF param | NOT_USED | |
| (13) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_LA_NOT_ALLOWED | |
| (14) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (15) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (16) | RR_SYNC_REQ op cksn kcv | NOT_USED NOT_USED NOT_USED | |

| | |
|------------------------|-----------------------------|
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| syncs | SYNCCS_LAI_NOT_ALLOW |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (17) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| syncs | SYNCCS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (18) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| bcch_inf | BCCH_INF_1 |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (19) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | RC_LA_NOT_ALLOWED |

| | | | |
|----------|----------|----|--------------------------|
| History: | 09.07.97 | HK | Initial |
| | 05.08.97 | DL | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.6.14 MM111: New Location Area Code in Update Status U3

Description: In Update Status U3 (Roaming not allowed) MM is . A new Location Updating is started by a change of cell. After completion of Location Updating MM is once more in State U1 Idle Updated.

Preamble: MM110

| MMI / CM / SIM | MM | RR / DL |
|----------------|---|---------|
| (1) | RR_ACTIVATE_IND | |
| | *<=====* | |
| (2) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (3) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (4) | RR_DATA_IND (LOCATION UPDATING ACC) | |
| | *<=====* | |
| (5) | RR_DATA_REQ (TMSI REALLOC COMPLETE) | |
| | *=====>* | |
| (6) | RR_SYNC_REQ | |
| | *=====>* | |
| (7) | RR_SYNC_REQ | |
| | *=====>* | |
| (8) | MMR_REG_CNF | |
| | *<=====* | |
| (9) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| (10) | RR_RELEASE_IND | |
| | *<=====* | |
| (11) | MDL_RELEASE_REQ | |
| | *<=====* | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|----------------|-------------------------|
| (1) RR_ACTIVATE_IND | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_0001 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (2) RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |

| | |
|-----------------------|-------------------------|
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (3) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (4) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_ACCEPT |
| ti | TI_0 |
| loc_area_ident | LOC_AREA_ID_123_33_0001 |
| mob_id | MOB_IDENT_NEW_TMSI |
| follow_proceed | NOT_USED |
| } | |
| (5) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_TMSI_REALLOC_COMP |
| ti | TI_0 |
| } | |
| (6) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | MOB_ID_NEW_TMSI |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | NOT_USED |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (7) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | PLMN_123_33 |
| lac | LAC_0001 |
| synccs | SYNCCS_LAI_ALLOW |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (8) MMR_REG_CNF | |
| plmn | PLMN_123_33 |
| (9) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_UPDATED_4 |
| bcch_inf | BCCH_INF_1 |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |

| | | |
|------|-----------------|-------------------------|
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |

History: 09.07.97 HK Initial

4.6.15 MM112: Normal Location Updating rejected four times

Description: A Normal Location Updating has been started in Update Status 2 (Idle not updated). A LOCATION UPDATING REJ message is received and MM releases the RR connection, initiates synchronization with RR and request SIM for an update . This sequence is carried out four times; each attempt is rejected (LOCATION UPDATING REJ message). Following the fourth attempt MM remains in Update Status 2 (Idle not Updated) and issues a MMR-NREG indication primitive.

Preamble: MM101

| MMI/CM/SIM | MM | RR/DL |
|--------------------------|-------------------------|-------|
| (1) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (2) | RR_DATA_IND | |
| | (LOCATION UPDATING REJ) | |
| | *<=====* | |
| (3) | RR_RELEASE_IND | |
| | *<=====* | |
| (4) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (5) | RR_SYNC_REQ | |
| | *=====>* | |
| (6) SIM_MM_UPDATE_REQ | | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (7) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (8) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (9) | RR_DATA_IND | |
| | (LOCATION UPDATING REJ) | |
| | *<=====* | |
| (10) | RR_RELEASE_IND | |
| | *<=====* | |
| (11) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (12) | RR_SYNC_REQ | |
| | *=====>* | |
| (13) SIM_MM_UPDATE_REQ | | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (14) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (15) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (16) | RR_DATA_IND | |
| | (LOCATION UPDATING REJ) | |
| | *<=====* | |
| (17) | RR_RELEASE_IND | |
| | *<=====* | |
| (18) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (19) | RR_SYNC_REQ | |
| | *=====>* | |
| (20) SIM_MM_UPDATE_REQ | | |
| | *<=====* | |
| TIMEOUT (10000) | | |

```

(21) | | RR_ESTABLISH_REQ |
      | | (LOCATION UPDATING REQ) |
      | | *=====>* |
(22) | | RR_ESTABLISH_CNF |
      | | *<=====* |
(23) | | RR_DATA_IND |
      | | (LOCATION UPDATING REJ) |
      | | *<=====* |
(24) | | RR_RELEASE_IND |
      | | *<=====* |
(25) | | MDL_RELEASE_REQ |
      | | *=====>* |
(26) | | RR_SYNC_REQ |
      | | *=====>* |
(27) | | SIM_MM_UPDATE_REQ |
      | | *<=====* |
(28) | | MMR_NREG_IND |
      | | *<=====* |
      | | | |
    
```

Parametrization

| Primitive | Parameter | Value |
|---|-----------|---|
| (1) RR_ESTABLISH_CNF param | | NOT_USED |
| (2) RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_UNSPECIFIED |
| (3) RR_RELEASE_IND relcs sapi gprs_resumption | | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (4) MDL_RELEASE_REQ ch_type sapi | | NOT_PRESENT_8BIT SAPI_0 |
| (5) RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVAL NOT_USED NOT_USED |
| (6) SIM_MM_UPDATE_REQ loc_info bcch_inf | | LOC_INFO_123_33_FEFF BCCH_INF_2 |

| | |
|------------------------|-----------------------------|
| forb_plmn | NOT_USED |
| cksn | CKSN_NO_KEY |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (7) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti | TI_0 |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (8) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (9) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_REJ |
| ti | TI_0 |
| rej_cause | RC_UNSPECIFIED |
| } | |
| (10) RR_RELEASE_IND | |
| relcs | RELCS_ABNORM_UNSPEC |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (12) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (13) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | BCCH_INF_2 |
| forb_plmn | NOT_USED |
| cksn | CKSN_NO_KEY |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |

| | | |
|------|---|--|
| (14) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (15) | RR_ESTABLISH_CNF param | NOT_USED |
| (16) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_UNSPECIFIED |
| (17) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (18) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (19) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (20) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF BCCH_INF_2 NOT_USED CKSN_NO_KEY KC_DELETED_SIM CELL_ID_1122 |
| (21) | RR_ESTABLISH_REQ estcs sdu { | ESTCS_SERV_REQ_BY_MM |

| | | | |
|----------|-------------------|-----------------------------|--------------------------|
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (22) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |
| (23) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_LOC_UPD_REJ | |
| | ti | TI_0 | |
| | rej_cause | RC_UNSPECIFIED | |
| | } | | |
| (24) | RR_RELEASE_IND | | |
| | relcs | RELCS_ABNORM_UNSPEC | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (25) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (26) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (27) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_123_33_FEFF | |
| | bcch_inf | BCCH_INF_2 | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_NO_KEY | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (28) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | RC_UNSPECIFIED | |
| History: | 09.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.6.16 MM113: Re-attempt after time-out Location updating timer

Description: MM enters state 19.2 (Idle Attempting to Update). The registration timer is started. After expiry, a normal location update attempt is started.

Preamble: MM409

| MMI/CM/SIM | MM | RR/DL |
|--|-------------------------|-------|
| COMMAND (MM CONFIG TIMER_SET=<T_REG, 25000>) | | |
| (1) | RR_ESTABLISH_CNF | |
| | *<===== | |
| (2) | RR_RELEASE_IND | |
| | *<===== | |
| (3) | MDL_RELEASE_REQ | |
| | *=====> | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====> | |
| (5) | RR_ESTABLISH_CNF | |
| | *<===== | |
| (6) | RR_RELEASE_IND | |
| | *<===== | |
| (7) | MDL_RELEASE_REQ | |
| | *=====> | |
| TIMEOUT (10000) | | |
| (8) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====> | |
| (9) | RR_ESTABLISH_CNF | |
| | *<===== | |
| (10) | RR_RELEASE_IND | |
| | *<===== | |
| (11) | MDL_RELEASE_REQ | |
| | *=====> | |
| (12) | RR_SYNC_REQ | |
| | *=====> | |
| (13) | SIM_MM_UPDATE_REQ | |
| | *<===== | |
| (14) | MMR_NREG_IND | |
| | *<===== | |
| TIMEOUT (30000) | | |
| (15) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====> | |

Parametrization

| Primitive | Parameter | Value |
|--|---|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |

| | | |
|--------|---|--|
| (3) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (4) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (5) | RR_ESTABLISH_CNF param | NOT_USED |
| (6) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (7) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (8) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (9) | RR_ESTABLISH_CNF param | NOT_USED |
| (10) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (12) | RR_SYNC_REQ op cksn kcv tmsi | NOT_USED NOT_USED NOT_USED NOT_USED |

| | | |
|------|-------------------|-----------------------------|
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (14) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_RC_NONE |
| (15) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 26.01.01 | HM | Revised |

4.6.17 MM114: Re-attempt after fieldstrength jump

Description: MM enters state 19.2 (Idle Attempting to Update). RR indicates a fieldstrength jump and a re-attempt is started, if a SIM card, but no Test-SIM card is inserted.

Preamble: MM409

| MMI/CM/SIM | MM | RR/DL |
|--|---|-------|
| COMMAND (MM CONFIG TIMER_SET=<T_REG, 25000>) | | |
| (1) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (2) | RR_RELEASE_IND | |
| | *<=====* | |
| (3) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (5) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (6) | RR_RELEASE_IND | |
| | *<=====* | |
| (7) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (10000) | | |
| (8) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (9) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (10) | RR_RELEASE_IND | |
| | *<=====* | |
| (11) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (12) | RR_SYNC_REQ | |
| | *=====>* | |
| (13) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| (14) | MMR_NREG_IND | |
| | *<=====* | |
| TIMEOUT (1000) | | |
| (15) | RR_SYNC_IND | |
| | *<=====* | |
| (16) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |

Parametrization

| Primitive | Parameter | Value |
|-------------------------------|-------------------------|-------|
| (3) RR_ESTABLISH_CNF param | NOT_USED | |
| (4) RR_RELEASE_IND relcs | RELCS_NORM | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |

| | | |
|------|---|--|
| (5) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (7) | RR_ESTABLISH_CNF param | NOT_USED |
| (8) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (10) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (11) | RR_ESTABLISH_CNF param | NOT_USED |
| (12) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (13) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (14) | RR_SYNC_REQ op cksn kcv tmsi | NOT_USED NOT_USED NOT_USED NOT_USED |

| | | |
|------|-------------------|-----------------------------|
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (15) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (16) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_RC_NONE |
| (17) | RR_SYNC_IND | |
| | ciph | NOT_USED |
| | mm_info | NOT_USED |
| | bcch_info | NOT_USED |
| | synccs | SYNCCS_LUP_RETRY |
| | chm | CHM_NOT_PRESENT |
| (18) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 26.01.01 | HM | Revised |

4.6.18 MM115: MS in new Location Area (TEST SIM inserted)

Description: A new location area is signalled to MM in the form of a RR-ACTIVATE confirmation primitive. MM starts normal Location Updating by issuing a LOCATION UPDATING REQ message as part of a RR-ESTABLISH request primitive and enters State 13 (Wait for RR-Connection - Location Updating).

Preamble: MM023B

| | MMI / CM | MM | RR / DL |
|-----|----------|-------------------------|---------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|----------|------------------|----------------|-------------------------|
| (12) | RR_ACTIVATE_CNF | op | OP_MODE_SIM |
| | | mm_info | MM_INFO |
| | | cid | CELL_ID_1122 |
| | | plmn | PLMN_123_33 |
| | | lac | LAC_0002 |
| | | power | RF_CLASS_2 |
| | | gprs_indic | GPRS_NO |
| (13) | RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | | sdu | { |
| | | component | MM |
| | | direction | UPLINK |
| | | pd | U_LOC_UPD_REQ |
| | | ti TI_0 | |
| | | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | | ciph_key_num | CIPH_KEY_NUM_RES |
| | | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | | mob_class_1 | MOB_CLASS_1 |
| | | mob_id | MOB_IDENT_IMSI |
| | | | } |
| History: | 15.02.00 | HM | Initial |

4.6.19 MM116: Location Updating Reject (PLMN not allowed), not HPLMN

Description: A request for a RR connection for Location Updating is confirmed in the form of a RR-ESTABLISH confirmation primitive. MM changes to State 3 (Location Updating initiated). MM is then notified in the form of a LOCATION-UPDATING-REJECT message that PLMN roaming is not allowed for the mobile station. MM releases the RR connection by issuing a MDL-RELEASE request primitive and changes to State 11 (Idle Roaming not allowed). The PLMN for which the LOCATION UPDATING REJECT with cause PLMN NOT ALLOWED received is *not* the HPLMN, thus it *will* be added to the forbidden list.

Preamble: MM105

| MMI / CM / SIM | MM | RR / DL |
|-----------------|-------------------------|---------|
| TIMEOUT (20000) | | |
| (1) | RR_ACTIVATE_IND | |
| | *<===== | |
| (2) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====> | |
| (3) | RR_ESTABLISH_CNF | |
| | *<===== | |
| (4) | RR_DATA_IND | |
| | (LOCATION UPDATING REJ) | |
| | *<===== | |
| (5) | RR_RELEASE_IND | |
| | *<===== | |
| (6) | MDL_RELEASE_REQ | |
| | *=====> | |
| (7) | RR_SYNC_REQ | |
| | *=====> | |
| (8) | RR_SYNC_REQ | |
| | *=====> | |
| (9) | SIM_MM_UPDATE_REQ | |
| | *<===== | |
| (10) | MMR_NREG_IND | |
| | *<===== | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|----------------------|-------|
| (1) RR_ACTIVATE_IND | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_44 | |
| lac | LAC_0002 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (2) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |

| | |
|-----------------------|-----------------------------|
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_0002 |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_NEW_TMSI |
| } | |
| (3) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (4) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_REJ |
| ti | TI_0 |
| rej_cause | RC_PLMN_NOT_ALLOWED |
| } | |
| (5) RR_RELEASE_IND | |
| relcs | RELCS_NORM |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (6) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (7) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_LIMITED_SERVICE |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (8) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (9) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (10) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |

| | | | |
|----------|---------------|----|---------------------|
| | new_forb_plmn | | PLMN_123_44 |
| | limited_cause | | RC_PLMN_NOT_ALLOWED |
| History: | 30.05.00 | HM | Initial |

4.6.20 MM117: Location Updating Reject (PLMN not allowed), mode AUTO

Description: The mobile station is requested to register in automatic mode. The HPLMN is not present. The first PLMN the mobile station tries to register is forbidden and newly entered into the forbidden PLMN list. Then the second found PLMN is tried. It is expected that the registration attempt into the second found PLMN works and we enter full service state.

PLMN_123_44 First found PLMN, forbidden
 PLMN_123_31 Second found PLMN, allowed

Preamble: MM001

| | MMI/CM/SIM | MM | RR/DL |
|------|-------------------|-------------------------|-------|
| (1) | SIM_MM_INSERT_IND | | |
| | *=====>* | | |
| (2) | MMR_REG_REQ | | |
| | *=====>* | | |
| (3) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (4) | | RR_ABORT_IND | |
| | | *<=====* | |
| (5) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (6) | MMR_NREG_IND | | |
| | *<=====* | | |
| (7) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (8) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (9) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (10) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (11) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (12) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (13) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (14) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (15) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (16) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (17) | MMR_NREG_IND | | |
| | *<=====* | | |
| (18) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (19) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (20) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (21) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (22) | | RR_DATA_IND | |
| | | (LOCATION UPDATING ACC) | |

```

(23) | | | *<=====
      | | | | RR_DATA_REQ |
      | | | | (TMSI_REALLOC_COMPLETE) |
      | | | | *=====>*
(24) | | | | RR_SYNC_REQ |
      | | | | *=====>*
(25) | | | | RR_SYNC_REQ |
      | | | | *=====>*
(26) | MMR_REG_CNF | |
      *<=====
(27) | SIM_MM_UPDATE_REQ | |
      *<=====
(28) | | | | RR_RELEASE_IND |
      | | | | *=====>*
(29) | | | | MDL_RELEASE_REQ |
      | | | | *=====>*
    
```

Parametrization

| Primitive | Parameter | Value |
|------------------------|--------------|-----------------------------|
| (11) SIM_MM_INSERT_IND | op_mode | NORMAL_SIM_INS |
| | imsi_field | IMSI_FIELD_1 |
| | loc_info | LOC_INFO_UPDATED_1 |
| | acc_ctrl | ACC_CTRL_1 |
| | bcch_inf | BCCH_INF_1 |
| | kc_n | KC_EMPTY |
| | pref_plmn | PREF_PLMN_NONE |
| | forb_plmn | FORB_PLMN_NONE |
| | phase | PHASE_2_SIM |
| | hplmn | THPLMN_01 |
| (12) MMR_REG_REQ | service_mode | SERVICE_MODE_FULL |
| (13) RR_ACTIVATE_REQ | plmn | PLMN_123_33 |
| | op | OP_MODE_SIM_NO_SERV |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | acc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_ECL |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (14) RR_ABORT_IND | op | OP_MODE_SIM |
| | abcs | ABCS_CEL_SEL_FAIL |
| | plmn_avail | TWO_PLMN_FOUND |
| | plmn | PLMN_LIST_2_PLMN_1_NEW_FORB |
| | rxlevel | RXLEVEL_20_18 |
| | power | RF_CLASS_2 |
| (15) MDL_RELEASE_REQ | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |

| | | |
|------|-------------------|---------------------------|
| (23) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (24) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_LIMITED_SERVICE |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (25) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVAL |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (26) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (27) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_RUNNING |
| | new_forb_plmn | PLMN_123_44 |
| | limited_cause | RC_PLMN_NOT_ALLOWED |
| (28) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_123_31 |
| | op | OP_MODE_SIM_NO_SERV |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | acc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_1 |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (29) | RR_ACTIVATE_CNF | |
| | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_31 |
| | lac | LAC_0002 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |

| | | |
|------|------------------|-------------------------|
| (30) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (31) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (32) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_31_0002 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | NOT_USED |
| | } | |
| (33) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (34) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | MOB_ID_NEW_TMSI |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_USED |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (35) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | PLMN_123_31 |
| | lac | LAC_0002 |

| | | | |
|----------|-------------------|----|-------------------------------------|
| | synccs | | SYNCCS_LAI_ALLOW |
| | acc | | NOT_USED |
| | thplmn | | NOT_USED |
| (36) | MMR_REG_CNF | | |
| | plmn | | PLMN_123_31 |
| (37) | SIM_MM_UPDATE_REQ | | |
| | loc_info | | LOC_INFO_UPDATED_31_0002 |
| | bcch_inf | | BCCH_INF_1 |
| | forb_plmn | | NOT_USED |
| | cksn | | CKSN_RES |
| | kc | | KC_DELETED_SIM |
| | cell_identity | | CELL_ID_1122 |
| (38) | RR_RELEASE_IND | | |
| | relcs | | RELCS_NORM |
| | sapi | | SAPI_0 |
| | gprs_resumption | | GPRS_RESUMPTION_NOT_ACK |
| (39) | MDL_RELEASE_REQ | | |
| | ch_type | | NOT_PRESENT_8BIT |
| | sapi | | SAPI_0 |
| History: | 30.05.00 | HM | Initial |
| | 07.01.01 | HM | Revised, updating now into selected |
| cell | | | |

4.6.21 MM118: Location Updating Reject (IMSI unknown in HLR), mode AUTO

Description: The mobile station is requested to register in automatic mode. The HPLMN is not present. The first PLMN the mobile station tries to register sends LOCATION UPDATING REJECT with cause #2 (IMSI unknown in HLR). It is expected that no further registration attempt will be tried into the second found PLMN, even if an RR_ACTIVATE_IND with op_mode OP_MODE_SIM will be received.

PLMN_123_44 First found PLMN, sends reject with cause #2

PLMN_123_31 Second found PLMN

Preamble: MM001

| | MMI/CM/SIM | MM | RR/DL |
|----------------|-------------------|---|-------|
| (1) | SIM_MM_INSERT_IND | | |
| (2) | MMR_REG_REQ | | |
| (3) | | RR_ACTIVATE_REQ | |
| (4) | | RR_ABORT_IND | |
| (5) | | MDL_RELEASE_REQ | |
| (6) | MMR_NREG_IND | | |
| (7) | | RR_ACTIVATE_REQ | |
| (8) | | RR_ACTIVATE_CNF | |
| (9) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (10) | | RR_ESTABLISH_CNF | |
| (11) | | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (12) | | RR_RELEASE_IND | |
| (13) | | MDL_RELEASE_REQ | |
| (14) | | RR_SYNC_REQ | |
| (15) | SIM_MM_UPDATE_REQ | | |
| (16) | MMR_NREG_IND | | |
| TIMEOUT (5000) | | | |
| (17) | | RR_ACTIVATE_IND | |
| (18) | MMR_NREG_IND | | |
| TIMEOUT (5000) | | | |
| (19) | MMR_NREG_REQ | | |
| (20) | | MDL_RELEASE_REQ | |
| (21) | | RR_DEACTIVATE_REQ | |
| (22) | MMR_NREG_CNF | | |

<=====

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------------------------|-----------------------------|--------------|
| (40) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (41) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (42) RR_ACTIVATE_REQ | | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_ECL | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (43) RR_ABORT_IND | | |
| op | OP_MODE_SIM | |
| abcs | ABCS_CEL_SEL_FAIL | |
| plmn_avail | TWO_PLMN_FOUND | |
| plmn | PLMN_LIST_2_PLMN_1_NEW_FORB | |
| rxlevel | RXLEVEL_20_18 | |
| power | RF_CLASS_2 | |
| (44) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (45) MMR_NREG_IND | | |
| nreg_cs | NREG_LIMITED_SERVICE | |
| search_running | SEARCH_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_RC_NONE | |
| (46) RR_ACTIVATE_REQ | | |
| plmn | PLMN_123_44 | |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_1 | |

| | | |
|------|------------------|------------------------------------|
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (47) | RR_ACTIVATE_CNF | |
| | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_44 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (48) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (49) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (50) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |
| | ti | TI_0 |
| | rej_cause | RC_IMSI_IN_HLR |
| | } | |
| (51) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (52) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (53) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG |
| | acc | NOT_USED |
| | thplmn | NOT_USED |

| | | | |
|------|-------------------|----------------|-------------------------|
| (54) | SIM_MM_UPDATE_REQ | loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| | | bcch_inf | NOT_USED |
| | | forb_plmn | NOT_USED |
| | | cksn | CKSN_RES |
| | | kc | KC_DELETED_SIM |
| | | cell_identity | CELL_ID_1122 |
| (55) | MMR_NREG_IND | nreg_cs | NREG_LIMITED_SERVICE |
| | | search_running | SEARCH_NOT_RUNNING |
| | | new_forb_plmn | PLMN_NO_ID |
| | | limited_cause | RC_IMSI_IN_HLR |
| (56) | RR_ACTIVATE_IND | op | OP_MODE_SIM |
| | | mm_info | MM_INFO |
| | | cid | CELL_ID_1122 |
| | | plmn | PLMN_123_33 |
| | | lac | LAC_0001 |
| | | power | RF_CLASS_2 |
| | | gprs_indic | GPRS_NO |
| (57) | MMR_NREG_IND | nreg_cs | NREG_LIMITED_SERVICE |
| | | search_running | SEARCH_NOT_RUNNING |
| | | new_forb_plmn | PLMN_NO_ID |
| | | limited_cause | RC_IMSI_IN_HLR |
| (58) | MMR_NREG_REQ | cs | CS_POW_OFF |
| (59) | MDL_RELEASE_REQ | ch_type | NOT_PRESENT_8BIT |
| | | sapi | SAPI_0 |
| (60) | RR_DEACTIVATE_REQ | param | NOT_USED |
| (61) | MMR_NREG_CNF | cs | CS_POW_OFF |

History: **04.01.01** **HM** **Initial**

4.7 Identity Request

4.7.1 MM121: Identity Request during Location Updating

Description: Connection is confirmed in the form of a RR-ESTABLISH confirmation primitive, whereupon MM changes to State 3 (Location Updating Initiated). In the course of Location Updating the network requests the identity of the MS. MM responds by issuing an Identity Response message as part of a RR-DATA indication primitive.

Preamble: MM101

| MMI/CM/SIM | MM | RR/DL |
|------------|------------------------------------|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_DATA_IND (IDENTITY REQUEST) | |
| (3) | RR_DATA_REQ (IDENTITY RESPONSE) | |

Parametrization

| Primitive | Parameter | Value |
|--|--|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_DATA_IND d1 d2 sdu { component direction pd ti ident } | NOT_USED NOT_USED MM DOWNLINK D_IDENT_REQ TI_0 IDENT_TYPE_IMSI | |
| (3) RR_DATA_REQ d1 d2 sdu { component direction pd ti mob_id } | NOT_USED NOT_USED MM UPLINK U_IDENT_RES TI_0 MOB_IDENT_IMSI | |

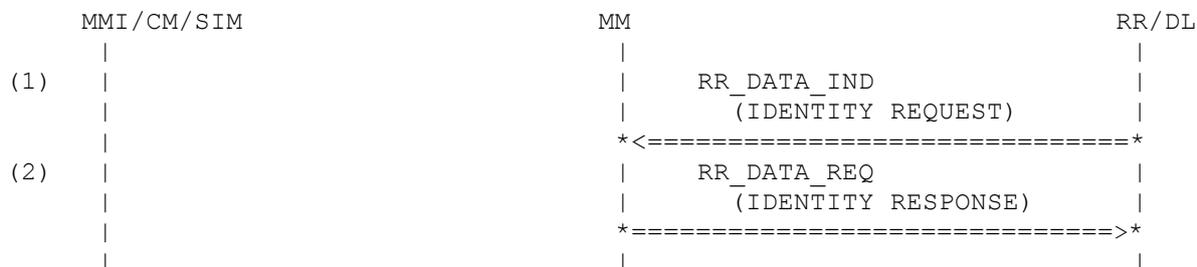
History: 09.07.97 HK Initial

4.7.2 MM122: Identity Request during MTC

Description: The mobile station receives an IDENTITY REQUEST message for the IMSI or IMEI from the network and responds by issuing a IDENTITY RESPONSE message containing the IMEI or IMSI, accordingly as requested.

Preamble: MM043

Variants: <A>....



Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------------------|------------------|-----------------|
| (1) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_IDENT_REQ | |
| ti | TI_0 | |
| <A> | ident | IDENT_TYPE_IMSI |
| | ident | IDENT_TYPE_IMEI |
| } | | |
| (2) RR_DATA_REQ | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_IDENT_RES | |
| ti | TI_0 | |
| <A> | mob_id | MOB_IDENT_IMSI |
| | mob_id | MOB_IDENT_IMEI |
| } | | |

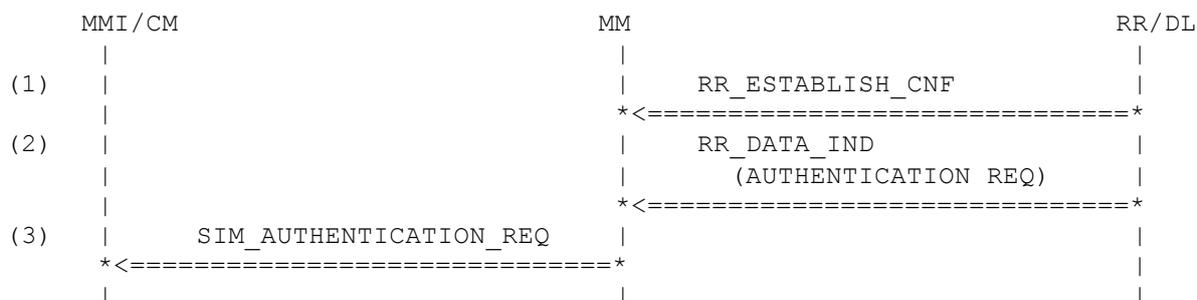
| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 31.07.97 | DL | Revised |
| | 18.04.01 | HM | Revised |

4.8 Authentication

4.8.1 MM141: Authentication Request

Description: The network confirms the request from the mobile station for a RR Connection in the form of a RR-ESTABLISH confirmation primitive. MM changes to State 3 ((Location Updating initiated) and issues an AUTHENTICATION REQ message and a SIM-AUTHENTICATION request primitive, initiating the authentication procedure with SIM.

Preamble: MM101



Parametrization

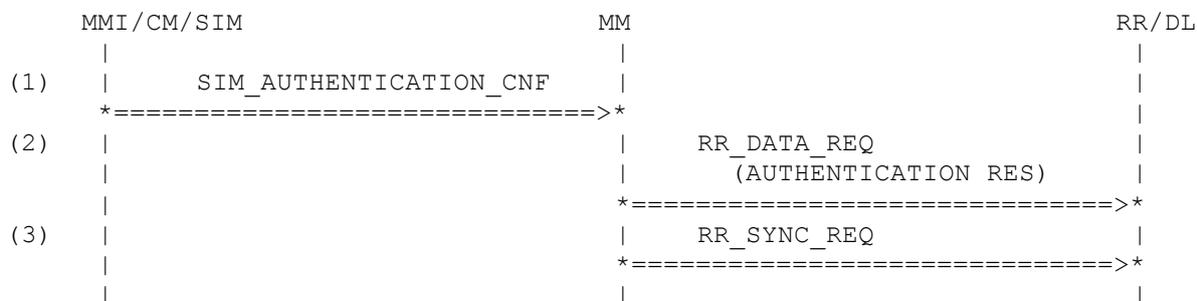
| Primitive | Parameter | Value |
|-------------------------------|-----------------|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_AUTH_REQ | |
| ti | TI_0 | |
| ciph_key_num | CIPH_KEY_NUM_01 | |
| auth_rand | AUTH_RAND_1 | |
| } | | |
| (3) SIM_AUTHENTICATION_REQ | | |
| source | SRC_MM | |
| rand | RAND_1_P | |
| cksn | CKSN_01 | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 31.07.97 | DL | Revised |

4.8.2 MM142: Authentication Response

Description: The authentication parameters are received from SIM in the form of a SIM-AUTHENTICATION confirmation primitive and are forwarded to the network as part of a AUTHENTICATION RES message. MM then commences synchronization with RR by issuing a RR-SYNC request primitive.

Preamble: MM141



Parametrization

| | Primitive | Parameter | Value |
|-----|------------------------|--------------|-------|
| (1) | SIM_AUTHENTICATION_CNF | | |
| | sres | SRES_1 | |
| | kc | KC_11223344 | |
| (2) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_AUTH_RES | |
| | ti | TI_0 | |
| | auth_sres | SRES_1_CODED | |
| | } | | |
| (3) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | CKSN_01 | |
| | kcv | KCV_11223344 | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_USED | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 31.07.97 | DL | Revised |

4.8.3 MM143: Authentication Request in State 6

Description: Authentication is requested by the network in the form of a AUTHENTICATION REQ message while the mobile station is in State 6 (MM Connection Active). Authentication is then sought and received from SIM (SIM-AUTHENTICATION request and confirmation primitives). MM sends this data to the network as part of a AUTHENTICATION RES message.

Preamble: MM043

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------------------|---------------------------------------|-------|
| (1) | | RR_DATA_IND (AUTHENTICATION REQ) | |
| | | *<=====* | |
| (2) | SIM_AUTHENTICATION_REQ | | |
| | *<=====* | | |
| (3) | SIM_AUTHENTICATION_CNF | | |
| | *=====>* | | |
| (4) | | RR_DATA_REQ (AUTHENTICATION RES) | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | | RR_DATA_IND (AUTHENTICATION REJ) | |
| | | *<=====* | |
| (7) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (8) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (9) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------------|--------------|-----------------|
| (1) RR_DATA_IND | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_AUTH_REQ |
| | ti | TI_0 |
| | ciph_key_num | CIPH_KEY_NUM_01 |
| | auth_rand | AUTH_RAND_1 |
| | } | |
| (2) SIM_AUTHENTICATION_REQ | source | SRC_MM |
| | rand | AUTH_RAND_1 |
| | cksn | CKSN_01 |
| (3) SIM_AUTHENTICATION_CNF | sres | SRES_1 |
| | kc | KC_11223344 |
| (4) RR_DATA_REQ | d1 | NOT_USED |

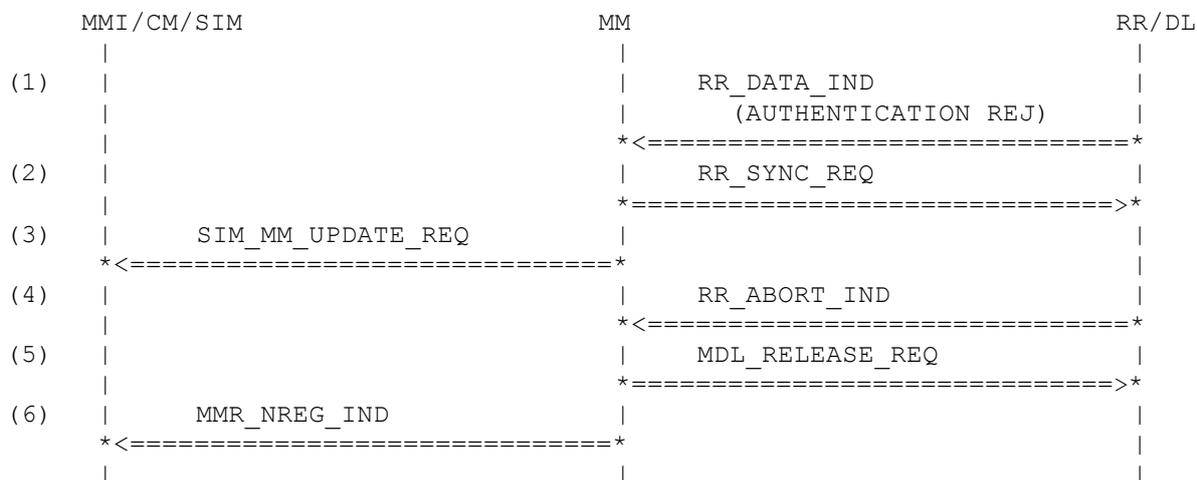
| | |
|-----------------------|------------------------------------|
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_AUTH_RES |
| ti | TI_0 |
| auth_sres | SRES_1_CODED |
| } | |
| (5) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | CKSN_01 |
| kcv | KCV_11223344 |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | NOT_USED |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (6) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_AUTH_REJ |
| ti | TI_0 |
| } | |
| (7) MMCC_RELEASE_IND | |
| ti | TI_2 |
| relcs | RELCS_NO_REGISTRATION |
| (8) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (9) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |

| | | | |
|----------|----------|----|---------|
| History: | 08.07.97 | HK | Initial |
| | 26.01.01 | HM | Revised |
| | 27.04.01 | HM | Revised |

4.8.4 MM144: Authentication Reject in State 3

Description: Authentication is rejected by the network in the form of a AUTHENTICATION REJ message followed by a RR-ABORT indication primitive while the mobile station is in State 3 (Location Updating Initiated). MM releases the RR connection and signals failure to MMI in the form of a MMR-NREG indication primitive with the negative registration cause set to 'authentication failure'.

Preamble: MM142



Parametrization

| Primitive | Parameter | Value |
|-----------------------|---------------|------------------------------------|
| (1) RR_DATA_IND | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_AUTH_REJ |
| | ti | TI_0 |
| | } | |
| (2) RR_SYNC_REQ | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (3) SIM_MM_UPDATE_REQ | loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_NO_KEY |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (4) RR_ABORT_IND | op | OP_MODE_TEST_SIM |

| | | | |
|----------|-----------------|-------------------------|-----------------------------|
| | abcs | ABCS_INT_PROT_ERR | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (5) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (6) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_AUTHREJ | |
| History: | 09.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 27.04.01 | HM | Changed order of primitives |

4.8.5 MM145: Authentication Reject and SIM Removal in State 3

Description: Authentication is rejected by the network in the form of a AUTHENTICATION REJ message while the mobile station is in State 3 (Location Updating Initiated). This is followed by the receipt of a SIM-REMOVE indication primitive. MM releases the RR connection and signals failure to MMI in the form of a MMR-NREG indication primitive with the negative registration cause set to 'authentication failure'.

Preamble: MM142

| | MMI/CM/SIM | MM | RR/DL |
|-----|-------------------|----------------------|-------|
| (1) | | RR_DATA_IND | |
| | | (AUTHENTICATION REJ) | |
| | | *<=====* | |
| (2) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (3) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (4) | SIM_REMOVE_IND | | |
| | *=====>* | | |
| | TIMEOUT (11000) | | |
| (5) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (6) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (7) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (8) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|-----------|------------------------------------|-------|
| (15) | RR_DATA_IND | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_AUTH_REJ | |
| ti | TI_0 | |
| } | | |
| (16) | RR_SYNC_REQ | |
| op | NOT_USED | |
| cksn | NOT_USED | |
| kcv | NOT_USED | |
| tmsi | NOT_USED | |
| plmn | NOT_USED | |
| lac | NOT_USED | |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG | |
| accc | NOT_USED | |
| thplmn | NOT_USED | |
| (17) | SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_PLMN_NOT_ALLOW | |
| bcch_inf | NOT_USED | |
| forb_plmn | NOT_USED | |

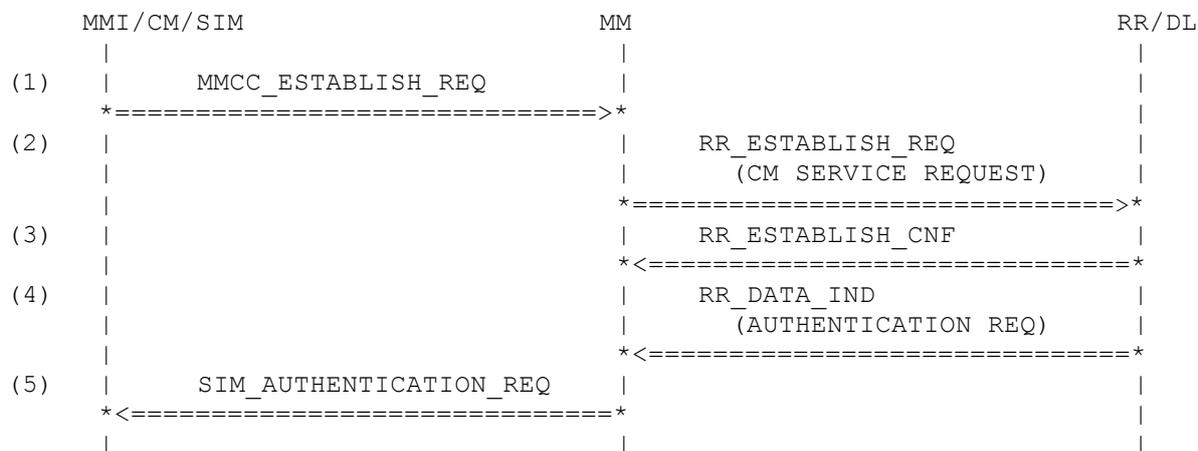
| | | |
|------|-----------------|-------------------------|
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (18) | | SIM_REMOVE_IND |
| | error | NOT_USED |
| (19) | | RR_ABORT_REQ |
| | abcs | ABCS_NORM |
| (20) | | RR_RELEASE_IND |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (21) | | MDL_RELEASE_REQ |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (22) | | MMR_NREG_IND |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_SIM_INVALID_REMOVED |

| | | | |
|----------|----------|----|-------------------------------------|
| History: | 08.07.97 | HK | Initial |
| | 03.03.00 | HM | Revised (search_running) |
| | 29.08.00 | HM | Revised |
| | 07.01.01 | HM | Adaption caused by GPRS integration |
| | 27.04.01 | HM | Revised |

4.8.6 MM146: Authentication Request in State 5

Description: In State 5 (Wait for Outgoing MM Connection) MM receives an establishment request from CC and sends CM SERVICE REQUEST message as part of a RR-ESTABLISH request primitive. The network commences the Authentication procedure in by sending a AUTHENTICATION REQ message and MM issues a SIM-AUTHENTICATION request primitive.

Preamble: MM024



Parametrization

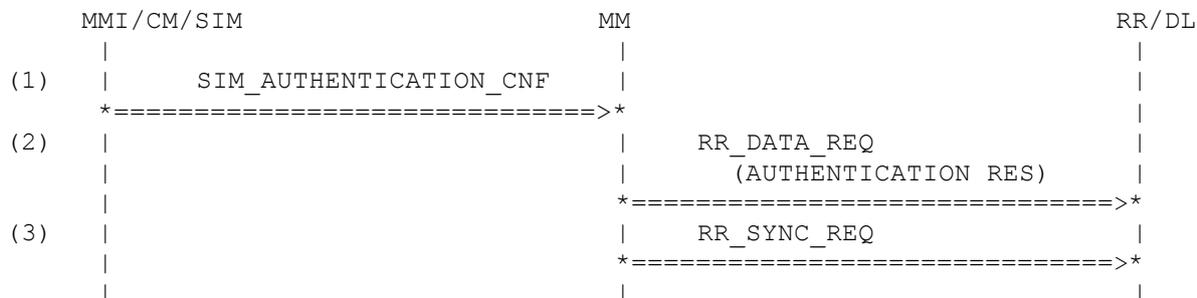
| Primitive | Parameter | Value |
|------------------------|--------------|---------------------|
| (1) MMCC_ESTABLISH_REQ | ti | TI_5 |
| | prio | PRIO_NORM_CALL |
| | estcs | ESTCS_MOB_ORIG_SPCH |
| (2) RR_ESTABLISH_REQ | estcs | ESTCS_MOB_ORIG_SPCH |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_CM_SERV_REQ |
| | ti | TI_0 |
| | cm_serv_type | ST_MOC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | mob_class_2 | MOB_CLASS_2 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (3) RR_ESTABLISH_CNF | param | NOT_USED |
| (4) RR_DATA_IND | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_AUTH_REQ |
| | ti | TI_0 |

| | | | |
|----------------------------|-----------------|----|---------|
| ciph_key_num | CIPH_KEY_NUM_04 | | |
| auth_rand | AUTH_RAND_1 | | |
| } | | | |
| (5) SIM_AUTHENTICATION_REQ | | | |
| source | NOT_USED | | |
| rand | AUTH_RAND_1 | | |
| cksn | CKSN_04 | | |
| History: | 08.07.97 | HK | Initial |

4.8.7 MM147: Response to Authentication Request in State 5

Description: In State 5 (Wait for outgoing MM Connection to the Network) MM receives a SIM-AUTHENTICATION confirmation primitive and sends the authentication parameters to the network in the form of an AUTHENTICATION RES message.

Preamble: MM146



Parametrization

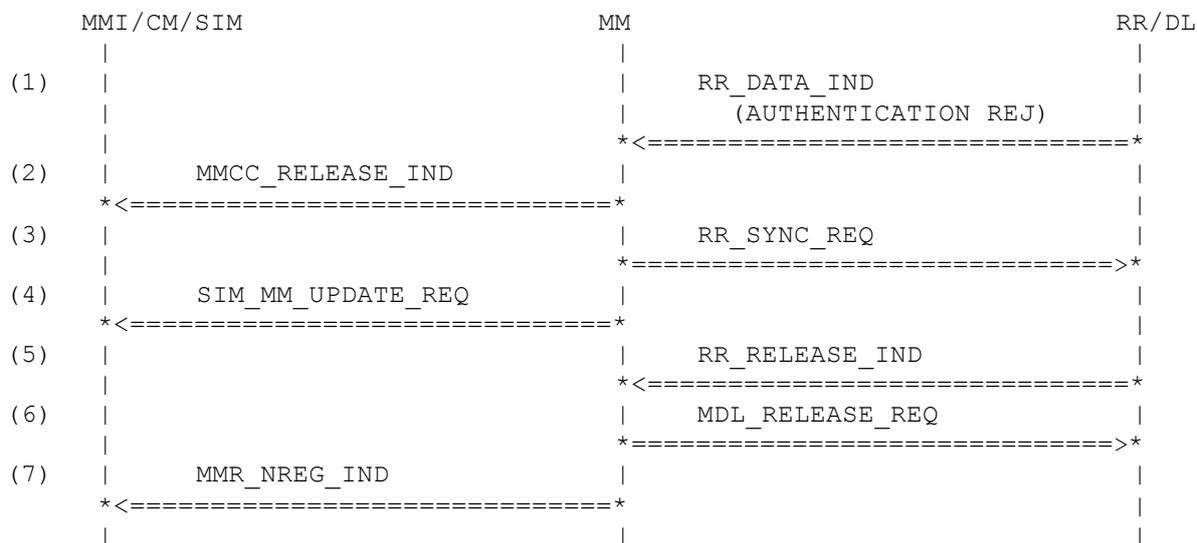
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------|------------------|--------------|
| (1) | SIM_AUTHENTICATION_CNF | | |
| | sres | SRES_1 | |
| | kc | KC_11223344 | |
| (2) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_AUTH_RES | |
| | ti | TI_0 | |
| | auth_sres | SRES_1_CODED | |
| | } | | |
| (3) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | CKSN_04 | |
| | kcv | KCV_11223344 | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | syncchs | NOT_USED | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |

History: 08.07.97 HK Initial

4.8.8 MM148: Authentication Reject in State 5

Description: Authentication is rejected by the network in the form of a AUTHENTICATION REJ message while the mobile station is in State 5 (Wait for outgoing MM Connection). This is followed by the receipt of a SIM-REMOVE indication primitive. MM releases the RR connection and signals failure to MMI in the form of a MMR-NREG indication primitive with the negative registration cause set to 'authentication failure'.

Preamble: MM147



Parametrization

| | Primitive | Parameter | Value |
|-----|-------------------|------------------------------------|-------|
| (1) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_AUTH_REJ | |
| | ti | TI_0 | |
| | } | | |
| (2) | MMCC_RELEASE_IND | | |
| | ti | TI_5 | |
| | relcs | RELCS_NO_REGISTRATION | |
| (3) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (4) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_PLMN_NOT_ALLOW | |
| | bcch_inf | NOT_USED | |
| | forb_plmn | NOT_USED | |

| | | | |
|----------|-----------------|-------------------------|--------------------------------|
| | cksn | CKSN_NO_KEY | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (5) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (6) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (7) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_AUTHREJ | |
| History: | 08.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 26.01.01 | HM | Revised |
| | 27.04.01 | HM | Changed ordering of primitives |

4.8.9 MM149: Authentication Reject during request for a second connection

Description: MM receives a second connection request from CC and sends a CM SERVICE REQUEST message to the network. This is followed by a AUTHENTICATION REQ message from the network; MM receives authentication confirmation for the previous authentication request (SIM-AUTHENTICATION confirmation primitive) and then seeks authentication for the second request. The data for the first authentication confirmation is forwarded to the network in the form of a AUTHENTICATION RES message. Authentication is rejected by the network in the form of a AUTHENTICATION REJ message. MM releases the RR connection and signals failure to MMI in the form of a MMR-NREG indication primitive with the negative registration cause set to 'authentication failure'. The reaction of MM to an Authentication failure during the Establishment of a second Connection is tested.

Preamble: MM045A

| | MMI/CM/SIM | MM | RR/DL |
|------|------------------------|-------------------------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | *=====> | | |
| (2) | | RR_DATA_REQ (CM SERVICE REQUEST) | |
| | *=====> | | |
| (3) | | RR_DATA_IND (AUTHENTICATION REQ) | |
| | *<=====* | | |
| (4) | SIM_AUTHENTICATION_REQ | | |
| | *<=====* | | |
| (5) | SIM_AUTHENTICATION_CNF | | |
| | *=====> | | |
| (6) | | RR_DATA_REQ (AUTHENTICATION RES) | |
| | *=====> | | |
| (7) | | RR_SYNC_REQ | |
| | *=====> | | |
| (8) | | RR_DATA_IND (AUTHENTICATION REJ) | |
| | *<=====* | | |
| (9) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (10) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (11) | | RR_SYNC_REQ | |
| | *=====> | | |
| (12) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (13) | | RR_RELEASE_IND | |
| | *<=====* | | |
| (14) | | MDL_RELEASE_REQ | |
| | *=====> | | |
| (15) | MMR_NREG_IND | | |
| | *<=====* | | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|---------------------|-------|
| (1) MMCC_ESTABLISH_REQ | | |
| ti | TI_5 | |
| prio | PRIO_NORM_CALL | |
| estcs | ESTCS_MOB_ORIG_SPCH | |

| | |
|----------------------------|------------------|
| (2) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_CM_SERV_REQ |
| ti | TI_0 |
| cm_serv_type | ST_MOC |
| ciph_key_num | CIPH_KEY_NUM_RES |
| mob_class_2 | MOB_CLASS_2 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (3) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_AUTH_REQ |
| ti | TI_0 |
| ciph_key_num | CIPH_KEY_NUM_04 |
| auth_rand | AUTH_RAND_1 |
| } | |
| (4) SIM_AUTHENTICATION_REQ | |
| source | SRC_MM |
| rand | AUTH_RAND_1 |
| cksn | CKSN_04 |
| (5) SIM_AUTHENTICATION_CNF | |
| sres | SRES_1 |
| kc | KC_11223344 |
| (6) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_AUTH_RES |
| ti | TI_0 |
| auth_sres | SRES_1_CODED |
| } | |
| (7) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | CKSN_04 |
| kcv | KCV_11223344 |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | NOT_USED |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (8) RR_DATA_IND | |
| d1 | NOT_USED |

| | |
|------------------------|------------------------------------|
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_AUTH_REJ |
| ti | TI_0 |
| } | |
| (9) MMCC_RELEASE_IND | |
| ti | TI_2 |
| relcs | RELCS_NO_REGISTRATION |
| (10) MMCC_RELEASE_IND | |
| ti | TI_5 |
| relcs | RELCS_NO_REGISTRATION |
| (11) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (12) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_NO_KEY |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (13) RR_RELEASE_IND | |
| relcs | RELCS_NORM |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (14) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (15) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | MMR_SIM_INVALID_AUTHREJ |

| | | | |
|----------|----------|----|--------------------------------|
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 26.01.01 | HM | Revised |
| | 27.04.01 | HM | Changed ordering of primitives |

4.8.10 MM150: Authentication in State 9

Description: In State 9 (Wait for Network Command) MM receives RR-ESTABLISH indication primitive and an AUTHENTICATION REQ message from the network. MM forwards the authentication request to SIM in the form of a SIM-AUTHENTICATION request primitive containing the ciphering key data received from the network.

Preamble: MM024

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------------------|----------------------|-------|
| (1) | | | |
| | | RR_ESTABLISH_IND | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (AUTHENTICATION REQ) | |
| | | *<=====* | |
| (3) | SIM_AUTHENTICATION_REQ | | |
| | *<=====* | | |
| | | | |

Parametrization

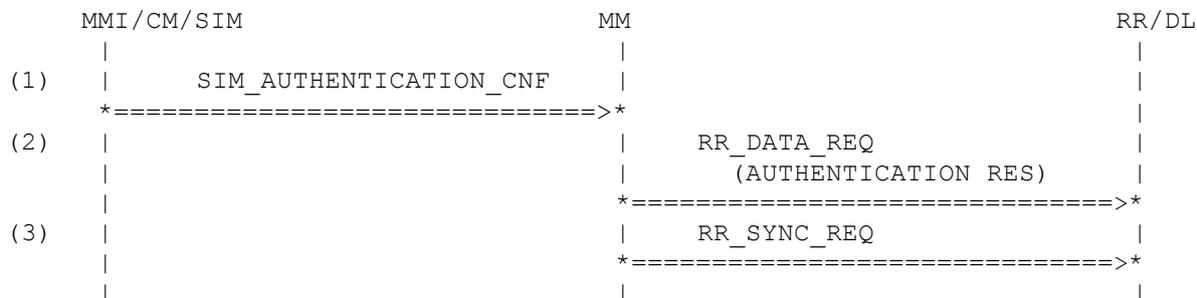
| | Primitive | Parameter | Value |
|-----|------------------------|-----------------|-------|
| (1) | RR_ESTABLISH_IND | | |
| | param | NOT_USED | |
| (2) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_AUTH_REQ | |
| | ti | TI_0 | |
| | ciph_key_num | CIPH_KEY_NUM_01 | |
| | auth_rand | AUTH_RAND_1 | |
| | } | | |
| (3) | SIM_AUTHENTICATION_REQ | | |
| | source | NOT_USED | |
| | rand | AUTH_RAND_1 | |
| | cksn | CKSN_01 | |

History: 10.07.97 HK Initial

4.8.11 MM151: Response to Authentication Request in State 9

Description: In State 9 (Wait for Network Command) MM receives a SIM-AUTHENTICATION confirmation primitive and sends the authentication parameters to the network in the form of an AUTHENTICATION RES message.

Preamble: MM150



Parametrization

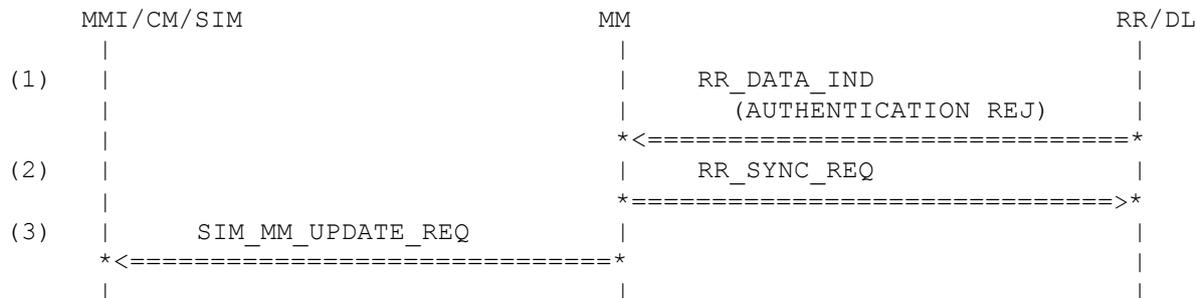
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------|------------------|--------------|
| (1) | SIM_AUTHENTICATION_CNF | | |
| | sres | SRES_1 | |
| | kc | KC_11223344 | |
| (2) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_AUTH_RES | |
| | ti | TI_0 | |
| | auth_sres | SRES_1_CODED | |
| | } | | |
| (3) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | CKSN_01 | |
| | kcv | KCV_11223344 | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | syncchs | NOT_USED | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |

History: 10.07.97 HK Initial

4.8.12 MM152: Authentication Reject in State 9

Description: In State 9 Wait for Network command MM receives RR_DATA_IND with an Authentication Reject message. MM sets the flag "Authentication fail", invalidates the SIM in RR, informs the SIM entity about loss of registration, considers the SIM as not present in MM and stays in State 9 WAIT FOR NETWORK COMMAND until the RR connection is released.

Preamble: MM151



Parametrization

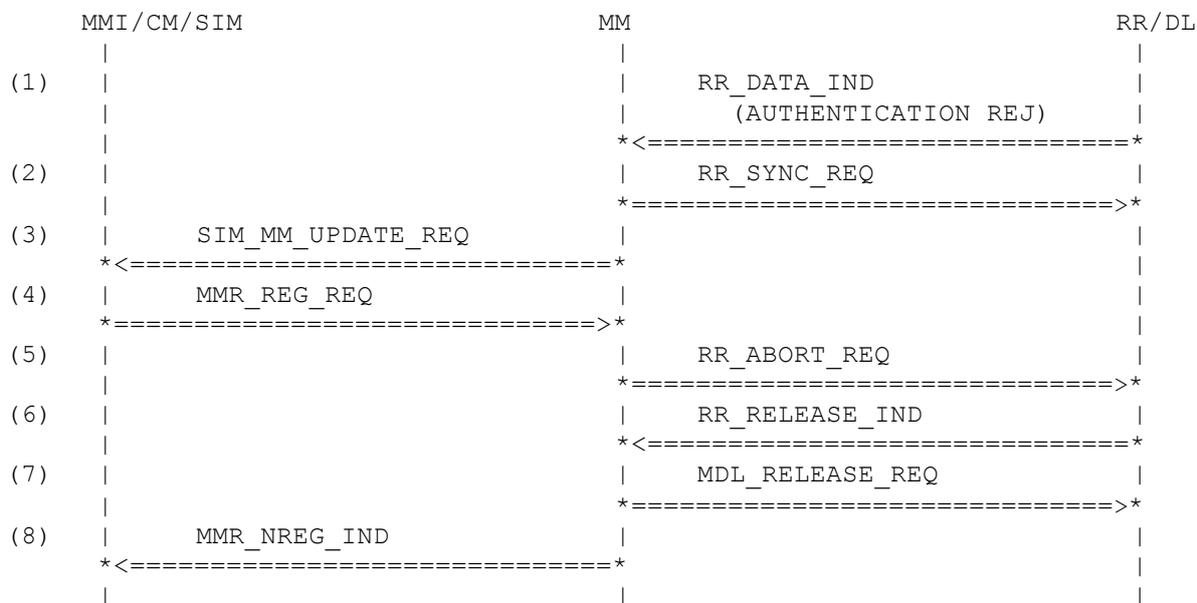
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|-------------------|------------------------------------|--------------|
| (1) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_AUTH_REJ | |
| | ti | TI_0 | |
| | } | | |
| (2) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (3) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_PLMN_NOT_ALLOW | |
| | bcch_inf | NOT_USED | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_NO_KEY | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |

| | | | |
|----------|----------|----|---------|
| History: | 10.07.97 | HK | Initial |
| | 30.04.01 | HM | Revised |

4.8.13 MM153: Registration request following authorization failure

Description: Authentication is rejected by the network in the form of a AUTHENTICATION REJ message followed by a RR-ABORT indication primitive while the mobile station is in State 3 (Location Updating Initiated). MM releases the RR connection and signals failure to MMI in the form of a MMR-NREG indication primitive with the negative registration cause set to 'authentication failure'.

Preamble: MM142



Parametrization

| Primitive | Parameter | Value |
|-----------------------|------------------------------------|-------|
| (1) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_AUTH_REJ | |
| ti | TI_0 | |
| } | | |
| (2) RR_SYNC_REQ | | |
| op | NOT_USED | |
| cksn | NOT_USED | |
| kcv | NOT_USED | |
| tmsi | NOT_USED | |
| plmn | NOT_USED | |
| lac | NOT_USED | |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG | |
| acc | NOT_USED | |
| thplmn | NOT_USED | |
| (3) SIM_MM_UPDATE_REQ | | |
| loc_info | LOC_INFO_PLMN_NOT_ALLOW | |
| bcch_inf | NOT_USED | |
| forb_plmn | NOT_USED | |
| cksn | CKSN_NO_KEY | |

| | | | |
|----------|-----------------|-------------------------|--------------------------|
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (4) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (5) | RR_ABORT_REQ | | |
| | abcs | ABCS_NORM | |
| (6) | RR_RELEASE_IND | | |
| | relcs | RELCS_ABNORM_UNSPEC | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (7) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (8) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_AUTHREJ | |
| History: | 21.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 27.04.01 | HM | Revised |

4.8.14 MM154: LUP Rejection following AUTHENTICATION RESPONSE in State 3

Description: In State 3 (Location Updating Initiated) MM receives a LOCATION UPDATING REJ message. MM releases the RR connection and signals failure to MMI in the form of a MMR-NREG indication primitive. The PLMN for which the LOCATION UPDATING REJECT with cause PLMN NOT ALLOWED received is the HPLMN, thus it will *not* be added to the forbidden list.

Preamble: MM142

| | MMI / CM / SIM | MM | RR / DL |
|-----|-------------------|-------------------------|---------|
| (1) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (2) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (3) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (4) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (5) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (6) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|---------------------|-----------------|--------------------------|
| (1) RR_DATA_IND | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |
| | ti | TI_0 |
| | rej_cause | RC_PLMN_NOT_ALLOWED |
| | } | |
| (2) RR_RELEASE_IND | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (3) MDL_RELEASE_REQ | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (4) RR_SYNC_REQ | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | syncs | SYNCS_TMSI_CKSN_KC_INVAL |

| | |
|-----------------------|-------------------------|
| acc | NOT_USED |
| thplmn | NOT_USED |
| (5) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_PLMN_NOT_ALLOW |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_NO_KEY |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (6) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | RC_PLMN_NOT_ALLOWED |

| | | | |
|----------|----------|----|--------------------------|
| History: | 21.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 22.05.00 | HM | Revised |

4.8.15 MM155: LUP with MM INFORMATION

Description: The SIM card needs some time to process the SRES. This time may be used by the network to transfer some information to the mobile station, which is forwarded transparently to upper layers. The authentication parameters are received from SIM in the form of a SIM-AUTHENTICATION confirmation primitive and are forwarded to the network as part of a AUTHENTICATION RES message. MM then commences synchronization with RR by issuing a RR-SYNC request primitive. The purpose of this testcase is to test that all parameters of the MM INFORMATION message are correctly transmitted to the ACI. Derived from testcase MM142.

Preamble: MM141

Variants: <A>....

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------------------|----------------------|-------|
| (1) | | RR_DATA_IND | |
| | | (MM INFORMATION) | |
| | | *<=====* | |
| (2) | MMR_INFO_IND | | |
| | *<=====* | | |
| (3) | SIM_AUTHENTICATION_CNF | | |
| | *=====>* | | |
| (4) | | RR_DATA_REQ | |
| | | (AUTHENTICATION RES) | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------|-----------|-------|
| (1) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |

```

        direction          DOWNLINK
        pd                 D_MM_INFORMATION
        full_net_name      FULL_NET_NAME
        short_net_name     SHORT_NET_NAME
    <A> net_tz              NET_TZ
    <A> net_tz_and_time     NOT_USED
    <B> net_tz              NOT_USED
    <B> net_tz_and_time     NET_TZ_AND_TIME
    }

(2) MMR_INFO_IND
    plmn                  PLMN_123_33
    full_name             FULL_NAME
    short_name            SHORT_NAME
    ntz                   NTZ_MET
    <A> time                NOT_USED
    <B> time                TIME

(3) SIM_AUTHENTICATION_CNF
    sres                  SRES_1
    kc                    KC_11223344

(4) RR_DATA_REQ
    d1                    NOT_USED
    d2                    NOT_USED
    sdu
    {
        component          MM
        direction          UPLINK
        pd                 U_AUTH_RES
        ti                 TI_0
        auth_sres          SRES_1_CODED
    }

(5) RR_SYNC_REQ
    op                    NOT_USED
    cksn                  CKSN_01
    kcv                   KCV_11223344
    tmsi                  NOT_USED
    plmn                  NOT_USED
    lac                   NOT_USED
    syncs                 NOT_USED
    acc                   NOT_USED
    thplmn                NOT_USED
    
```

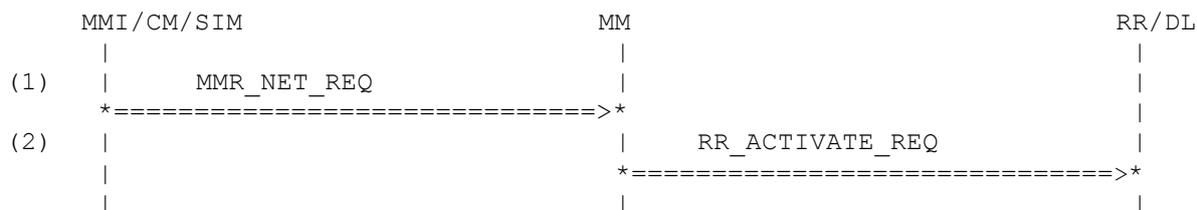
History: 08.03.00 HM Initial

4.9 Net Request

4.9.1 MM161: Net Request in State 19.4

Description: MM receives a MMR-NET request primitive in State 19.4 (Idle No IMSI). A RR-ACTIVATE request with an empty IMSI is issued and MM enters State 19.8 (Idle, PLMN Search, Normal Service).

Preamble: MM024



Parametrization

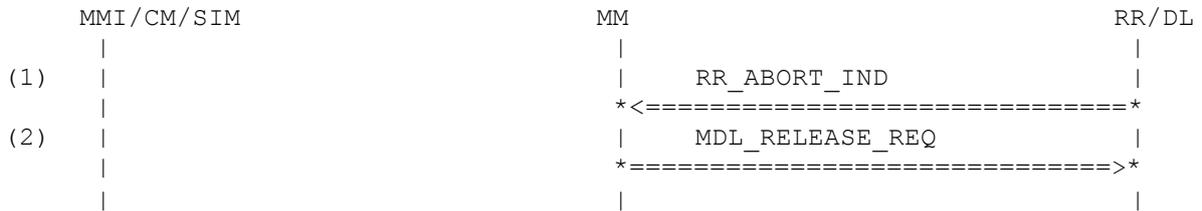
| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|---|--|--------------|
| (1) MMR_NET_REQ param | NOT_USED | |
| (2) RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NET_REQUEST CKSN_NO_KEY KC_DELETED ACC_CLASS_0000 EMPTY_IMSI NOT_USED NOT_USED NOT_USED CELL_TEST_DISABLE GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 10.07.97 | HK | Initial |
| | 17.09.97 | DL | revised |

4.9.2 MM162: RR_ABORT_IND in State 19

Description: MM receives a RR-ABORT indication primitive in State 19 (MM Idle). MM enters the limited service state.

Preamble: MM022



Parametrization

| Primitive | Parameter | Value |
|---------------------|-------------------|-------|
| (1) RR_ABORT_IND | | |
| op | OP_MODE_TEST_SIM | |
| abcs | ABCS_CEL_SEL_FAIL | |
| plmn_avail | NOT_USED | |
| plmn | PLMN_123_44 | |
| rxlevel | NOT_USED | |
| power | RF_CLASS_2 | |
| (2) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |

| | | | |
|----------|----------|----|---------|
| History: | 10.07.97 | HK | Initial |
| | 17.02.00 | HM | Revised |

4.10 TMSI Reallocation

4.10.1 MM181: TMSI Reallocation in State 5

Description: RR connection is confirmed in the form of a RR-ESTABLISH confirmation primitive. This is followed by a TMSI REALLOCATION COMMAND message. MM issues a TMSI REALLOC COMPLETE message and begins synchronization with RR (RR-SYNC request primitive). On receiving a CM SERVICE ACCEPT message MM issues a MMCC-ESTABLISH confirmation primitive.

Preamble: MM041

| | MMI/CM/SIM | MM | RR/DL |
|-----|--------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (TMSI_REALLOC_COMMAND) | |
| | | *<=====* | |
| (3) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (4) | | RR_DATA_REQ | |
| | | (TMSI_REALLOC_COMPLETE) | |
| | | *=====>* | |
| (5) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (6) | | RR_DATA_IND | |
| | | (CM_SERVICE_ACCEPT) | |
| | | *<=====* | |
| (7) | MMCC_ESTABLISH_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti loc_area_ident mob_id } | NOT_USED NOT_USED NOT_USED MM DOWNLINK D_TMSI_REALLOC_CMD TI_0 LOC_AREA_ID_123_33_0001 MOB_IDENT_NEW_TMSI | |
| (3) | RR_SYNC_REQ op cksn kcv tmsi | NOT_USED NOT_USED NOT_USED MOB_ID_NEW_TMSI | |

| | | |
|-------|--------------------|---------------------|
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_USED |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (4) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (5) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_5 |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (6) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_CM_SERV_ACCEPT |
| | ti | TI_0 |
| | } | |
| (7) | MMCC_ESTABLISH_CNF | |
| | ti | TI_2 |

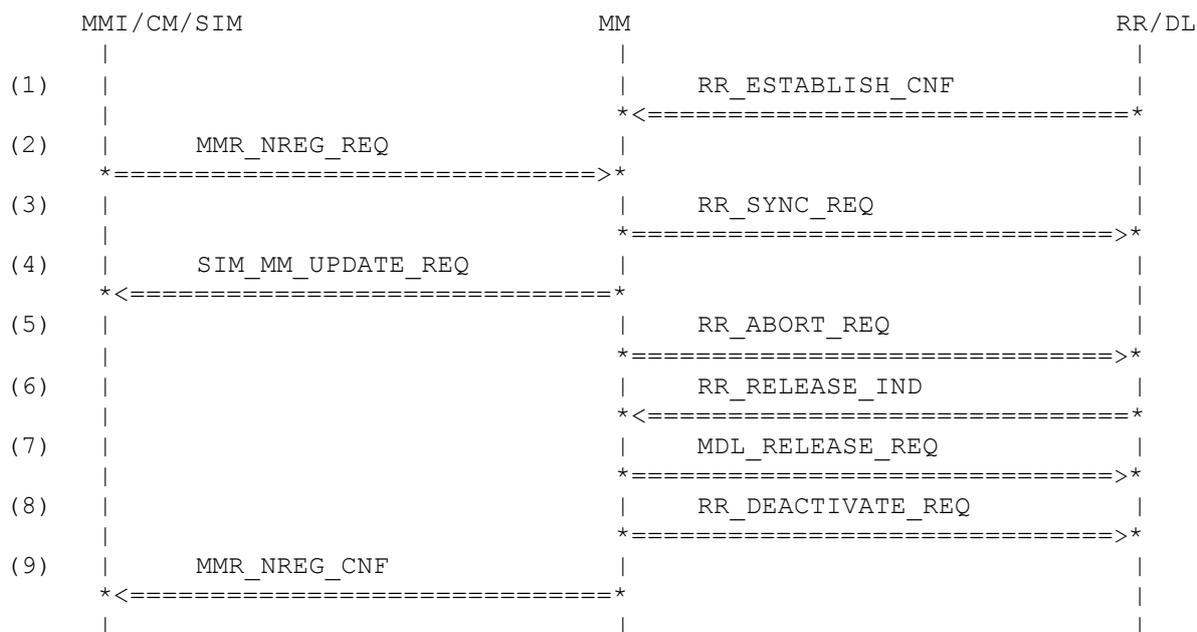
History: 09.07.97 HK Initial

4.11 Deregistration

4.11.1 MM201: MMR_NREG_REQ in State 3

Description: MM receives a RR-ESTABLISH confirmation primitive in State 3 (Location updating initiated). This is followed by a MMR-NREG request primitive. MM releases the RR connection and issues a MMR-NREG confirmation primitive with cause set to 'Power off'.

Preamble: MM101



Parametrization

| | Primitive | Parameter | Value |
|-----|---|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (3) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_INVALID NOT_USED NOT_USED | |
| (4) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 | |

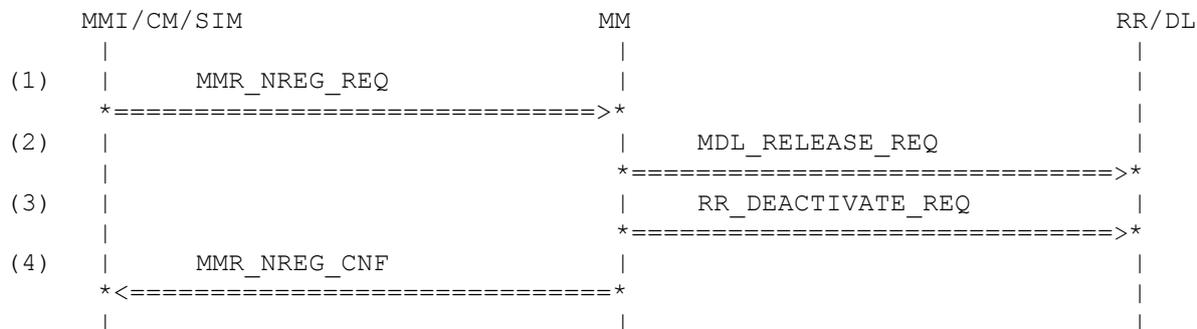
| | | |
|-----|--|--|
| (5) | RR_ABORT_REQ abcs | ABCS_NORM |
| (6) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (7) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (8) | RR_DEACTIVATE_REQ param | NOT_USED |
| (9) | MMR_NREG_CNF cs | CS_POW_OFF |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 15.09.97 | DL | revised |
| | 11.04.01 | HM | Revised |
| | 25.04.01 | HM | Revised |

4.11.2 MM202: Power Off in Ustate Status U1

Description: MM receives a MMR-NREG request primitive. MM issues a RR-DEACTIVATE request primitive and a MMR-NREG confirmation primitive with cause set to 'Power off' and changes to changes to State 0 (Null).

Preamble: MM023A



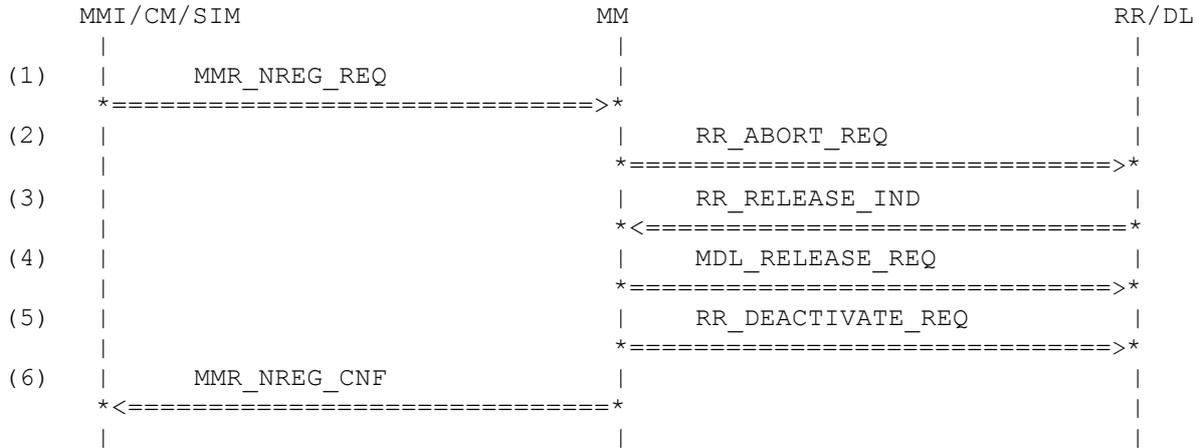
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 08.07.97 | HK | Initial |

4.11.3 MM203: Authentication Reject and Power off in State 6

Description: MM receives a MMR-NREG request primitive in State6 (MM Connection Active) and commences a shutdown.

Preamble: MM143



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--|--|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | RR_ABORT_REQ abcs | ABCS_NORM | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (6) | MMR_NREG_CNF cs | CS_POW_OFF | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 09.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 26.01.01 | HM | Revised |
| | 30.04.01 | HM | Revised |

4.11.4 MM204: Power Off in State 10

Description: MM receives a MMR-NREG request primitive in State 10 (Location Update Rejected) and commences a shutdown.

Preamble: MM101

| | MMI/CM/SIM | MM | RR/DL |
|------|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (4) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (5) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (6) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (7) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (9) | | RR_DEACTIVATE_REQ | |
| | | *=====>* | |
| (10) | MMR_NREG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|--|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_UNSPECIFIED | |
| (3) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (4) | RR_SYNC_REQ op cksn kcv tmsi plmn lac syncscs | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCSCS_TMSI_INVALID | |

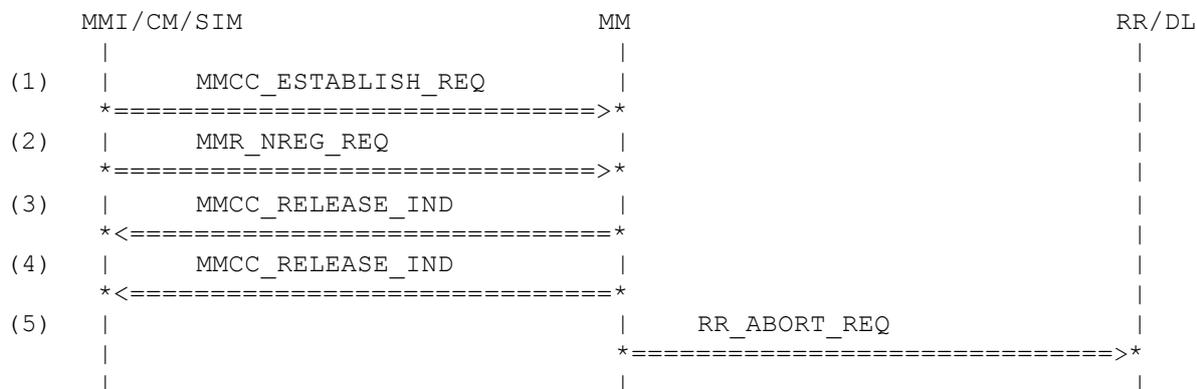
| | | |
|--------|-------------------|-------------------------|
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (5) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (6) | RR_ABORT_REQ | |
| | abcs | ABCS_NORM |
| (7) | RR_RELEASE_IND | |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (8) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (9) | RR_DEACTIVATE_REQ | |
| | param | NOT_USED |
| (10) | | MMR_NREG_CNF |
| | cs | CS_POW_OFF |

| | | | |
|----------|----------|----|---------|
| History: | 10.07.97 | HK | Initial |
| | 16.09.97 | DL | revised |
| | 11.04.01 | HM | Revised |
| | 25.04.01 | HM | Revised |

4.11.5 MM205: Power Off in State 14

Description: MM receives a MMR-NREG request primitive in State 14(Wait for RR Connection) and commences a shutdown.

Preamble: MM041



Parametrization

| Primitive | Parameter | Value |
|------------------------|---------------------|-------|
| (1) MMCC_ESTABLISH_REQ | | |
| ti | TI_3 | |
| prio | PRIO_NORM_CALL | |
| estcs | ESTCS_MOB_ORIG_DATA | |
| (2) MMR_NREG_REQ | | |
| cs | CS_POW_OFF | |
| (3) MMCC_RELEASE_IND | | |
| ti | TI_2 | |
| relcs | RELCS_UNSPECIFIED | |
| (4) MMCC_RELEASE_IND | | |
| ti | TI_3 | |
| relcs | RELCS_UNSPECIFIED | |
| (5) RR_ABORT_REQ | | |
| abcs | ABCS_NORM | |

| | | | |
|----------|----------|----|---------|
| History: | 10.07.97 | HK | Initial |
| | 16.09.97 | DL | revised |

4.11.6 MM206: Power Off in State 18

Description: MM receives a MMR-NREG request primitive in State 18 (Wait for RR Active) and issues a RR-DEACTIVATE request primitive.

Preamble: MM023A



Parametrization

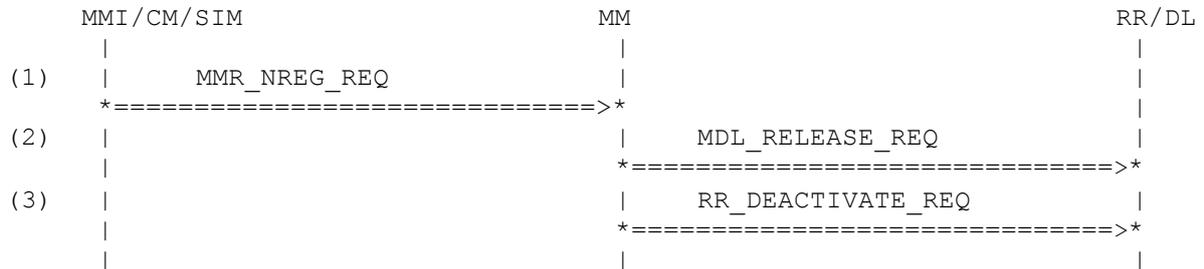
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |

History: 10.07.97 HK Initial

4.11.7 MM207: Power Off Remove in State 19

Description: MM receives a MMR-NREG request primitive in State 19 (MM Idle) and issues a RR-DEACTIVATE request primitive.

Preamble: MM161



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |

History: 10.07.97 HK Initial

4.11.8 MM208: Switch on after power off, IMSI ATTACH needed

Description: The mobile was switched off logically, but the power was not removed physically. This is the behaviour expected with the AT command AT+CFUN=4. The SIM data should have been preserved. After reactivation in the same location area, an IMSI ATTACH is needed.

Preamble: MM202

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|---|---------|
| (1) | MMR_REG_REQ | | |
| (2) | | RR_ACTIVATE_REQ | |
| (3) | | RR_ACTIVATE_CNF | |
| (4) | MMR_REG_CNF | | |
| (5) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|----------------------|-------|
| (1) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (2) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_ECL | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (3) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO_ATT | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (4) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |
| (5) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |

```
pd          U_LOC_UPD_REQ
ti          TI_0
loc_upd_type LOC_UPD_TYPE_ATTACH
ciph_key_num CIPH_KEY_NUM_RES
loc_area_ident LOC_AREA_ID_123_33_2147
mob_class_1 MOB_CLASS_1
mob_id      MOB_IDENT_IMSI
}
```

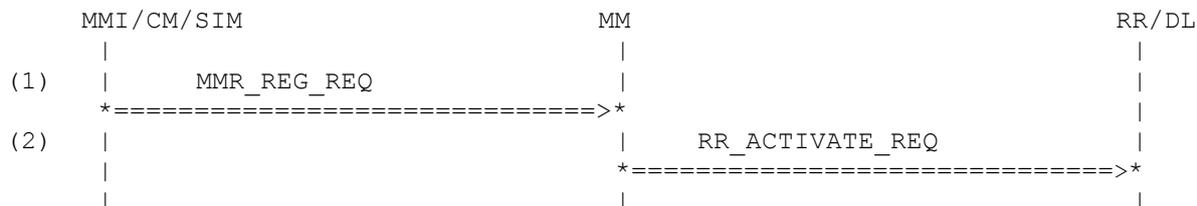
History: 11.04.01 HM Initial

4.12 Registration (REG_MS_OFF, no SIM Card)

4.12.1 MM300: Registration

Description: The reaction of MM to a request for registration with unplugged SIM card is tested. MM receives a MMR-REG request primitive and responds by issuing a RR-ACTIVATE request primitive in which the op field is set to 'limited service, no SIM'.

Preamble: MM001



Parametrization

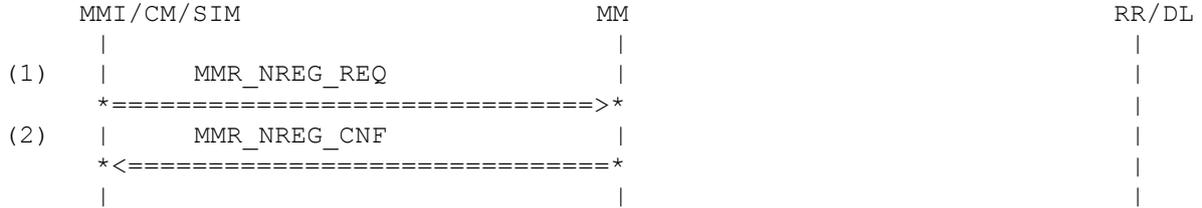
| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|---------------------|------------------------|--------------|
| (1) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (2) RR_ACTIVATE_REQ | | |
| plmn | PLMN_NO_ID | |
| op | OP_MODE_NO_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KC_DELETED | |
| acc | ACC_CLASS_0000 | |
| imsi | MOB_ID_NO_ID | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_FF | |
| bcch_info | NOT_USED | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.12.2 MM301: Deregistration

Description: MM receives a MMR-NREG request primitive. MM is in NULL state, no lower layers are active. MM issues a MMR-NREG confirmation primitive with cause set to 'Power off'.

Preamble: MM001



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--------------------|------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MMR_NREG_CNF cs | CS_POW_OFF | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 15.09.97 | DL | revised |
| | 31.03.00 | HM | Revised |

4.12.3 MM302: SIM Insertion

Description: MM receives a SIM-INSERT indication primitive. It stores the parameters and waits for registration start by MMI.

Preamble: MM001

| | | | | | |
|---------|--------|-------------------|----|--|-------|
| | MMI/CM | | MM | | RR/DL |
| | | | | | |
| (1) | | SIM_MM_INSERT_IND | | | |
| | | *=====> | | | |
| TIMEOUT | (3000) | | | | |
| | | | | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----------------------|--------------------|--------------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | OP_NORMAL_SIM | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.12.4 MM352: PLMN Available Request

Description: MMI requests a PLMN available list. There is no SIM inserted. This is not allowed.

Preamble: MM001

| | MMI / CM | MM | RR / DL |
|-----|--------------|----|---------|
| | | | |
| (1) | MMR_NET_REQ | | |
| | *=====>* | | |
| (2) | MMR_PLMN_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--|--|--------------|
| (1) | MMR_NET_REQ param | NOT_USED | |
| (2) | MMR_PLMN_IND res plmn forb_ind rxlevel | RES_REJ_NO_SIM_AVAIL NOT_USED NOT_USED NOT_USED | |

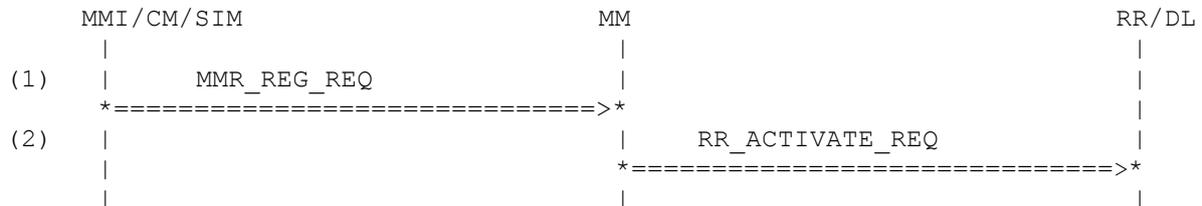
| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.13 Registration (REG_NO_SERVICE, no SIM Card)

4.13.1 MM303: Registration

Description: The reaction of MM to a request for registration with unplugged SIM card is tested. MM receives a MMR-REG request primitive and responds by issuing a RR-ACTIVATE request primitive in which the op field is set to 'limited service, no SIM'.

Preamble: MM300



Parametrization

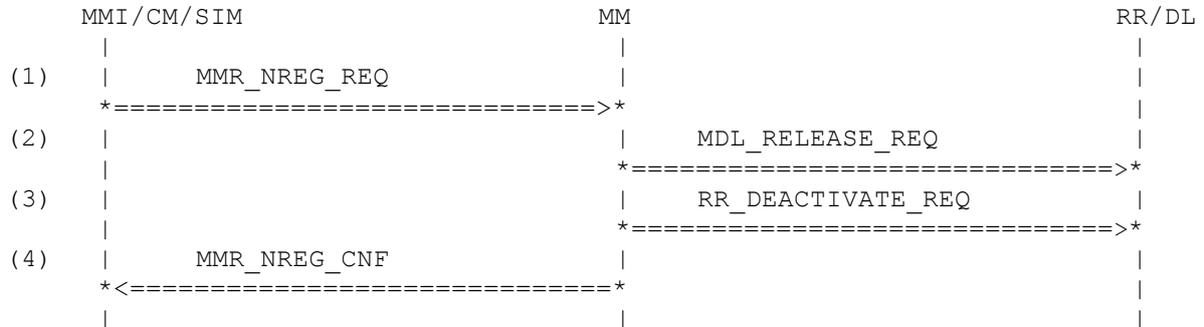
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------|------------------|------------------------|--------------|
| (14) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (15) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_NO_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KC_DELETED | |
| | acc | ACC_CLASS_0000 | |
| | imsi | MOB_ID_NO_ID | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_FF | |
| | bcch_info | NOT_USED | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.13.2 MM304: Deregistration

Description: MM receives a MMR-NREG request primitive. MM issues a RR-DEACTIVATE request primitive and a MMR-NREG confirmation primitive with cause set to 'Power off' and changes to changes to State 0 (Null).

Preamble: MM300



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |

History: 08.07.97 HK Initial

4.13.3 MM305: SIM Insertion

Description: MM receives a SIM-INSERT indication primitive. It stores the parameters and waits for registration start by MMI.

Preamble: MM300

| | | | | | |
|---------|--------|-------------------|----|--|-------|
| | MMI/CM | | MM | | RR/DL |
| | | | | | |
| (1) | | SIM_MM_INSERT_IND | | | |
| | | *=====> | | | |
| TIMEOUT | (3000) | | | | |
| | | | | | |

Parametrization

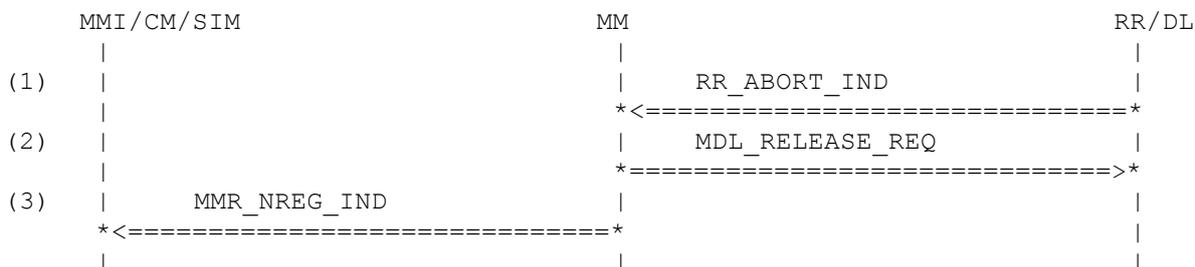
| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----------------------|--------------------|--------------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | OP_NORMAL_SIM | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.13.4 MM306: RR failure (No Service)

Description: MM receives a RR-ABORT indication primitive indicating No Service.

Preamble: MM300



Parametrization

| | Primitive | Parameter | Value |
|------|-----------------|----------------------------|-------|
| (16) | RR_ABORT_IND | | |
| | op | OP_MODE_NO_SIM_NO_SERV | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | plmn_avail | NO_PLMN_FOUND | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (17) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (18) | MMR_NREG_IND | | |
| | nreg_cs | NREG_CELL_SELECTION_FAILED | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_NOSIM | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.13.5 MM307: MM Success (Limited Service)

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. No SIM is inserted.

Preamble: MM300

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|-------------------------|-----------------------------|
| (20) RR_ACTIVATE_CNF | | |
| op | OP_MODE_NO_SIM_LIM_SERV | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_44 | |
| lac | LAC_0002 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (21) MMR_NREG_IND | | |
| nreg_cs | NREG_LIMITED_SERVICE | |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_SIM_INVALID_NOSIM | |
| History: | 09.07.97 | HK Initial |
| | 06.08.97 | DL Revised |
| | 12.08.97 | HK Revised |
| | 02.03.00 | HM Revised (search_running) |

4.13.6 MM353: PLMN Available Request

Description: MMI requests a PLMN available list. There is no SIM inserted. This is not allowed.

Preamble: MM300

| | MMI / CM | MM | RR / DL |
|-----|--------------|----|---------|
| (1) | MMR_NET_REQ | | |
| | *----->* | | |
| (2) | MMR_PLMN_IND | | |
| | *<-----* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|------------------|----------------------|-------|
| (1) MMR_NET_REQ | | |
| param | NOT_USED | |
| (2) MMR_PLMN_IND | | |
| res | RES_REJ_NO_SIM_AVAIL | |
| plmn | NOT_USED | |

forb_ind
rxlevel

NOT_USED
NOT_USED

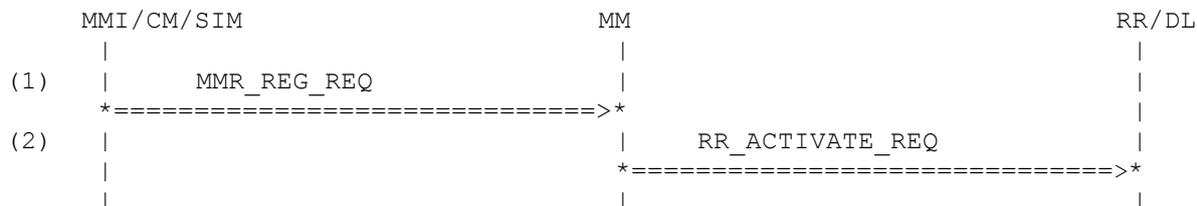
| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.14 Registration (REG_LIMITED_SERVICE, no SIM Card)

4.14.1 MM308: Registration

Description: The reaction of MM to a request for registration with unplugged SIM card is tested. MM receives a MMR-REG request primitive and responds by issuing a RR-ACTIVATE request primitive in which the op field is set to 'limited service, no SIM'.

Preamble: MM307



Parametrization

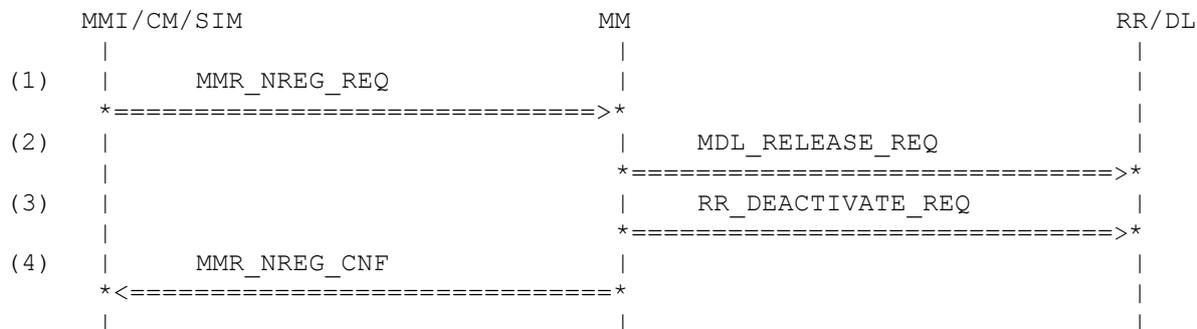
| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|---------------------|------------------------|--------------|
| (1) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (2) RR_ACTIVATE_REQ | | |
| plmn | PLMN_NO_ID | |
| op | OP_MODE_NO_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KC_DELETED | |
| acc | ACC_CLASS_0000 | |
| imsi | MOB_ID_NO_ID | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_FF | |
| bcch_info | NOT_USED | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.14.2 MM309: Deregistration

Description: MM receives a MMR-NREG request primitive. MM issues a RR-DEACTIVATE request primitive and a MMR-NREG confirmation primitive with cause set to 'Power off' and changes to changes to State 0 (Null).

Preamble: MM307



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |

History: 08.07.97 HK Initial

4.14.3 MM310: SIM Insertion

Description: MM receives a SIM-INSERT indication primitive. It stores the parameters and waits for registration start by MMI.

Preamble: MM307

| | | | | | |
|---------|--------|-------------------|----|--|-------|
| | MMI/CM | | MM | | RR/DL |
| | | | | | |
| (1) | | SIM_MM_INSERT_IND | | | |
| | | *=====> | | | |
| TIMEOUT | (3000) | | | | |
| | | | | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----------------------|--------------------|--------------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | OP_NORMAL_SIM | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.14.4 MM311: RR failure (No Service)

Description: MM receives a RR-ABORT indication primitive indicating No Service. No SIM is inserted.

Preamble: MM307

| | MMI/CM/SIM | MM | RR/DL |
|-----|--------------|-----------------|-------|
| (1) | | RR_ABORT_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *<=====* | |
| (3) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

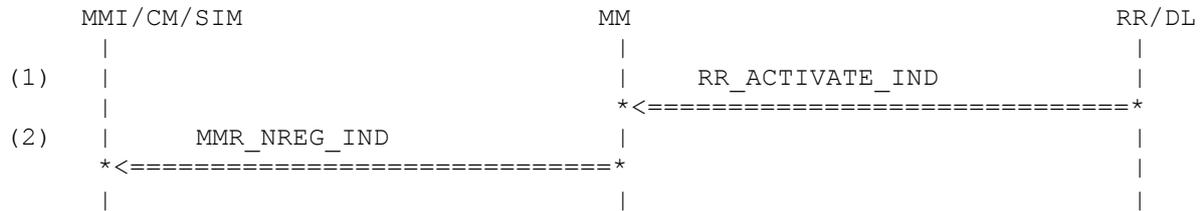
| Primitive | Parameter | Value |
|---------------------|----------------|----------------------------|
| (1) RR_ABORT_IND | op | OP_MODE_NO_SIM_NO_SERV |
| | abcs | ABCS_CEL_SEL_FAIL |
| | plmn_avail | NO_PLMN_FOUND |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (2) MDL_RELEASE_REQ | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| | | |
| (3) MMR_NREG_IND | nreg_cs | NREG_CELL_SELECTION_FAILED |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_SIM_INVALID_NOSIM |
| | | |

History: 10.07.97 HK Initial
 02.03.00 HM Revised (search_running)

4.14.5 MM312: MM Success (Limited Service)

Description: MM is informed by means of a RR-ACTIVATE indication primitive that the mobile station is synchronous to a cell. No SIM is inserted.

Preamble: MM307



Parametrization

| Primitive | Parameter | Value |
|---------------------|-------------------------|-------|
| (1) RR_ACTIVATE_IND | | |
| op | OP_MODE_NO_SIM_LIM_SERV | |
| mm_info | MM_INFO | |
| cid | CELL_ID_0045 | |
| plmn | PLMN_123_44 | |
| lac | LAC_0002 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (2) MMR_NREG_IND | | |
| nreg_cs | NREG_LIMITED_SERVICE | |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_SIM_INVALID_NOSIM | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.14.6 MM354: PLMN Available Request

Description: MMI requests a PLMN available list. There is no SIM inserted. This is not allowed.

Preamble: MM307

| | MMI / CM | MM | RR / DL |
|-----|--------------|----|---------|
| | | | |
| (1) | MMR_NET_REQ | | |
| | *=====>* | | |
| (2) | MMR_PLMN_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--|--|--------------|
| (1) | MMR_NET_REQ param | NOT_USED | |
| (2) | MMR_PLMN_IND res plmn forb_ind rxlevel | RES_REJ_NO_SIM_AVAIL NOT_USED NOT_USED NOT_USED | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.15 Registration (REG_MS_OFF, with SIM card)

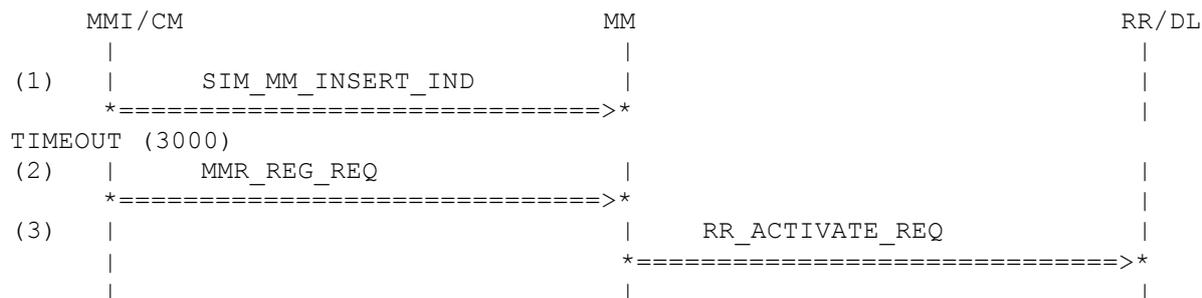
4.15.1 MM313: Registration

Description: MM receives SIM information followed by the registration start of MMI. The cell selection is started.

Variant A: not updated start with HPLMN
 Variant B: updated, HPLMN start with HPLMN
 Variant C: updated, not HPLMN start with LPLMN

Preamble: MM001

Variants: <A>...<C>



Parametrization

| Primitive | Parameter | Value |
|-----------------------|---------------------|------------------------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | OP_NORMAL_SIM | |
| imsi_field | IMSI_FIELD_1 | |
| <A> | loc_info | LOC_INFO_NOT_UPD_LPLMN |
| | loc_info | LOC_INFO_UPDATED_1 |
| <C> | loc_info | LOC_INFO_UPDATED_LPLMN |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| <A> | forb_plmn | FORB_PLMN_NONE |
| | forb_plmn | FORB_PLMN_2 |
| <C> | forb_plmn | FORB_PLMN_NONE |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (2) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (3) RR_ACTIVATE_REQ | | |
| <A> | plmn | PLMN_123_33 |
| | plmn | PLMN_123_33 |
| <C> | plmn | PLMN_123_31 |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| <A> | bcch_info | BCCH_INFO_1 |
| | bcch_info | BCCH_INFO_ECL |

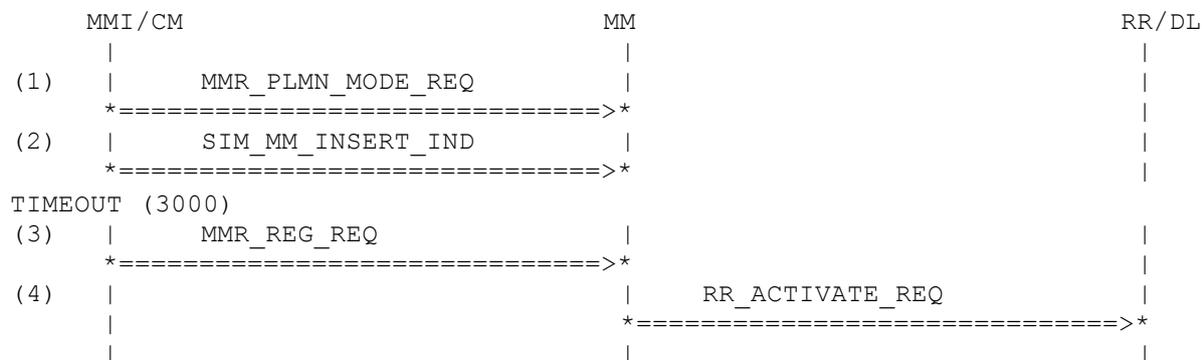
| | | |
|------------|-------------------|---------------|
| <C> | bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 24.02.00 | HM | Revised |

4.15.2 MM314: PLMN Mode Change

Description: MMI changes the PLMN mode from automatic to manual. MM receives SIM information followed by the registration start of MMI. The cell selection is started.

Preamble: MM001



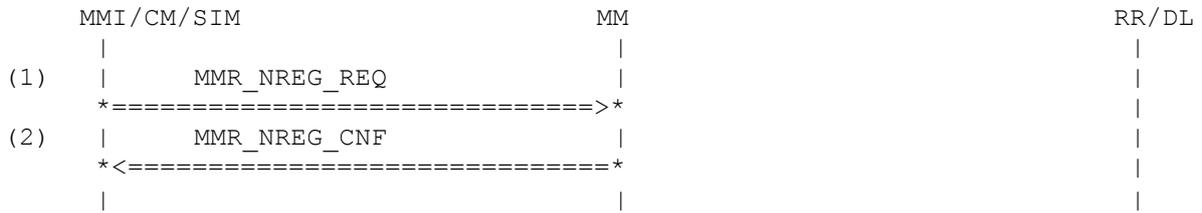
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|-------------------|------------------------|--------------|
| (1) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_MAN | |
| (2) | SIM_MM_INSERT_IND | | |
| | op_mode | OP_NORMAL_SIM | |
| | imsi_field | IMSI_FIELD_1 | |
| | loc_info | LOC_INFO_NOT_UPD_LPLMN | |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | forb_plmn | FORB_PLMN_NONE | |
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (3) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (4) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_SIM_NO_SERV_M | |
| | cksn | CKSN_RES | |
| | kcv | KC_DELETED | |
| | acc | ACC_CLASS_0000 | |
| | imsi | MOB_ID_NO_ID | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_FF | |
| | bcch_info | NOT_USED | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.15.3 MM315: Deregistration (Power Off)

Description: MM receives a MMR-NREG request primitive. issues a MMR-NREG confirmation primitive with cause set to 'Power off'.

Preamble: MM302



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--------------------|------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MMR_NREG_CNF cs | CS_POW_OFF | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 15.09.97 | DL | revised |

4.15.4 MM316: Deregistration (SIM invalid)

Description: MM receives a MMR-NREG request primitive. issues a MMR-NREG confirmation primitive with cause set to 'SIM Remove'. This doesn't erase SIM data in MM, but MM now considers the SIM as invalid until MMR_REG_REQ with SERVICE_MODE_FULL is received.

Preamble: MM302



Parametrization

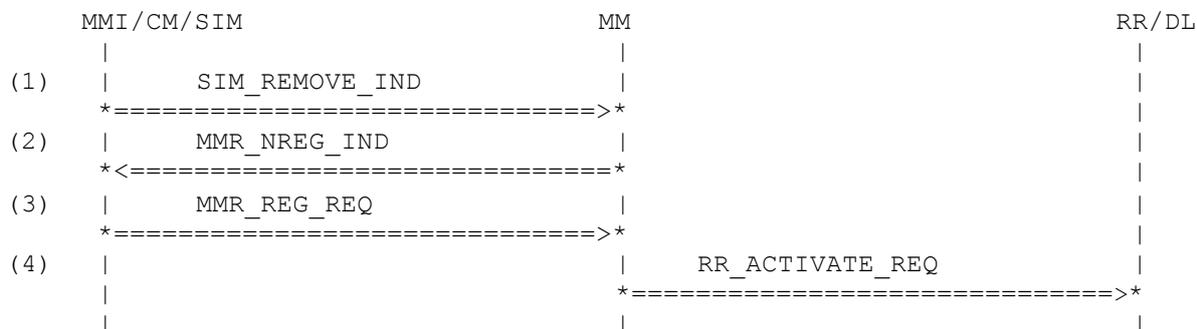
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|------------------------|--------------|
| (1) | MMR_NREG_REQ | | |
| | cs | CS_SIM_REM | |
| (2) | MMR_NREG_CNF | | |
| | cs | CS_SIM_REM | |
| (3) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_LIMITED | |
| (4) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_NO_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KC_DELETED | |
| | acc | ACC_CLASS_0000 | |
| | imsi | MOB_ID_NO_ID | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_FF | |
| | bcch_info | NOT_USED | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 15.09.97 | DL | Revised |
| | 26.04.00 | HM | Revised |

4.15.5 MM317: SIM Removal

Description: The SIM card is removed before starting with registration. MM is in NULL state, no lower layers are active in this state.

Preamble: MM302



Parametrization

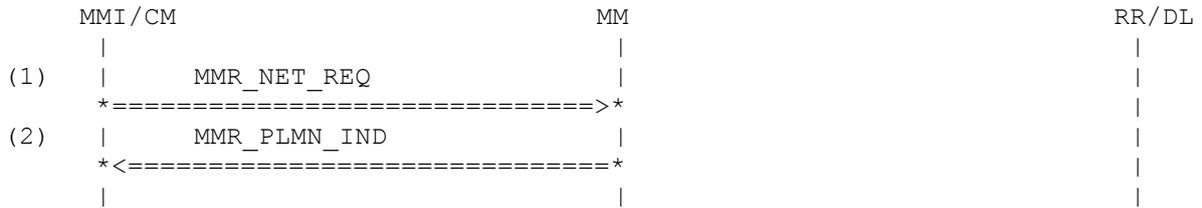
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|---|---|--------------|
| (1) | SIM_REMOVE_IND error | NOT_USED | |
| (2) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_CELL_SELECTION_FAILED SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| (3) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (4) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NO_SIM_NO_SERV CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID MOB_ID_NO_ID THPLMN_FF NOT_USED CELL_TEST_DISABLE GPRS_NO | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 08.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 31.08.00 | HM | Revised |

4.15.6 MM351: PLMN Available Request

Description: MMI requests a PLMN available list before starting registration. This is not allowed.

Preamble: MM302



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--|---|--------------|
| (1) | MMR_NET_REQ param | NOT_USED | |
| (2) | MMR_PLMN_IND res plmn forb_ind rxlevel | RES_REJ_NOT_IDL_MOD NOT_USED NOT_USED NOT_USED | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.16 Registration (REG_NO_SERVICE, with SIM card, automatic mode)

4.16.1 MM318: Registration

Description: MM receives SIM information followed by the registration start of MMI. The cell selection is started.

Variant A: not updated start with HPLMN
 Variant B: updated, HPLMN start with HPLMN
 Variant C: updated, not HPLMN start with LPLMN

Preamble: MM300

Variants: <A>....<C>



Parametrization

| | Primitive | Parameter | Value |
|-----|-------------------|---------------------|------------------------|
| (1) | SIM_MM_INSERT_IND | | |
| | op_mode | OP_NORMAL_SIM | |
| | imsi_field | IMSI_FIELD_1 | |
| | <A> | loc_info | LOC_INFO_NOT_UPD_LPLMN |
| | | loc_info | LOC_INFO_UPDATED_1 |
| | <C> | loc_info | LOC_INFO_UPDATED_LPLMN |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | <A> | forb_plmn | FORB_PLMN_NONE |
| | | forb_plmn | FORB_PLMN_2 |
| | <C> | forb_plmn | FORB_PLMN_NONE |
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (2) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (3) | RR_ACTIVATE_REQ | | |
| | <A> | plmn | PLMN_123_33 |
| | | plmn | PLMN_123_33 |
| | <C> | plmn | PLMN_123_31 |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | <A> | bcch_info | BCCH_INFO_1 |

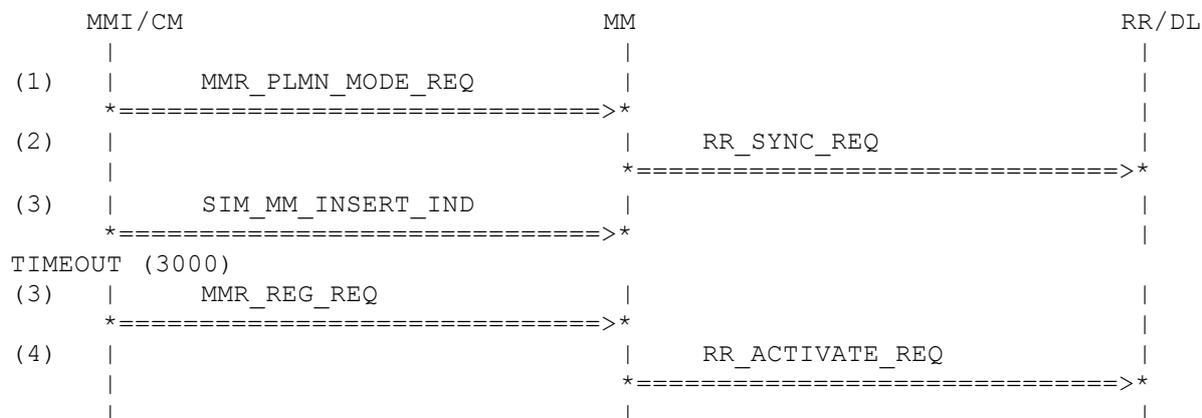
| | | |
|------------|-------------------|---------------|
| | bcch_info | BCCH_INFO_ECL |
| <C> | bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 24.02.00 | HM | Revised |

4.16.2 MM319: PLMN Mode Change

Description: MMI changes the PLMN mode from automatic to manual. MM receives SIM information followed by the registration start of MMI. The cell selection is started.

Preamble: MM300



Parametrization

| | Primitive | Parameter | Value |
|-----|-------------------|--------------------------|-------|
| (1) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_MAN | |
| (2) | RR_SYNC_REQ | | |
| | op | OP_MODE_NO_SIM_NO_SERV_M | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_PRESENT_16BIT | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (3) | SIM_MM_INSERT_IND | | |
| | op_mode | OP_NORMAL_SIM | |
| | imsi_field | IMSI_FIELD_1 | |
| | loc_info | LOC_INFO_NOT_UPD_LPLMN | |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | forb_plmn | FORB_PLMN_NONE | |
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (4) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (5) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_SIM_NO_SERV_M | |
| | cksn | CKSN_RES | |
| | kcv | KC_DELETED | |
| | acc | ACC_CLASS_0000 | |
| | imsi | MOB_ID_NO_ID | |

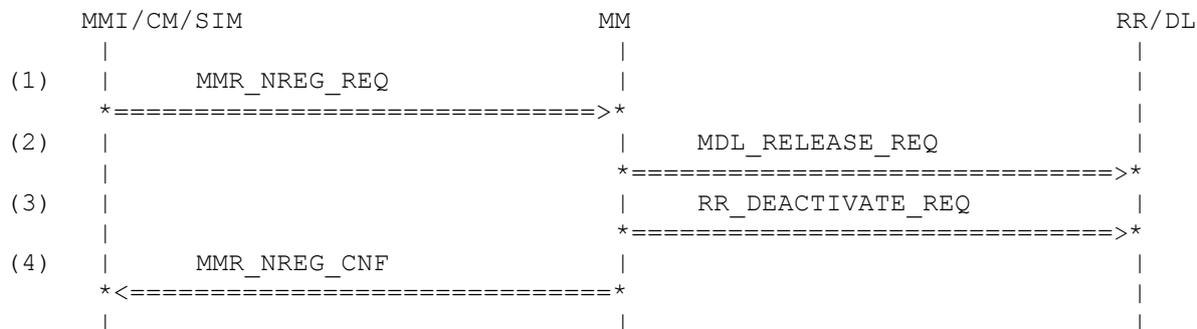
| | |
|------------|-------------------|
| tmsi | MOB_ID_NO_ID |
| thplmn | THPLMN_FF |
| bcch_info | NOT_USED |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.16.3 MM320: Deregistration (Power Off)

Description: MM receives a MMR-NREG request primitive. MM issues a RR-DEACTIVATE request primitive and a MMR-NREG confirmation primitive with cause set to 'Power off' and changes to changes to State 0 (Null).

Preamble: MM313A



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |

History: 08.07.97 HK Initial

4.16.4 MM321: Deregistration (SIM invalid)

Description: MM receives a MMR-NREG request primitive. issues a MMR-NREG confirmation primitive with cause set to 'SIM Remove'.

Preamble: MM313A



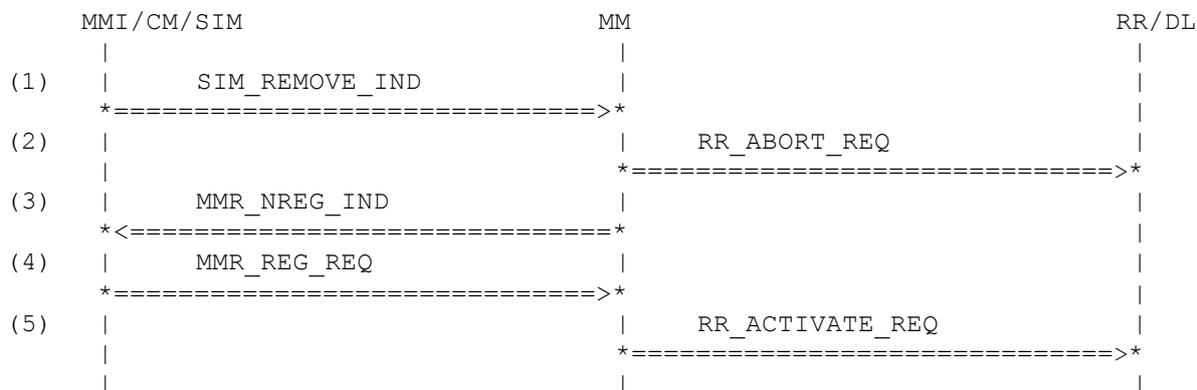
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|---|--|--------------|
| (1) | MMR_NREG_REQ cs | CS_SIM_REM | |
| (2) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (3) | MMR_NREG_CNF cs | CS_SIM_REM | |
| (4) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (5) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |
| History: | 09.07.97 | HK | Initial |
| | 15.09.97 | DL | revised |
| | 30.08.00 | HM | Revised |

4.16.5 MM322: SIM Removal

Description: The SIM card is removed before starting with registration.

Preamble: MM313A



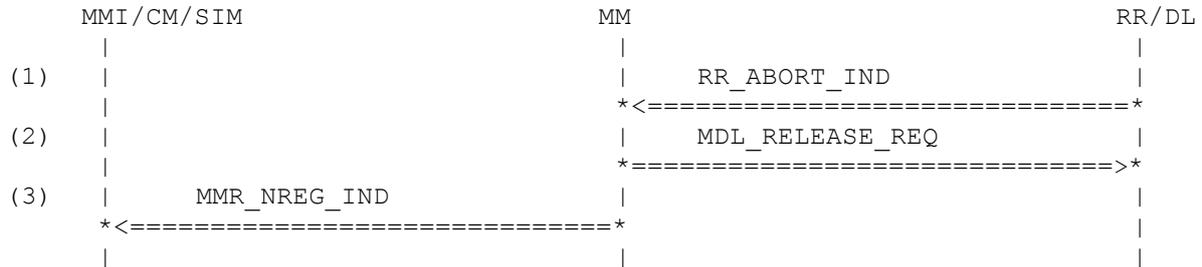
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|---|---|--|
| (1) | SIM_REMOVE_IND error | NOT_USED | |
| (2) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (3) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_NO_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| (4) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (5) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NO_SIM_NO_SERV CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID MOB_ID_NO_ID THPLMN_FF NOT_USED CELL_TEST_DISABLE GPRS_NO | |
| History: | 08.07.97 02.03.00 07.01.01 | HK HM HM | Initial Revised (search_running) Adaption caused by GPRS integration |

4.16.6 MM323: RR failure (No Service)

Description: MM receives a RR-ABORT indication primitive indicating No Service.

Preamble: MM313A



Parametrization

| | Primitive | Parameter | Value |
|----------|----------------|----------------------------|--------------------------|
| (23) | op | RR_ABORT_IND | |
| | abcs | OP_MODE_SIM_NO_SERV | |
| | plmn_avail | ABCS_CEL_SEL_FAIL | |
| | plmn | NO_PLMN_FOUND | |
| | rxlevel | NOT_USED | |
| | power | NOT_USED | |
| | | RF_CLASS_2 | |
| (24) | ch_type | MDL_RELEASE_REQ | |
| | sapi | NOT_PRESENT_8BIT | |
| | | SAPI_0 | |
| (25) | nreg_cs | MMR_NREG_IND | |
| | search_running | NREG_CELL_SELECTION_FAILED | |
| | new_forb_plmn | SEARCH_NOT_RUNNING | |
| | limited_cause | PLMN_NO_ID | |
| | | MMR_RC_NONE | |
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.16.7 MM324: RR failure (Limited Service, no further PLMNs)

Description: MM receives a RR-ABORT indication primitive indicating Limited Service. The one PLMN which was found is in the forbidden PLMN list and cannot be used.

Preamble: MM313B

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | RR_ABORT_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (3) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|----------------|----------------------|-----------------------------|
| (26) | RR_ABORT_IND | |
| op | OP_MODE_SIM_LIM_SERV | |
| abcs | ABCS_CEL_SEL_FAIL | |
| plmn_avail | ONE_PLMN_FOUND | |
| plmn | PLMN_LIST_FORB | |
| rxlevel | RXLEVEL_20 | |
| power | RF_CLASS_2 | |
| (27) | MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (28) | MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE | |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_RC_NONE | |
| History: | 10.07.97 | HK Initial |
| | 03.03.00 | HM Revised (search_running) |

4.16.8 MM325: RR failure (Limited Service, further PLMNs available)

Description: MM receives a RR-ABORT indication primitive indicating Limited Service. The one PLMN which was found is not in the forbidden PLMN list and can be used.

Preamble: MM313A

| | MMI/CM/SIM | MM | RR/DL |
|-----|--------------|-----------------|-------|
| (1) | | RR_ABORT_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *>=====* | |
| (3) | MMR_NREG_IND | | |
| | *<=====* | | |
| (4) | | RR_ACTIVATE_REQ | |
| | | *>=====* | |
| | | | |

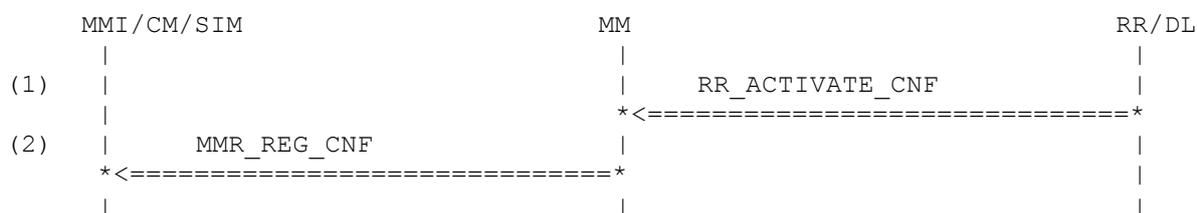
Parametrization

| | Primitive | Parameter | Value |
|----------|-----------------|----------------------|--------------------------|
| (1) | RR_ABORT_IND | | |
| | op | OP_MODE_SIM_LIM_SERV | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | plmn_avail | ONE_PLMN_FOUND | |
| | plmn | PLMN_LIST_LPLMN | |
| | rxlevel | RXLEVEL_20 | |
| | power | RF_CLASS_2 | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| (4) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_31 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.16.9 MM326: MM Success

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell.

Preamble: MM313B



Parametrization

| Primitive | Parameter | Value |
|----------------------|--------------|-------|
| (19) RR_ACTIVATE_CNF | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (20) MMR_REG_CNF | | |
| plmn | PLMN_123_33 | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.16.10 MM327: MM Failure

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. A location updating is started. After four rejections limited service is indicated to the user.

Preamble: MM313B

| | MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | MMR_REG_CNF | | |
| | *<=====* | | |
| (3) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (4) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (5) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (6) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (7) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (8) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (9) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| TIMEOUT (10000) | | | |
| (10) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (11) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (12) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (13) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (14) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (15) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (16) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| TIMEOUT (10000) | | | |
| (17) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (18) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (19) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (20) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (21) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (22) | | RR_SYNC_REQ | |

```

|
|
(23) | SIM_MM_UPDATE_REQ |
| *<=====>
TIMEOUT (10000)
(24) | RR_ESTABLISH_REQ |
| (LOCATION_UPDATING_REQ) |
| *=====>
(25) | RR_ESTABLISH_CNF |
| *<=====>
(26) | RR_DATA_IND |
| (LOCATION_UPDATING_REJ) |
| *<=====>
(27) | RR_RELEASE_IND |
| *<=====>
(28) | MDL_RELEASE_REQ |
| *=====>
(29) | RR_SYNC_REQ |
| *=====>
(30) | SIM_MM_UPDATE_REQ |
| *<=====>
(31) | MMR_NREG_IND |
| *<=====>
|

```

Parametrization

| Primitive | Parameter | Value |
|-----------------------|-------------------------|-------|
| (19) RR_ACTIVATE_CNF | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_0002 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (20) MMR_REG_CNF | | |
| plmn | PLMN_123_33 | |
| (21) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (22) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (23) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |

| | | |
|------|-------------------|-----------------------------|
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |
| | ti | TI_0 |
| | rej_cause | RC_UNSPECIFIED |
| | } | |
| (24) | RR_RELEASE_IND | |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (25) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (26) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (27) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | BCCH_INF_2 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_NO_KEY |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (28) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (29) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (30) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |

| | | |
|------|-------------------|------------------------------|
| | ti | TI_0 |
| | rej_cause | RC_UNSPECIFIED |
| | } | |
| (31) | RR_RELEASE_IND | |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (32) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (33) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNC_CS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (34) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FFFF |
| | bcch_inf | BCCH_INF_2 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_NO_KEY |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (35) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FFFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (36) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (37) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |
| | ti | TI_0 |
| | rej_cause | RC_UNSPECIFIED |
| | } | |

| | | |
|-------|---|--|
| (38) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (39) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (40) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (41) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF BCCH_INF_2 NOT_USED CKSN_NO_KEY KC_DELETED_SIM CELL_ID_1122 |
| (42) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (43) | RR_ESTABLISH_CNF param | NOT_USED |
| (44) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_UNSPECIFIED |
| (45) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |

| | | | |
|----------|-------------------|-----------------------------|--------------------------|
| (46) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (47) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |
| (48) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_123_33_FEFF | |
| | bcch_inf | BCCH_INF_2 | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_NO_KEY | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (49) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | RC_UNSPECIFIED | |
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.16.11 MM328: MM Authentication Failure

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. A location updating is started. After authentication failure only limited service shall be allowed.

Preamble: MM313B

| | MMI/CM/SIM | MM | RR/DL |
|------|------------------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | MMR_REG_CNF | | |
| | *<=====* | | |
| (3) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (4) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (5) | | RR_DATA_IND | |
| | | (AUTHENTICATION REQ) | |
| | | *<=====* | |
| (6) | SIM_AUTHENTICATION_REQ | | |
| | *<=====* | | |
| (7) | SIM_AUTHENTICATION_CNF | | |
| | *=====>* | | |
| (8) | | RR_DATA_REQ | |
| | | (AUTHENTICATION RES) | |
| | | *=====>* | |
| (9) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (10) | | RR_DATA_IND | |
| | | (AUTHENTICATION REJ) | |
| | | *<=====* | |
| (11) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (12) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (13) | | RR_ABORT_IND | |
| | | *<=====* | |
| (14) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (15) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|------|-----------------|--------------|-------|
| (21) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (22) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |

| | | |
|------|---|--|
| (23) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (24) | RR_ESTABLISH_CNF param | NOT_USED |
| (25) | RR_DATA_IND d1 d2 sdu { component direction pd ti ciph_key_num auth_rand } | NOT_USED NOT_USED MM DOWNLINK D_AUTH_REQ TI_0 CIPH_KEY_NUM_01 AUTH_RAND_1 |
| (26) | SIM_AUTHENTICATION_REQ source rand cksn | SRC_MM RAND_1_P CKSN_01 |
| (27) | SIM_AUTHENTICATION_CNF sres kc | SRES_1 KC_11223344 |
| (28) | RR_DATA_REQ d1 d2 sdu { component direction pd ti auth_sres } | NOT_USED NOT_USED MM UPLINK U_AUTH_RES TI_0 SRES_1_CODED |
| (29) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED CKSN_01 KCV_11223344 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED |

| | | | |
|----------|-------------------|------------------------------------|--------------------------------|
| (30) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_AUTH_REJ | |
| | ti | TI_0 | |
| | } | | |
| (31) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |
| (32) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_PLMN_NOT_ALLOW | |
| | bcch_inf | NOT_USED | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_NO_KEY | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (33) | RR_ABORT_IND | | |
| | op | OP_MODE_TEST_SIM | |
| | abcs | ABCS_RAD_LNK_FAIL | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (34) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (35) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_AUTHREJ | |
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |
| | 27.04.01 | HM | Changed ordering of primitives |

4.16.12 MM355: PLMN Available Request

Description: MM is in no service condition. MMI requests a PLMN available request and starts a PLMN search in RR. The result is forwarded to MMI.

[MMR_NREG_IND (cell selection failed) could cause display "NO SERVICE" in step 11. This may not be correct ...]

Preamble: MM300

Variants: <A>...<C>

| | MMI / CM | MM | RR / DL |
|------|-------------------|-----------------|---------|
| (1) | SIM_MM_INSERT_IND | | |
| | | *=====>* | |
| (2) | MMR_REG_REQ | | |
| | | *=====>* | |
| (3) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (4) | | RR_ABORT_IND | |
| | | *<=====* | |
| (5) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (6) | MMR_NREG_IND | | |
| | | *<=====* | |
| (7) | MMR_NET_REQ | | |
| | | *=====>* | |
| (8) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (9) | | RR_ABORT_IND | |
| | | *<=====* | |
| (10) | MMR_PLMN_IND | | |
| | | *<=====* | |
| (11) | MMR_NREG_IND | | |
| | | *<=====* | |

Parametrization

| | Primitive | Parameter | Value |
|-----|-------------------|-------------------|------------------------|
| (1) | SIM_MM_INSERT_IND | | |
| | op_mode | OP_NORMAL_SIM | |
| | imsi_field | IMSI_FIELD_1 | |
| | <A> | loc_info | LOC_INFO_NOT_UPD_LPLMN |
| | | loc_info | LOC_INFO_UPDATED_1 |
| | <C> | loc_info | LOC_INFO_UPDATED_LPLMN |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | <A> | forb_plmn | FORB_PLMN_NONE |
| | | forb_plmn | FORB_PLMN_NONE |
| | <C> | forb_plmn | FORB_PLMN_2 |
| (2) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (3) | RR_ACTIVATE_REQ | | |
| | <A> | plmn | PLMN_123_33 |
| | | plmn | PLMN_123_33 |

| | | |
|---------------------|----------------------------|--------------------|
| <C> | plmn | PLMN_123_31 |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| <A> | bcch_info | BCCH_INFO_1 |
| | bcch_info | BCCH_INFO_ECL |
| <C> | bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (4) RR_ABORT_IND | | |
| op | OP_MODE_SIM_NO_SERV | |
| abcs | ABCS_CEL_SEL_FAIL | |
| plmn_avail | NO_PLMN_FOUND | |
| plmn | NOT_USED | |
| rxlevel | NOT_USED | |
| power | RF_CLASS_2 | |
| (5) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (6) MMR_NREG_IND | | |
| nreg_cs | NREG_CELL_SELECTION_FAILED | |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_RC_NONE | |
| (7) MMR_NET_REQ | | |
| param | NOT_USED | |
| (8) RR_ACTIVATE_REQ | | |
| plmn | PLMN_NO_ID | |
| op | OP_MODE_SIM_NO_SERV_A | |
| cksn | CKSN_NO_KEY | |
| kcv | KC_DELETED | |
| acc | ACC_CLASS_0000 | |
| imsi | EMPTY_IMSI | |
| tmsi | NOT_USED | |
| thplmn | NOT_USED | |
| bcch_info | NOT_USED | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (9) RR_ABORT_IND | | |
| op | OP_MODE_SIM_NO_SERV4 | |
| abcs | ABCS_CEL_SEL_FAIL | |
| <A> | plmn_avail | NO_PLMN_FOUND |
| | plmn_avail | TWO_PLMN_FOUND |
| <C> | plmn_avail | TWO_PLMN_FOUND |
| <A> | plmn | NOT_USED |
| | plmn | PLMN_LIST_2_PLMN |
| <C> | plmn | PLMN_LIST_2_PLMN_F |
| <A> | rxlevel | NOT_USED |
| | rxlevel | RXLEVEL_20_18 |
| <C> | rxlevel | RXLEVEL_20_18 |
| power | RF_CLASS_2 | |

(10) MMR_PLMN_IND

| | | |
|-----|----------|-----------------------|
| <A> | res | RES_OK_NO_PLMN_FND |
| | res | RES_OK_PLMN_LST_AVAIL |
| <C> | res | RES_OK_PLMN_LST_AVAIL |
| <A> | plmn | NOT_USED |
| | plmn | PLMN_LIST_2_PLMN_A |
| <C> | plmn | PLMN_LIST_2_PLMN_AF |
| <A> | forb_ind | NOT_USED |
| | forb_ind | FORB_PLMN_ID |
| <C> | forb_ind | FORB_PLMN_ID_F |
| <A> | rxlevel | NOT_USED |
| | rxlevel | RXLEVEL_20_18_A |
| <C> | rxlevel | RXLEVEL_20_18_A |

(11) MMR_NREG_IND

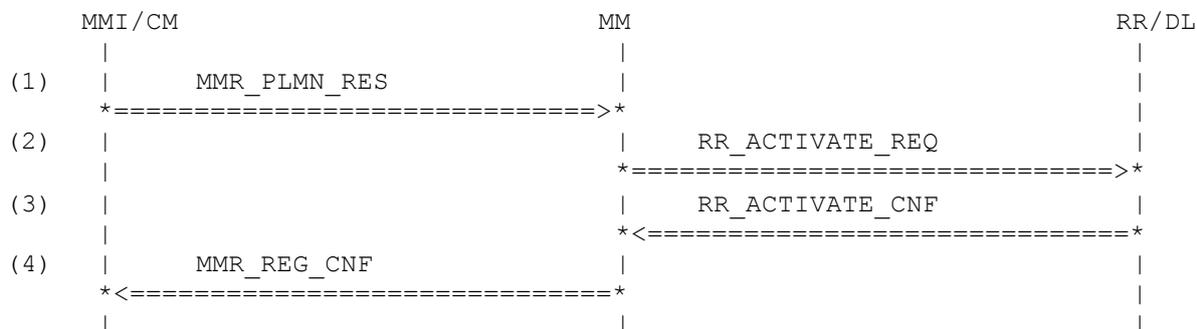
| | |
|----------------|----------------------------|
| nreg_cs | NREG_CELL_SELECTION_FAILED |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 24.02.00 | HM | Revised |
| | 03.03.00 | HM | Revised (search_running) |

4.16.13 MM358: PLMN Selection successful

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is successful.

Preamble: MM355B



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|---------------------|--------------|
| (1) | MMR_PLMN_RES | | |
| | plmn | PLMN_123_33 | |
| (2) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (3) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (4) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.16.14 MM359: PLMN Selection unsuccessful

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is unsuccessful.

Preamble: MM355B

| | MMI / CM | MM | RR / DL |
|-----|--------------|-----------------|---------|
| (1) | MMR_PLMN_RES | | |
| | *=====>* | | |
| (2) | | RR_ACTIVATE_REQ | |
| | *=====>* | | |
| (3) | | RR_ABORT_IND | |
| | *<=====* | | |
| (4) | | MDL_RELEASE_REQ | |
| | *=====>* | | |
| (5) | MMR_NREG_IND | | |
| | *<=====* | | |
| (6) | | RR_ACTIVATE_REQ | |
| | *=====>* | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|--|-------|
| (1) | MMR_PLMN_RES plmn | PLMN_123_33 | |
| (2) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |
| (3) | RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_SIM_LIM_SERV ABCS_CEL_SEL_FAIL ONE_PLMN_FOUND PLMN_LIST_FORB RXLEVEL_20 RF_CLASS_2 | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_RUNNING PLMN_NO_ID MMR_RC_NONE | |
| (6) | RR_ACTIVATE_REQ plmn | PLMN_123_32_A | |

| | |
|------------|---------------------|
| op | OP_MODE_SIM_NO_SERV |
| cksn | CKSN_RES |
| kcv | KCV_EMPTY |
| acc | ACC_2143 |
| imsi | MOB_ID_IMSI |
| tmsi | MOB_ID_NO_ID |
| thplmn | THPLMN_01 |
| bcch_info | BCCH_INFO_1 |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |

| | | | |
|----------|----------|----|--------------------------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 03.03.00 | HM | Revised (search_running) |

4.16.15 MM364: PLMN Available List to MMI

Description: MM has requested the list of available PLMNs. This list is forwarded to MMI.
 [What about the last MMR_NREG_IND? Is this really correct here? ...]

Preamble: MM001

Variants: <A>...<C>

| | MMI/CM | MM | RR/DL |
|----------------|-------------------|-----------------|-------|
| (1) | MMR_PLMN_MODE_REQ | | |
| | *=====>* | | |
| (2) | SIM_MM_INSERT_IND | | |
| | *=====>* | | |
| TIMEOUT (3000) | | | |
| (3) | MMR_REG_REQ | | |
| | *=====>* | | |
| (4) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (5) | | RR_ABORT_IND | |
| | | *<=====* | |
| (6) | MMR_PLMN_IND | | |
| | *<=====* | | |
| (7) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

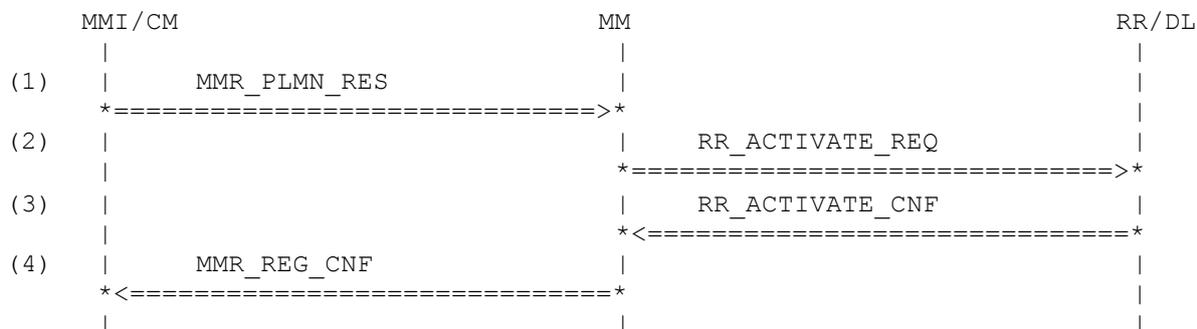
| | Primitive | Parameter | Value |
|-----|-------------------|-----------------------|----------------|
| (1) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_MAN | |
| (2) | SIM_MM_INSERT_IND | | |
| | op_mode | OP_NORMAL_SIM | |
| | imsi_field | IMSI_FIELD_1 | |
| | loc_info | LOC_INFO_UPDATED_1 | |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | <A> | forb_plmn | FORB_PLMN_NONE |
| | | forb_plmn | FORB_PLMN_NONE |
| | <C> | forb_plmn | FORB_PLMN_2 |
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (3) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (4) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_SIM_NO_SERV_M | |
| | cksn | CKSN_RES | |
| | kcv | KC_DELETED | |
| | acc | ACC_CLASS_0000 | |
| | imsi | MOB_ID_NO_ID | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_FF | |
| | bcch_info | NOT_USED | |

| | | | |
|------------------|------------|----------------------------|--------------------------|
| cell_test | | CELL_TEST_DISABLE | |
| gprs_indic | | GPRS_NO | |
| (5) RR_ABORT_IND | | | |
| op | | OP_MODE_SIM_1 | |
| abcs | | ABCS_CEL_SEL_FAIL | |
| <A> | plmn_avail | NO_PLMN_FOUND | |
| | plmn_avail | TWO_PLMN_FOUND | |
| <C> | plmn_avail | TWO_PLMN_FOUND | |
| <A> | plmn | NOT_USED | |
| | plmn | PLMN_LIST_2_PLMN | |
| <C> | plmn | PLMN_LIST_2_PLMN_F | |
| <A> | rxlevel | NOT_USED | |
| | rxlevel | RXLEVEL_20_18 | |
| <C> | rxlevel | RXLEVEL_20_18 | |
| power | | RF_CLASS_2 | |
| (6) MMR_PLMN_IND | | | |
| <A> | res | RES_OK_NO_PLMN_FND | |
| | res | RES_OK_USR_MST_SEL_PLMN | |
| <C> | res | RES_OK_USR_MST_SEL_PLMN | |
| <A> | plmn | NOT_USED | |
| | plmn | PLMN_LIST_2_PLMN_A | |
| <C> | plmn | PLMN_LIST_2_PLMN_AF | |
| <A> | forb_ind | NOT_USED | |
| | forb_ind | FORB_PLMN_ID | |
| <C> | forb_ind | FORB_PLMN_ID_F | |
| <A> | rxlevel | NOT_USED | |
| | rxlevel | RXLEVEL_20_18_A | |
| <C> | rxlevel | RXLEVEL_20_18_A | |
| (7) MMR_NREG_IND | | | |
| nreg_cs | | NREG_CELL_SELECTION_FAILED | |
| search_running | | SEARCH_NOT_RUNNING | |
| new_forb_plmn | | PLMN_NO_ID | |
| limited_cause | | MMR_RC_NONE | |
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.16.16 MM365: PLMN Selection successful (manual Mode)

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is successful.

Preamble: MM364B



Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------------------|-------------------|--------------|
| (36) MMR_PLMN_RES | | |
| plmn | PLMN_123_33 | |
| (37) RR_ACTIVATE_REQ | | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_2 | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_1 | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (38) RR_ACTIVATE_CNF | | |
| op | OP_MODE_SIM_3 | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (39) MMR_REG_CNF | | |
| plmn | PLMN_123_33 | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.16.17 MM366: PLMN Selection unsuccessful (Manual Mode)

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is unsuccessful.

Preamble: MM364B

| | MMI / CM | MM | RR / DL |
|-----|--------------|-----------------|---------|
| (1) | MMR_PLMN_RES | | |
| (2) | | RR_ACTIVATE_REQ | |
| (3) | | RR_ABORT_IND | |
| (4) | | MDL_RELEASE_REQ | |
| (5) | MMR_NREG_IND | | |
| (6) | MMR_PLMN_IND | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|--|-------|
| (1) | MMR_PLMN_RES plmn | PLMN_123_33 | |
| (2) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_2 CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |
| (3) | RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_SIM_4 ABCS_CEL_SEL_FAIL ONE_PLMN_FOUND PLMN_LIST_FORB RXLEVEL_20 RF_CLASS_2 | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_RC_NONE | |
| (6) | MMR_PLMN_IND res | RES_OK_USR_MST_SEL_PLMN | |

plmn
forb_ind
rxlevel

PLMN_LIST_1_PLMN_A
FORB_PLMN_ID_1F
RXLEVEL_20_A

| | | | |
|----------|----------|----|--------------------------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.17 Registration (REG_LIMITED_SERVICE, with SIM card, automatic mode)

4.17.1 MM329: Registration

Description: MM receives SIM information followed by the registration start of MMI. The cell selection is started.

Variant A: not updated start with HPLMN
 Variant B: updated, HPLMN start with HPLMN
 Variant C: updated, not HPLMN start with LPLMN

Preamble: MM307

Variants: <A>....<C>



Parametrization

| Primitive | Parameter | Value |
|-----------------------|---------------------|------------------------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | OP_NORMAL_SIM | |
| imsi_field | IMSI_FIELD_1 | |
| <A> | loc_info | LOC_INFO_NOT_UPD_LPLMN |
| | loc_info | LOC_INFO_UPDATED_1 |
| <C> | loc_info | LOC_INFO_UPDATED_LPLMN |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| <A> | forb_plmn | FORB_PLMN_NONE |
| | forb_plmn | FORB_PLMN_2 |
| <C> | forb_plmn | FORB_PLMN_NONE |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (2) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (3) RR_ACTIVATE_REQ | | |
| <A> | plmn | PLMN_123_33 |
| | plmn | PLMN_123_33 |
| <C> | plmn | PLMN_123_31 |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| <A> | bcch_info | BCCH_INFO_1 |

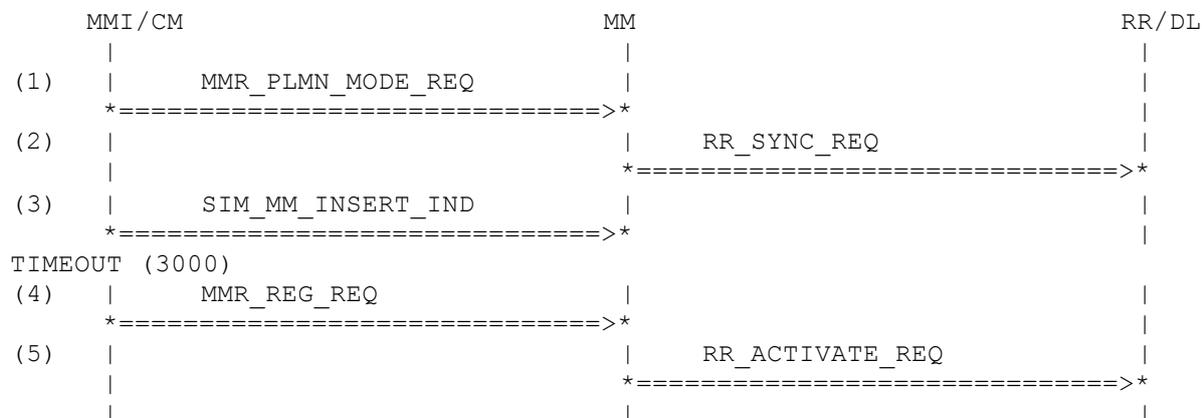
| | | |
|------------|-------------------|---------------|
| | bcch_info | BCCH_INFO_ECL |
| <C> | bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 24.02.00 | HM | Revised |

4.17.2 MM330: PLMN Mode Change

Description: MMI changes the PLMN mode from automatic to manual. MM receives SIM information followed by the registration start of MMI. The cell selection is started.

Preamble: MM307



Parametrization

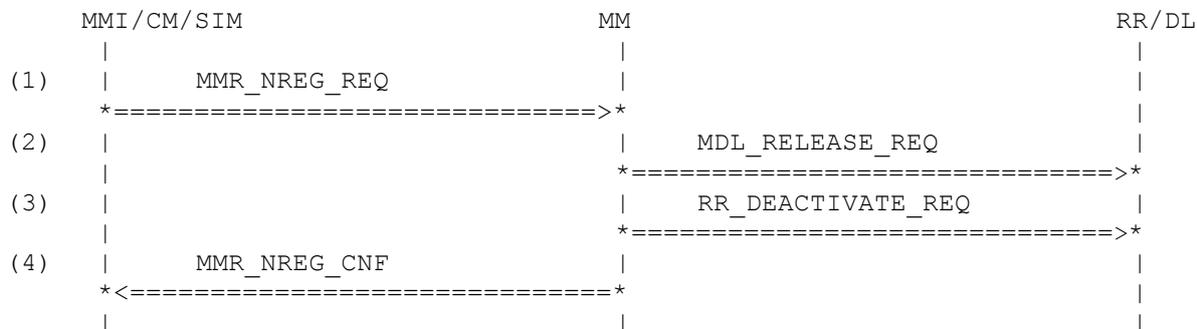
| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | MMR_PLMN_MODE_REQ mode | MODE_MAN | |
| (2) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | OP_MODE_NO_SIM_NO_SERV_M NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_PRESENT_16BIT NOT_USED NOT_USED | |
| (3) | SIM_MM_INSERT_IND op_mode imsi_field loc_info acc_ctrl bcch_inf kc_n pref_plmn forb_plmn phase hplmn | OP_NORMAL_SIM IMSI_FIELD_1 LOC_INFO_NOT_UPD_LPLMN ACC_CTRL_1 BCCH_INF_1 KC_EMPTY PREF_PLMN_NONE FORB_PLMN_NONE PHASE_2_SIM THPLMN_01 | |
| (4) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (5) | RR_ACTIVATE_REQ plmn op cksn kcv accc imsi | PLMN_NO_ID OP_MODE_SIM_NO_SERV_M CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID | |

| | | | |
|------------|----------|-------------------|---------|
| tmsi | | MOB_ID_NO_ID | |
| thplmn | | THPLMN_FF | |
| bcch_info | | NOT_USED | |
| cell_test | | CELL_TEST_DISABLE | |
| gprs_indic | | GPRS_NO | |
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.17.3 MM331: Deregistration (Power Off)

Description: MM receives a MMR-NREG request primitive. MM issues a RR-DEACTIVATE request primitive and a MMR-NREG confirmation primitive with cause set to 'Power off' and changes to changes to State 0 (Null).

Preamble: MM329A



Parametrization

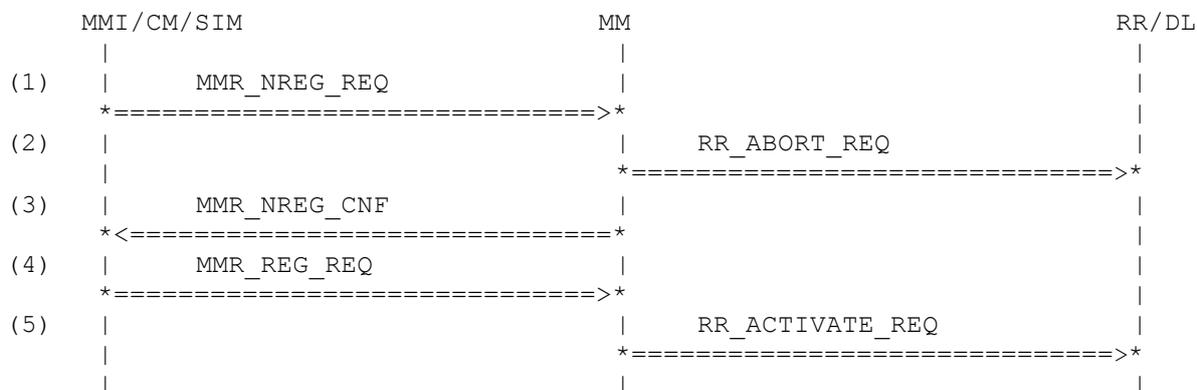
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |

History: 08.07.97 HK Initial

4.17.4 MM332: Deregistration (SIM invalid)

Description: MM receives a MMR-NREG request primitive. issues a MMR-NREG confirmation primitive with cause set to 'SIM Remove'. SIM data will not be deleted in MM, only a flag will be set that most of the data shall not be used anymore. If receiving a MMR_REG_REQ primitive with SERVICE_MODE_FULL indication, the SIM data will be revalidated.

Preamble: MM329A



Parametrization

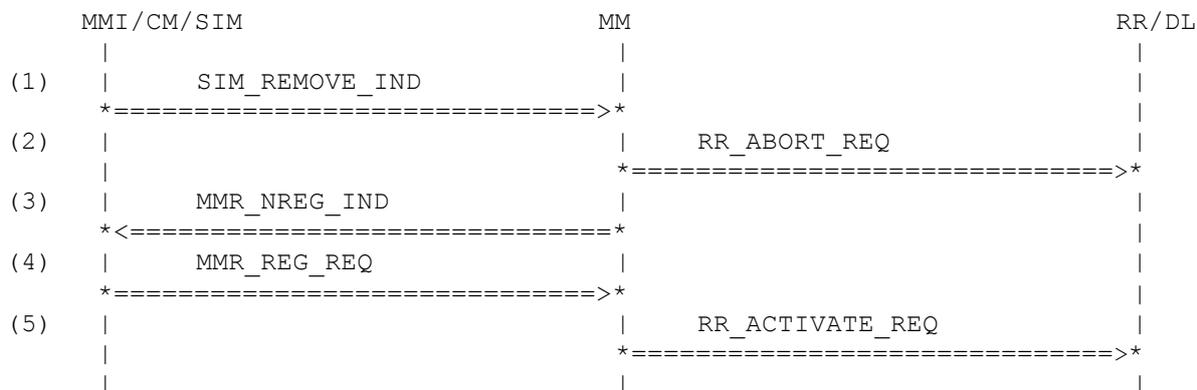
| Primitive | Parameter | Value |
|--|--|-------|
| (1) MMR_NREG_REQ cs | CS_SIM_REM | |
| (2) RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (3) MMR_NREG_CNF cs | CS_SIM_REM | |
| (4) MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (5) RR_ACTIVATE_REQ plmn op cksn kcv accc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 15.09.97 | DL | revised |
| | 30.08.00 | HM | Revised |

4.17.5 MM333: SIM Removal

Description: The SIM card is removed before starting with registration.

Preamble: MM329A



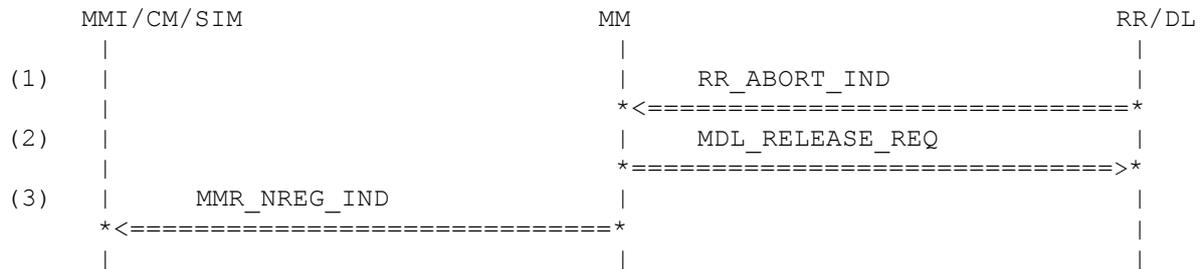
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|---|---|--|
| (1) | SIM_REMOVE_IND error | NOT_USED | |
| (2) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (3) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_NO_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| (4) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (5) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NO_SIM_NO_SERV CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID MOB_ID_NO_ID THPLMN_FF NOT_USED CELL_TEST_DISABLE GPRS_NO | |
| History: | 08.07.97 02.03.00 07.01.01 | HK HM HM | Initial Revised (search_running) Adaption caused by GPRS integration |

4.17.6 MM334: RR failure (No Service)

Description: MM receives a RR-ABORT indication primitive indicating No Service.

Preamble: MM329A



Parametrization

| | Primitive | Parameter | Value |
|----------|-----------------|----------------------------|--------------------------|
| (1) | RR_ABORT_IND | | |
| | op | OP_MODE_SIM_NO_SERV | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | plmn_avail | NO_PLMN_FOUND | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | MMR_NREG_IND | | |
| | nreg_cs | NREG_CELL_SELECTION_FAILED | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.17.7 MM335: RR failure (Limited Service, no further PLMNs)

Description: MM receives a RR-ABORT indication primitive indicating Limited Service. The one PLMN which was found is in the forbidden PLMN list and cannot be used.

Preamble: MM329B

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | RR_ABORT_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (3) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|----------|-----------------|----------------------|--------------------------|
| (1) | RR_ABORT_IND | | |
| | op | OP_MODE_SIM_LIM_SERV | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | plmn_avail | ONE_PLMN_FOUND | |
| | plmn | PLMN_LIST_FORB | |
| | rxlevel | RXLEVEL_20 | |
| | power | RF_CLASS_2 | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.17.8 MM336: RR failure (Limited Service, further PLMNs available)

Description: MM receives a RR-ABORT indication primitive indicating Limited Service. The one PLMN which was found is not in the forbidden PLMN list and can be used. The MMI is informed about the fact that the stack currently is in limited service, but that the search for a network delivering full service still is going on.

Preamble: MM329A

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | RR_ABORT_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (3) | MMR_NREG_IND | | |
| | *<=====* | | |
| (4) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| | | | |

Parametrization

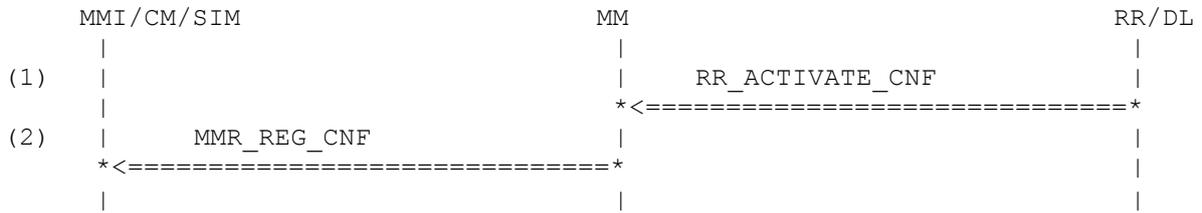
| | Primitive | Parameter | Value |
|-----|-----------------|----------------------|-------|
| (1) | RR_ABORT_IND | | |
| | op | OP_MODE_SIM_LIM_SERV | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | plmn_avail | ONE_PLMN_FOUND | |
| | plmn | PLMN_LIST_LPLMN | |
| | rxlevel | RXLEVEL_20 | |
| | power | RF_CLASS_2 | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| (4) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_31 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.17.9 MM337: MM Success

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell.

Preamble: MM329B



Parametrization

| Primitive | Parameter | Value |
|---------------------|------------|--------------|
| (1) RR_ACTIVATE_CNF | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (2) MMR_REG_CNF | plmn | PLMN_123_33 |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.17.10 MM338: MM Failure

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. A location updating is started. After four rejections limited service is indicated to the user.

Preamble: MM329B

| | MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<===== | |
| (2) | MMR_REG_CNF | | |
| | *<===== | | |
| (3) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====> | |
| (4) | | RR_ESTABLISH_CNF | |
| | | *<===== | |
| (5) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<===== | |
| (6) | | RR_RELEASE_IND | |
| | | *<===== | |
| (7) | | MDL_RELEASE_REQ | |
| | | *=====> | |
| (8) | | RR_SYNC_REQ | |
| | | *=====> | |
| (9) | SIM_MM_UPDATE_REQ | | |
| | *<===== | | |
| TIMEOUT (10000) | | | |
| (10) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====> | |
| (11) | | RR_ESTABLISH_CNF | |
| | | *<===== | |
| (12) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<===== | |
| (13) | | RR_RELEASE_IND | |
| | | *<===== | |
| (14) | | MDL_RELEASE_REQ | |
| | | *=====> | |
| (15) | | RR_SYNC_REQ | |
| | | *=====> | |
| (16) | SIM_MM_UPDATE_REQ | | |
| | *<===== | | |
| TIMEOUT (10000) | | | |
| (17) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====> | |
| (18) | | RR_ESTABLISH_CNF | |
| | | *<===== | |
| (19) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<===== | |
| (20) | | RR_RELEASE_IND | |
| | | *<===== | |
| (21) | | MDL_RELEASE_REQ | |
| | | *=====> | |
| (22) | | RR_SYNC_REQ | |

```

|
|
(23) |          SIM_MM_UPDATE_REQ          |
|          *<=====*>                |
TIMEOUT (10000)
(24) |          RR_ESTABLISH_REQ           |
|          (LOCATION_UPDATING_REQ)     |
|          *=====*>                |
(25) |          RR_ESTABLISH_CNF          |
|          *<=====*>                |
(26) |          RR_DATA_IND               |
|          (LOCATION_UPDATING_REJ)     |
|          *<=====*>                |
(27) |          RR_RELEASE_IND            |
|          *<=====*>                |
(28) |          MDL_RELEASE_REQ           |
|          *=====*>                |
(29) |          RR_SYNC_REQ               |
|          *=====*>                |
(30) |          SIM_MM_UPDATE_REQ          |
|          *<=====*>                |
(31) |          MMR_NREG_IND               |
|          *<=====*>                |
|
|
    
```

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|-------------------------|--------------|
| (1) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |
| (3) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (4) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |
| (5) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |

| | | |
|------|-------------------|-----------------------------|
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |
| | ti | TI_0 |
| | rej_cause | RC_UNSPECIFIED |
| | } | |
| (6) | RR_RELEASE_IND | |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (7) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (8) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (9) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | BCCH_INF_2 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_NO_KEY |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (10) | | RR_ESTABLISH_REQ |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (11) | | RR_ESTABLISH_CNF |
| | param | NOT_USED |
| (12) | | RR_DATA_IND |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |

| | | |
|------|-----------------|-----------------------------|
| | ti | TI_0 |
| | rej_cause | RC_UNSPECIFIED |
| | } | |
| (13) | | RR_RELEASE_IND |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (14) | | MDL_RELEASE_REQ |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (15) | | RR_SYNC_REQ |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (16) | | SIM_MM_UPDATE_REQ |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | BCCH_INF_2 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_NO_KEY |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (17) | | RR_ESTABLISH_REQ |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (18) | | RR_ESTABLISH_CNF |
| | param | NOT_USED |
| (19) | | RR_DATA_IND |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |
| | ti | TI_0 |
| | rej_cause | RC_UNSPECIFIED |
| | } | |

| | | |
|------|---|--|
| (20) | relcs sapi gprs_resumption | RR_RELEASE_IND RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (21) | ch_type sapi | MDL_RELEASE_REQ NOT_PRESENT_8BIT SAPI_0 |
| (22) | op cksn kcv tmsi plmn lac synccs acc thplmn | RR_SYNC_REQ NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (23) | loc_info bcch_inf forb_plmn cksn kc cell_identity | SIM_MM_UPDATE_REQ LOC_INFO_123_33_FEFF BCCH_INF_2 NOT_USED CKSN_NO_KEY KC_DELETED_SIM CELL_ID_1122 |
| (24) | estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | RR_ESTABLISH_REQ ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (25) | param | RR_ESTABLISH_CNF NOT_USED |
| (26) | d1 d2 sdu { component direction pd ti rej_cause } | RR_DATA_IND NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_UNSPECIFIED |
| (27) | relcs sapi gprs_resumption | RR_RELEASE_IND RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |

| | | | |
|----------|----------------|-----------------------------|--------------------------|
| (28) | ch_type | MDL_RELEASE_REQ | |
| | sapi | NOT_PRESENT_8BIT | |
| | | SAPI_0 | |
| (29) | op | RR_SYNC_REQ | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |
| (30) | loc_info | SIM_MM_UPDATE_REQ | |
| | bcch_inf | LOC_INFO_123_33_FEFF | |
| | forb_plmn | BCCH_INF_2 | |
| | cksn | NOT_USED | |
| | kc | CKSN_NO_KEY | |
| | cell_identity | KC_DELETED_SIM | |
| | | CELL_ID_1122 | |
| (31) | nreg_cs | MMR_NREG_IND | |
| | search_running | NREG_LIMITED_SERVICE | |
| | new_forb_plmn | SEARCH_NOT_RUNNING | |
| | limited_cause | PLMN_NO_ID | |
| | | RC_UNSPECIFIED | |
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.17.11 MM339: MM Authentication Failure

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. A location updating is started. After authentication failure only limited service shall be allowed.

Preamble: MM329B

| | MMI/CM/SIM | MM | RR/DL |
|------|------------------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | MMR_REG_CNF | | |
| | *<=====* | | |
| (3) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (4) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (5) | | RR_DATA_IND | |
| | | (AUTHENTICATION REQ) | |
| | | *<=====* | |
| (6) | SIM_AUTHENTICATION_REQ | | |
| | *<=====* | | |
| (7) | SIM_AUTHENTICATION_CNF | | |
| | *=====>* | | |
| (8) | | RR_DATA_REQ | |
| | | (AUTHENTICATION RES) | |
| | | *=====>* | |
| (9) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (10) | | RR_DATA_IND | |
| | | (AUTHENTICATION REJ) | |
| | | *<=====* | |
| (11) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (12) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (13) | | RR_ABORT_IND | |
| | | *<=====* | |
| (14) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (15) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|------------------|--------------|
| (1) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |

| | | |
|----------------------------|---|--|
| (3) RR_ESTABLISH_REQ | estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (4) RR_ESTABLISH_CNF | param | NOT_USED |
| (5) RR_DATA_IND | d1 d2 sdu { component direction pd ti ciph_key_num auth_rand } | NOT_USED NOT_USED MM DOWNLINK D_AUTH_REQ TI_0 CIPH_KEY_NUM_01 AUTH_RAND_1 |
| (6) SIM_AUTHENTICATION_REQ | source rand cksn | SRC_MM RAND_1_P CKSN_01 |
| (7) SIM_AUTHENTICATION_CNF | sres kc | SRES_1 KC_11223344 |
| (8) RR_DATA_REQ | d1 d2 sdu { component direction pd ti auth_sres } | NOT_USED NOT_USED MM UPLINK U_AUTH_RES TI_0 SRES_1_CODED |
| (9) RR_SYNC_REQ | op cksn kcv tmsi plmn lac syncchs accc thplmn | NOT_USED CKSN_01 KCV_11223344 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED |

| | | | |
|----------|-------------------|------------------------------------|--------------------------------|
| (10) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_AUTH_REJ | |
| | ti | TI_0 | |
| | } | | |
| (11) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |
| (12) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_PLMN_NOT_ALLOW | |
| | bcch_inf | NOT_USED | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_NO_KEY | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (13) | RR_ABORT_IND | | |
| | op | OP_MODE_TEST_SIM | |
| | abcs | ABCS_RAD_LNK_FAIL | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (14) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (15) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_AUTHREJ | |
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |
| | 27.04.01 | HM | Changed ordering of primitives |

4.17.12 MM356: PLMN Available Request

Description: MM is in limited service condition. MMI requests a PLMN available request and starts a PLMN search in RR. The result is forwarded to MMI. Even if no PLMN is present in the list, the service delivered from RR decides whether it is limited or no service.

Preamble: MM300

Variants: <A>...<C>

| MMI/CM | MM | RR/DL |
|-------------------------|-----------------|-------|
| (1) SIM_MM_INSERT_IND | | |
| *=====>* | | |
| (2) MMR_REG_REQ | | |
| *=====>* | | |
| (3) | RR_ACTIVATE_REQ | |
| | *=====>* | |
| (4) | RR_ABORT_IND | |
| | *<=====* | |
| (5) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (6) MMR_NREG_IND | | |
| *<=====* | | |
| (7) MMR_NET_REQ | | |
| *=====>* | | |
| (8) | RR_ACTIVATE_REQ | |
| | *=====>* | |
| (9) | RR_ABORT_IND | |
| | *<=====* | |
| (10) MMR_PLMN_IND | | |
| *<=====* | | |
| (11) MMR_NREG_IND | | |
| *<=====* | | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------------|-------------------|------------------------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | OP_NORMAL_SIM | |
| imsi_field | IMSI_FIELD_1 | |
| <A> | loc_info | LOC_INFO_NOT_UPD_LPLMN |
| | loc_info | LOC_INFO_UPDATED_1 |
| <C> | loc_info | LOC_INFO_UPDATED_LPLMN |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| <A> | forb_plmn | FORB_PLMN_NONE |
| | forb_plmn | FORB_PLMN_NONE |
| <C> | forb_plmn | FORB_PLMN_2 |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (1) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (2) RR_ACTIVATE_REQ | | |
| <A> | plmn | PLMN_123_33 |
| | plmn | PLMN_123_33 |
| <C> | plmn | PLMN_123_31 |

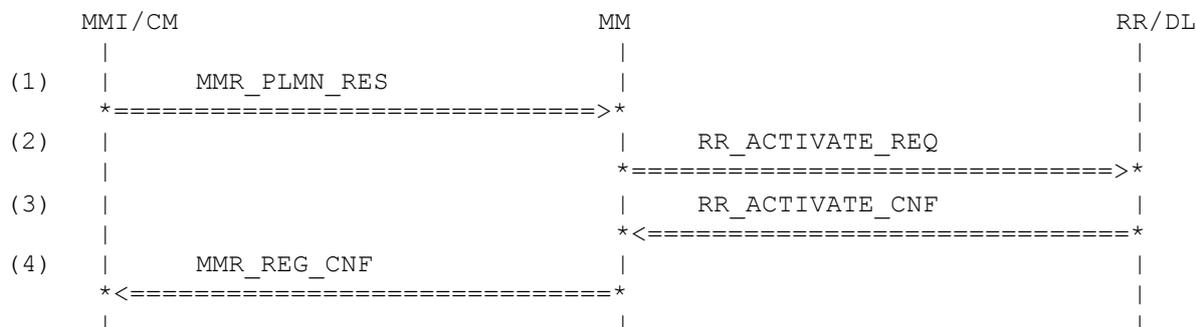
| | | |
|-------------------------|-----------------------|--------------------|
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| <A> | bcch_info | BCCH_INFO_1 |
| | bcch_info | BCCH_INFO_ECL |
| <C> | bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (3) RR_ABORT_IND | | |
| op | OP_MODE_SIM_LIM_SERV | |
| abcs | ABCS_CEL_SEL_FAIL | |
| <A> | plmn_avail | ONE_PLMN_FOUND |
| | plmn_avail | ONE_PLMN_FOUND |
| <C> | plmn_avail | NO_PLMN_FOUND |
| <A> | plmn | PLMN_123_33 |
| | plmn | PLMN_123_33 |
| <C> | plmn | NOT_USED |
| rxlevel | RXLEVEL_20 | |
| power | RF_CLASS_2 | |
| (4) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (5) MMR_NREG_IND | | |
| nreg_cs | NREG_LIMITED_SERVICE | |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_RC_NONE | |
| (6) MMR_NET_REQ | | |
| param | NOT_USED | |
| (7) RR_ACTIVATE_REQ | | |
| plmn | PLMN_NO_ID | |
| op | OP_MODE_SIM_NO_SERV_A | |
| cksn | CKSN_NO_KEY | |
| kcv | KC_DELETED | |
| acc | ACC_CLASS_0000 | |
| imsi | EMPTY_IMSI | |
| tmsi | NOT_USED | |
| thplmn | NOT_USED | |
| bcch_info | NOT_USED | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (8) RR_ABORT_IND | | |
| op | OP_MODE_SIM_LIM_SERV4 | |
| abcs | ABCS_CEL_SEL_FAIL | |
| <A> | plmn_avail | NO_PLMN_FOUND |
| | plmn_avail | TWO_PLMN_FOUND |
| <C> | plmn_avail | TWO_PLMN_FOUND |
| <A> | plmn | NOT_USED |
| | plmn | PLMN_LIST_2_PLMN |
| <C> | plmn | PLMN_LIST_2_PLMN_F |
| <A> | rxlevel | NOT_USED |
| | rxlevel | RXLEVEL_20_18 |

| | | | |
|-------------------|----------------|-----------------------|--------------------------|
| <C> | power | rxlevel RF_CLASS_2 | RXLEVEL_20_18 |
| (9) MMR_PLMN_IND | | | |
| <A> | | res | RES_OK_NO_PLMN_FND |
| | | res | RES_OK_PLMN_LST_AVAIL |
| <C> | | res | RES_OK_PLMN_LST_AVAIL |
| <A> | | plmn | NOT_USED |
| | | plmn | PLMN_LIST_2_PLMN_A |
| <C> | | plmn | PLMN_LIST_2_PLMN_AF |
| <A> | | forb_ind | NOT_USED |
| | | forb_ind | FORB_PLMN_ID |
| <C> | | forb_ind | FORB_PLMN_ID_F |
| <A> | | rxlevel | NOT_USED |
| | | rxlevel | RXLEVEL_20_18_A |
| <C> | | rxlevel | RXLEVEL_20_18_A |
| (10) MMR_NREG_IND | | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 24.02.00 | HM | Revised |
| | 02.03.00 | HM | Revised (search_running) |
| | 15.03.01 | HM | Revised |

4.17.13 MM360: PLMN Selection successful

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is successful.

Preamble: MM356B



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|---------------------|--------------|
| (1) | MMR_PLMN_RES | | |
| | plmn | PLMN_123_33 | |
| (2) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (3) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (4) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.17.14 MM361: PLMN Selection unsuccessful

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is unsuccessful.

Preamble: MM356B

| | MMI / CM | MM | RR / DL |
|-----|--------------|-----------------|---------|
| (1) | MMR_PLMN_RES | | |
| (2) | | RR_ACTIVATE_REQ | |
| (3) | | RR_ABORT_IND | |
| (4) | | MDL_RELEASE_REQ | |
| (5) | MMR_NREG_IND | | |
| (6) | | RR_ACTIVATE_REQ | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|--|-------|
| (1) | MMR_PLMN_RES plmn | PLMN_123_33 | |
| (2) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |
| (3) | RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_SIM_LIM_SERV ABCS_CEL_SEL_FAIL ONE_PLMN_FOUND PLMN_LIST_FORB RXLEVEL_20 RF_CLASS_2 | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_RUNNING PLMN_NO_ID MMR_RC_NONE | |
| (6) | RR_ACTIVATE_REQ plmn | PLMN_123_32_A | |

| | |
|------------|---------------------|
| op | OP_MODE_SIM_NO_SERV |
| cksn | CKSN_RES |
| kcv | KCV_EMPTY |
| acc | ACC_2143 |
| imsi | MOB_ID_IMSI |
| tmsi | MOB_ID_NO_ID |
| thplmn | THPLMN_01 |
| bcch_info | BCCH_INFO_1 |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |

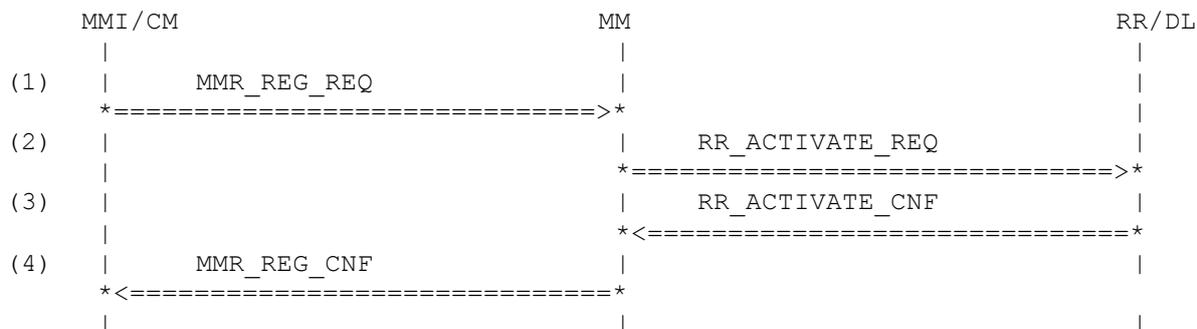
| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised |

4.18 Registration (REG_FULL_SERVICE, with SIM card, automatic mode)

4.18.1 MM340: Registration

Description: MMI restarts registration. This is not allowed in full service. Instead a PLMN list must be requested by MMI and a selection must be done using MMR_PLMN_RES.

Preamble: MM337



Parametrization

| Primitive | Parameter | Value |
|---------------------|--------------|---------------------|
| (1) MMR_REG_REQ | service_mode | SERVICE_MODE_FULL |
| (2) RR_ACTIVATE_REQ | plmn | PLMN_123_33 |
| | op | OP_MODE_SIM_NO_SERV |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | acc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_ECL |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (3) RR_ACTIVATE_CNF | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (4) MMR_REG_CNF | plmn | PLMN_123_33 |

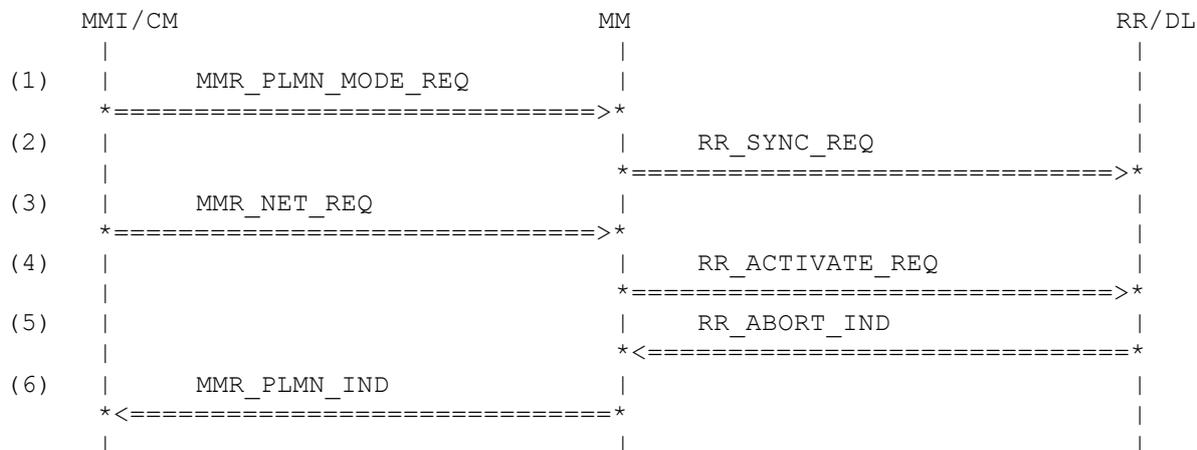
| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.05.01 | HM | Revised |

4.18.2 MM341: PLMN Mode Change

Description: MMI changes the PLMN mode from automatic to manual. MM receives SIM information followed by the registration start of MMI. The cell selection is started.

Preamble: MM337

Variants: <A>...



Parametrization

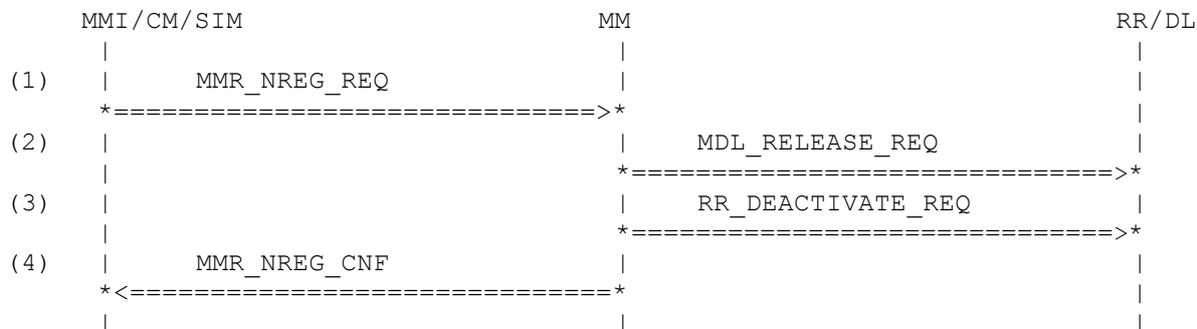
| | Primitive | Parameter | Value |
|-----|---|--|-------|
| (1) | MMR_PLMN_MODE_REQ mode | MODE_MAN | |
| (2) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | OP_MODE_SIM_2 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_PRESENT_16BIT NOT_USED NOT_USED | |
| (3) | MMR_NET_REQ param | NOT_USED | |
| (4) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_SIM_NO_SERV_M CKSN_NO_KEY KC_DELETED ACC_CLASS_0000 EMPTY_IMSI NOT_USED NOT_USED NOT_USED CELL_TEST_DISABLE GPRS_NO | |
| (5) | RR_ABORT_IND op abcs plmn_avail | OP_SIM_MAN_MMI_SRCH_FS ABCS_CEL_SEL_FAIL TWO_PLMN_FOUND | |

| | | |
|------------------|-------------------------|---------------------|
| <A> | plmn | PLMN_LIST_2_PLMN |
| | plmn | PLMN_LIST_2_PLMN_F |
| rxlevel | RXLEVEL_20_18 | |
| power | RF_CLASS_2 | |
| (6) MMR_PLMN_IND | | |
| res | RES_OK_USR_MST_SEL_PLMN | |
| <A> | plmn | PLMN_LIST_2_PLMN_A |
| | plmn | PLMN_LIST_2_PLMN_AF |
| <A> | forb_ind | FORB_PLMN_ID |
| | forb_ind | FORB_PLMN_ID_F |
| rxlevel | RXLEVEL_20_18_A | |
| History: | 07.07.97 | HK Initial |
| | 06.08.97 | DL Revised |
| | 12.08.97 | HK Revised |

4.18.3 MM342: Deregistration (Power Off)

Description: MM receives a MMR-NREG request primitive. MM issues a RR-DEACTIVATE request primitive and a MMR-NREG confirmation primitive with cause set to 'Power off' and changes to changes to State 0 (Null).

Preamble: MM337



Parametrization

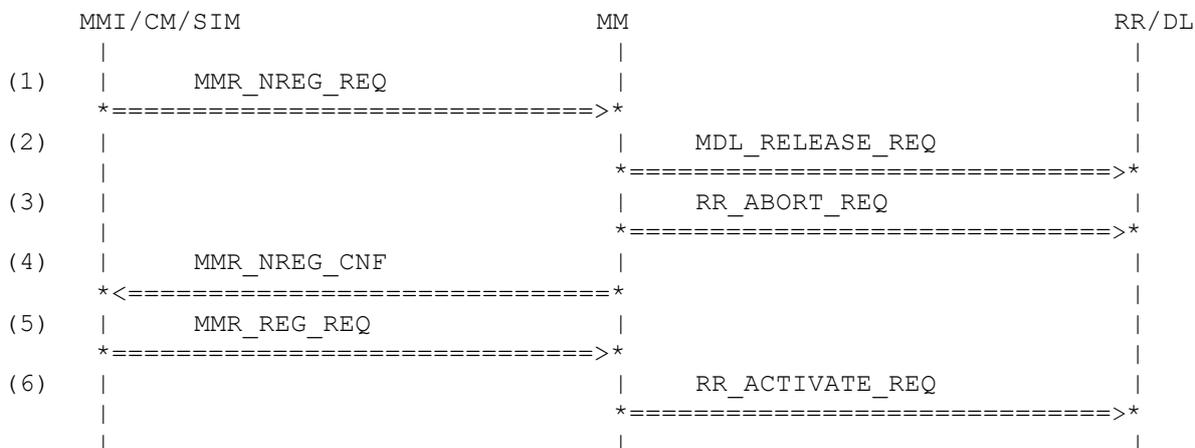
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |

History: 08.07.97 HK Initial

4.18.4 MM343: Deregistration (SIM invalid)

Description: MM receives a MMR-NREG request primitive and issues a MMR-NREG confirmation primitive with cause set to 'SIM Remove'. SIM data in MM will not be deleted, but only be considered invalid until a MMR_REG_REQ primitive with parameter SERVICE_MODE_FULL will be received. Compare this testcase with MM332.

Preamble: MM337



Parametrization

| Primitive | Parameter | Value |
|--|--|-------|
| (62) MMR_NREG_REQ cs | CS_SIM_REM | |
| (63) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (64) RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (65) MMR_NREG_CNF cs | CS_SIM_REM | |
| (66) MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (67) RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_ECL CELL_TEST_DISABLE GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 15.09.97 | DL | revised |
| | 30.08.00 | HM | Revised |

4.18.5 MM344: SIM Removal

Description: The SIM card is removed before starting with registration.

Preamble: MM337

| | MMI/CM/SIM | MM | RR/DL |
|-----|----------------|-----------------|-------|
| (1) | SIM_REMOVE_IND | | |
| | *=====>* | | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (3) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (4) | MMR_NREG_IND | | |
| | *<=====* | | |
| (5) | MMR_REG_REQ | | |
| | *=====>* | | |
| (6) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| | | | |

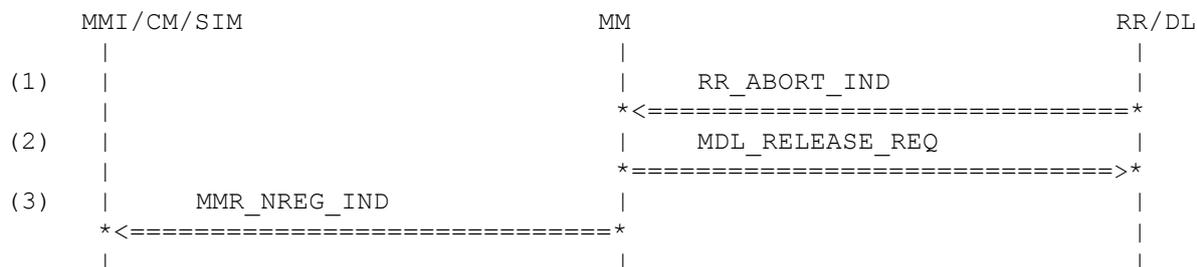
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|---|---|--|
| (1) | SIM_REMOVE_IND error | NOT_USED | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (4) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| (5) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (6) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NO_SIM_NO_SERV CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID MOB_ID_NO_ID THPLMN_FF NOT_USED CELL_TEST_DISABLE GPRS_NO | |
| History: | 08.07.97 02.03.00 07.01.01 | HK HM HM | Initial Revised (search_running) Adaption caused by GPRS integration |

4.18.6 MM345: RR failure (No Service)

Description: MM receives a RR-ABORT indication primitive indicating No Service.

Preamble: MM337



Parametrization

| Primitive | Parameter | Value |
|---------------------|----------------------------|-------|
| (1) RR_ABORT_IND | | |
| op | OP_MODE_SIM_NO_SERV | |
| abcs | ABCS_CEL_SEL_FAIL | |
| plmn_avail | NO_PLMN_FOUND | |
| plmn | NOT_USED | |
| rxlevel | NOT_USED | |
| power | RF_CLASS_2 | |
| (2) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (3) MMR_NREG_IND | | |
| nreg_cs | NREG_CELL_SELECTION_FAILED | |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_RC_NONE | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.18.7 MM346: RR failure (Limited Service, no further PLMNs)

Description: MM receives a RR-ABORT indication primitive indicating Limited Service. The one PLMN which was found is in the forbidden PLMN list. This indication is forwarded to MMI.

Preamble: MM337

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | RR_ABORT_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *<=====* | |
| (3) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

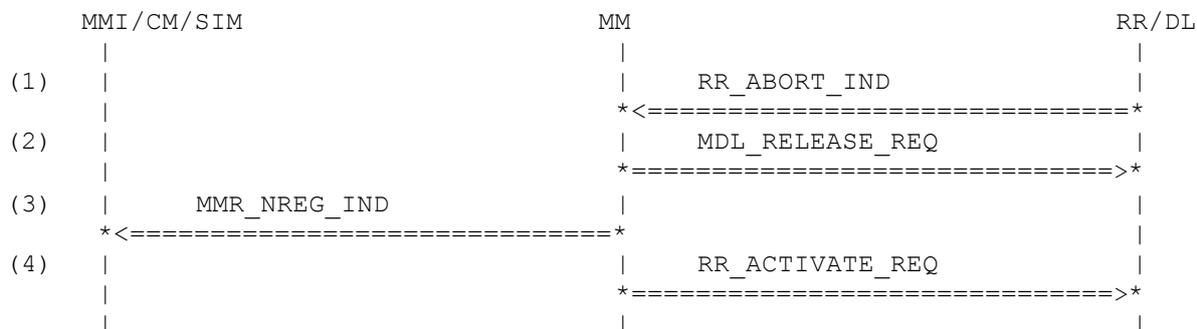
| | Primitive | Parameter | Value |
|-----|-----------------|----------------------|-------|
| (1) | RR_ABORT_IND | | |
| | op | OP_MODE_SIM_LIM_SERV | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | plmn_avail | ONE_PLMN_FOUND | |
| | plmn | PLMN_LIST_FORB | |
| | rxlevel | RXLEVEL_20 | |
| | power | RF_CLASS_2 | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |

| | | | |
|----------|----------|----|--------------------------|
| History: | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.18.8 MM347: RR failure (Limited Service, further PLMNs available)

Description: MM receives a RR-ABORT indication primitive indicating Limited Service. This indication is forwarded to MMI.

Preamble: MM337



Parametrization

| | Primitive | Parameter | Value |
|------|-----------------|----------------------|-------|
| (29) | op | RR_ABORT_IND | |
| | abcs | OP_MODE_SIM_LIM_SERV | |
| | plmn_avail | ABCS_CEL_SEL_FAIL | |
| | plmn | ONE_PLMN_FOUND | |
| | rxlevel | PLMN_LIST_LP_LPMN | |
| | power | RXLEVEL_20 | |
| | | RF_CLASS_2 | |
| (30) | ch_type | MDL_RELEASE_REQ | |
| | sapi | NOT_PRESENT_8BIT | |
| | | SAPI_0 | |
| (31) | nreg_cs | MMR_NREG_IND | |
| | search_running | NREG_LIMITED_SERVICE | |
| | new_forb_plmn | SEARCH_RUNNING | |
| | limited_cause | PLMN_NO_ID | |
| | | MMR_RC_NONE | |
| (4) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_31 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |

| History: | Date | Author | Change |
|----------|----------|--------|--------------------------|
| | 10.07.97 | HK | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 14.03.01 | HM | Revised |

4.18.9 MM348: MM Success

Description: MM is informed about a cell change.

Preamble: MM337

| | MMI/CM/SIM | MM | RR/DL |
|-----|-------------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (3) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (4) | | RR_DATA_IND | |
| | | (LOCATION UPDATING ACC) | |
| | | *<=====* | |
| (5) | | RR_DATA_REQ | |
| | | (TMSI REALLOC COMPLETE) | |
| | | *=====>* | |
| (6) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (7) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (8) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|-------|
| (1) | RR_ACTIVATE_IND | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_31 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (3) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |
| (4) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |

| | | | |
|-----------------------|--|--------------------------|--|
| sdu | | | |
| { | | | |
| component | | MM | |
| direction | | DOWNLINK | |
| pd | | D_LOC_UPD_ACCEPT | |
| ti | | TI_0 | |
| loc_area_ident | | LOC_AREA_ID_123_31_2147 | |
| mob_id | | MOB_IDENT_NEW_TMSI | |
| follow_proceed | | NOT_USED | |
| } | | | |
| (5) RR_DATA_REQ | | | |
| d1 | | NOT_USED | |
| d2 | | NOT_USED | |
| sdu | | | |
| { | | | |
| component | | MM | |
| direction | | UPLINK | |
| pd | | U_TMSI_REALLOC_COMP | |
| ti | | TI_0 | |
| } | | | |
| (6) RR_SYNC_REQ | | | |
| op | | NOT_USED | |
| cksn | | NOT_USED | |
| kcv | | NOT_USED | |
| tmsi | | MOB_ID_NEW_TMSI | |
| plmn | | NOT_USED | |
| lac | | NOT_USED | |
| synccs | | NOT_USED | |
| acc | | NOT_USED | |
| thplmn | | NOT_USED | |
| (7) RR_SYNC_REQ | | | |
| op | | NOT_USED | |
| cksn | | NOT_USED | |
| kcv | | NOT_USED | |
| tmsi | | NOT_USED | |
| plmn | | PLMN_123_31 | |
| lac | | LAC_2147 | |
| synccs | | SYNCCS_LAI_ALLOW | |
| acc | | NOT_USED | |
| thplmn | | NOT_USED | |
| (8) SIM_MM_UPDATE_REQ | | | |
| loc_info | | LOC_INFO_UPDATED_31_2147 | |
| bcch_inf | | BCCH_INF_1 | |
| forb_plmn | | NOT_USED | |
| cksn | | CKSN_RES | |
| kc | | KC_DELETED_SIM | |
| cell_identity | | CELL_ID_1122 | |

| | | | |
|----------|----------|----|---------|
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.18.10 MM349: MM Failure

Description: MM is informed about a cell change. A location updating is started. After four rejections MM enters the state ATTEMPTING TO UPDATE and no further reactions are expected.

Preamble: MM337

| | MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (3) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (4) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (5) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (6) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (7) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (8) | SIM_MM_UPDATE_REQ | | |
| | | *<=====* | |
| TIMEOUT (10000) | | | |
| (9) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (10) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (11) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (12) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (13) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (14) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (15) | SIM_MM_UPDATE_REQ | | |
| | | *<=====* | |
| TIMEOUT (10000) | | | |
| (16) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (17) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (18) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (19) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (20) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (21) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (22) | SIM_MM_UPDATE_REQ | | |

```

        *<=====
TIMEOUT (10000)
(23) | | RR_ESTABLISH_REQ |
      | | (LOCATION UPDATING REQ) |
      | | *=====>*
(24) | | RR_ESTABLISH_CNF |
      | | *=====>*
(25) | | RR_DATA_IND |
      | | (LOCATION UPDATING REJ) |
      | | *=====>*
(26) | | RR_RELEASE_IND |
      | | *=====>*
(27) | | MDL_RELEASE_REQ |
      | | *=====>*
(28) | | RR_SYNC_REQ |
      | | *=====>*
(29) | SIM_MM_UPDATE_REQ |
      | *=====>*
(30) | MMR_NREG_IND |
      | *=====>*
      | |
    
```

Parametrization

| Primitive | Parameter | Value |
|----------------------|-------------------------|-------|
| (1) RR_ACTIVATE_IND | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_31 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (2) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (3) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (4) RR_DATA_IND | | |
| d1 | NOT_USED | |
| d2 | NOT_USED | |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |
| pd | D_LOC_UPD_REJ | |

| | |
|-----------------------|------------------------------|
| ti | TI_0 |
| rej_cause | RC_UNSPECIFIED |
| } | |
| (5) RR_RELEASE_IND | |
| relcs | RELCS_ABNORM_UNSPEC |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (6) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (7) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNC_CS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (8) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FFFF |
| bcch_inf | BCCH_INF_2 |
| forb_plmn | NOT_USED |
| cksn | CKSN_NO_KEY |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (9) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti | TI_0 |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_FFFF |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (10) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (11) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_REJ |
| ti | TI_0 |
| rej_cause | RC_UNSPECIFIED |
| } | |

| | | |
|------|---|--|
| (12) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (13) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (14) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (15) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF BCCH_INF_2 NOT_USED CKSN_NO_KEY KC_DELETED_SIM CELL_ID_1122 |
| (16) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (17) | RR_ESTABLISH_CNF param | NOT_USED |
| (18) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_UNSPECIFIED |
| (19) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |

| | | |
|------|---|--|
| (20) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (21) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVAL NOT_USED NOT_USED |
| (22) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF BCCH_INF_2 NOT_USED CKSN_NO_KEY KC_DELETED_SIM CELL_ID_1122 |
| (23) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (24) | RR_ESTABLISH_CNF param | NOT_USED |
| (25) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_UNSPECIFIED |
| (26) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (27) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |

(28) RR_SYNC_REQ
op NOT_USED
cksn NOT_USED
kcv NOT_USED
tmsi NOT_USED
plmn NOT_USED
lac NOT_USED
synccs SYNCCS_TMSI_CKSN_KC_INVALID
accc NOT_USED
thplmn NOT_USED

(29) SIM_MM_UPDATE_REQ
loc_info LOC_INFO_123_33_FEFF
bcch_inf BCCH_INF_2
forb_plmn NOT_USED
cksn CKSN_NO_KEY
kc KC_DELETED_SIM
cell_identity CELL_ID_1122

(30) MMR_NREG_IND
nreg_cs NREG_LIMITED_SERVICE
search_running SEARCH_NOT_RUNNING
new_forb_plmn PLMN_NO_ID
limited_cause RC_UNSPECIFIED

History: 09.07.97 HK Initial
 06.08.97 DL Revised
 12.08.97 HK Revised
 15.01.01 HM Revised (last NREG_IND added)

4.18.11 MM350: MM Authentication Failure

Description: MM is informed by means of a RR-ACTIVATE confirmation primitive that the mobile station is synchronous to a cell. A location updating is started. After authentication failure only limited service shall be allowed.

Preamble: MM329B

| | MMI/CM/SIM | MM | RR/DL |
|------|------------------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | MMR_REG_CNF | | |
| | *<=====* | | |
| (3) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (4) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (5) | | RR_DATA_IND | |
| | | (AUTHENTICATION REQ) | |
| | | *<=====* | |
| (6) | SIM_AUTHENTICATION_REQ | | |
| | *<=====* | | |
| (7) | SIM_AUTHENTICATION_CNF | | |
| | *=====>* | | |
| (8) | | RR_DATA_REQ | |
| | | (AUTHENTICATION RES) | |
| | | *=====>* | |
| (9) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (10) | | RR_DATA_IND | |
| | | (AUTHENTICATION REJ) | |
| | | *<=====* | |
| (11) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (12) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (13) | | RR_ABORT_IND | |
| | | *<=====* | |
| (14) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (15) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|---------------------|--------------|-------|
| (1) RR_ACTIVATE_CNF | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_0002 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (2) MMR_REG_CNF | | |
| plmn | PLMN_123_33 | |

| | | |
|----------------------------|---|--|
| (3) RR_ESTABLISH_REQ | estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (4) RR_ESTABLISH_CNF | param | NOT_USED |
| (5) RR_DATA_IND | d1 d2 sdu { component direction pd ti ciph_key_num auth_rand } | NOT_USED NOT_USED MM DOWNLINK D_AUTH_REQ TI_0 CIPH_KEY_NUM_01 AUTH_RAND_1 |
| (6) SIM_AUTHENTICATION_REQ | source rand cksn | SRC_MM RAND_1_P CKSN_01 |
| (7) SIM_AUTHENTICATION_CNF | sres kc | SRES_1 KC_11223344 |
| (8) RR_DATA_REQ | d1 d2 sdu { component direction pd ti auth_sres } | NOT_USED NOT_USED MM UPLINK U_AUTH_RES TI_0 SRES_1_CODED |
| (9) RR_SYNC_REQ | op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED CKSN_01 KCV_11223344 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED |

| | | | |
|----------|-------------------|------------------------------------|--------------------------------|
| (10) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_AUTH_REJ | |
| | ti | TI_0 | |
| | } | | |
| (11) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID_NO_PAG | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |
| (12) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_PLMN_NOT_ALLOW | |
| | bcch_inf | NOT_USED | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_NO_KEY | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (13) | RR_ABORT_IND | | |
| | op | OP_MODE_TEST_SIM | |
| | abcs | ABCS_RAD_LNK_FAIL | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (14) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (15) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_AUTHREJ | |
| History: | 09.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 02.03.00 | HM | Revised (search_running) |
| | 27.04.01 | HM | Changed ordering of primitives |

4.18.12 MM357: PLMN Available Request

Description: MM is in full service condition. MMI requests a PLMN available request and starts a PLMN search in RR. The result is forwarded to MMI.

Preamble: MM329B

Variants: <A>...<C>

| | MMI / CM | MM | RR / DL |
|-----|--------------|-----------------|---------|
| (1) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (2) | MMR_REG_CNF | | |
| | *<=====* | | |
| (3) | MMR_NET_REQ | | |
| | *=====>* | | |
| (4) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (5) | | RR_ABORT_IND | |
| | | *<=====* | |
| (6) | MMR_PLMN_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|-----------------|--------------------|----------------|
| (1) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |
| (3) | MMR_NET_REQ | | |
| | param | NOT_USED | |
| (4) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_SIM_A | |
| | cksn | CKSN_NO_KEY | |
| | kcv | KC_DELETED | |
| | accc | ACC_CLASS_0000 | |
| | imsi | EMPTY_IMSI | |
| | tmsi | NOT_USED | |
| | thplmn | NOT_USED | |
| | bcch_info | NOT_USED | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (5) | RR_ABORT_IND | | |
| | op | OP_MODE_SIM_SERV_A | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | <A> | plmn_avail | NO_PLMN_FOUND |
| | | plmn_avail | TWO_PLMN_FOUND |
| | <C> | plmn_avail | TWO_PLMN_FOUND |

| | | |
|-------|------------|--------------------|
| <A> | plmn | NOT_USED |
| | plmn | PLMN_LIST_2_PLMN |
| <C> | plmn | PLMN_LIST_2_PLMN_F |
| <A> | rxlevel | NOT_USED |
| | rxlevel | RXLEVEL_20_18 |
| <C> | rxlevel | RXLEVEL_20_18 |
| power | RF_CLASS_2 | |

(6) MMR_PLMN_IND

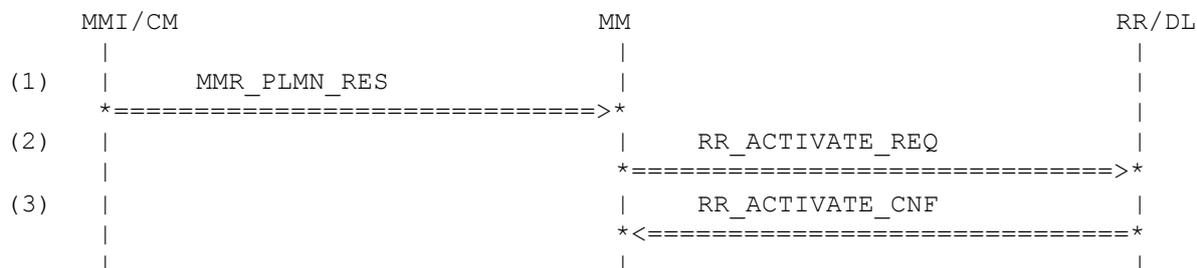
| | | |
|-----|----------|-----------------------|
| <A> | res | RES_OK_NO_PLMN_FND |
| | res | RES_OK_PLMN_LST_AVAIL |
| <C> | res | RES_OK_PLMN_LST_AVAIL |
| <A> | plmn | NOT_USED |
| | plmn | PLMN_LIST_2_PLMN_A |
| <C> | plmn | PLMN_LIST_2_PLMN_AF |
| <A> | forb_ind | NOT_USED |
| | forb_ind | FORB_PLMN_ID |
| <C> | forb_ind | FORB_PLMN_ID_F |
| <A> | rxlevel | NOT_USED |
| | rxlevel | RXLEVEL_20_18_A |
| <C> | rxlevel | RXLEVEL_20_18_A |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |

4.18.13 MM362: PLMN Selection successful

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is successful.

Preamble: MM357B



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------|---------------------|--------------|
| (1) | MMR_PLMN_RES | | |
| | plmn | PLMN_123_33 | |
| (2) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (3) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |
| | 12.08.97 | HK | Revised |
| | 24.03.00 | HM | Revised |

4.18.14 MM363: PLMN Selection unsuccessful

Description: MMI has requested a PLMN available list. It now selects a PLMN. The selection is unsuccessful.

Preamble: MM357B



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------|---|--|--------------|
| (40) | MMR_PLMN_RES plmn | PLMN_123_33 | |
| (41) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |
| (42) | RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_SIM_LIM_SERV ABCS_CEL_SEL_FAIL ONE_PLMN_FOUND PLMN_LIST_FORB RXLEVEL_20 RF_CLASS_2 | |
| (43) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (44) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_RC_NONE | |

| | | | |
|----------|----------|----|---------|
| History: | 07.07.97 | HK | Initial |
| | 06.08.97 | DL | Revised |

| | | |
|----------|----|--------------------------|
| 12.08.97 | HK | Revised |
| 02.03.00 | HM | Revised (search_running) |

4.19 MM Idle Mode Behaviour (Normal Service)

4.19.1 MM400: Normal Service, new cell, same location area

Description: MM is in service state NORMAL SERVICE. A new cell is entered in the same location area. The new cell indicates IMSI attach. It is assumed that no location updating is started.

Preamble: MM024

| | | |
|----------------|-----------------|---------|
| MMI / CM | MM | RR / DL |
| | | |
| (1) | RR_ACTIVATE_IND | |
| | * <=====* | |
| TIMEOUT (3000) | | |
| | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|---------------------|------------------|--------------|
| (1) RR_ACTIVATE_IND | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1123 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |

History: 03.05.99 LE Initial

4.19.2 MM401: Normal Service, new cell, new location area

Description: MM is in service state NORMAL SERVICE. A new cell is entered in a new location area. A normal location updating is started.

Preamble: MM024

| | MMI / CM | MM | RR/DL |
|-----|----------|-------------------------|-------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|-------|
| (1) | RR_ACTIVATE_IND | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

History: 07.07.97 HK Initial

4.19.3 MM402: Normal Service, new cell, new PLMN identification

Description: MM is in service state NORMAL SERVICE. A new cell is entered in a new PLMN. A normal location updating is started.

Preamble: MM024

| | MMI / CM | MM | RR / DL |
|-----|----------|-------------------------|---------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

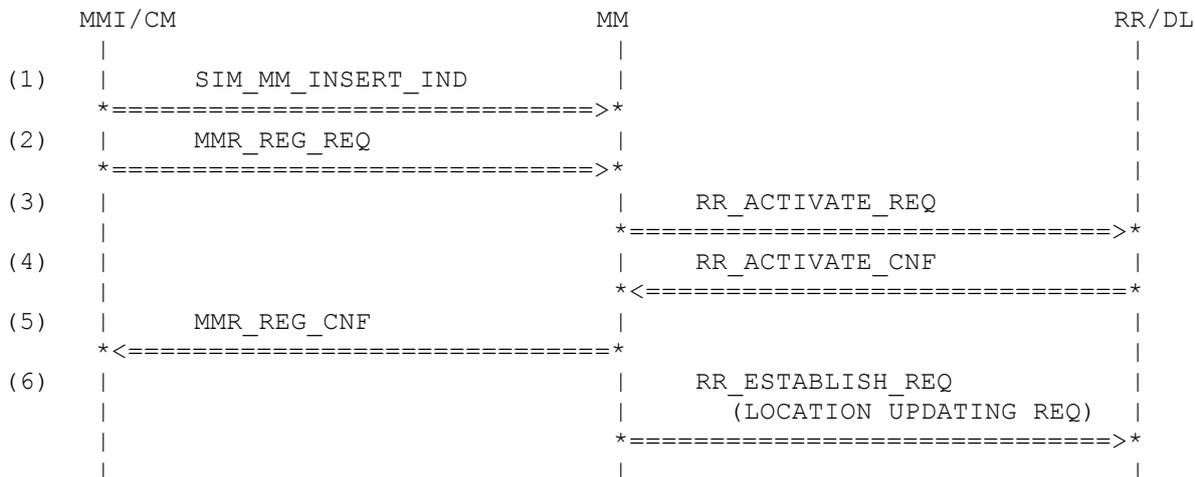
| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|-------|
| (1) | RR_ACTIVATE_IND | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_44 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

History: 07.07.97 HK Initial

4.19.4 MM403: Updated, IMSI Attach

Description: MM receives a SIM-INSERT indication primitive and initiates cell selection by issuing a RR-ACTIVATE request primitive. Successful conclusion of cell selection is signalled by the receipt of a RR-ACTIVATE confirmation primitive. MM forwards the PLMN identification to MMI in the form of a MMR-REG confirmation primitive. An IMSI attach is started.

Preamble: MM022



Parametrization

| | Primitive | Parameter | Value |
|-----|-------------------|---------------------|-------|
| (6) | SIM_MM_INSERT_IND | | |
| | op_mode | NORMAL_SIM_INS | |
| | imsi_field | IMSI_FIELD_1 | |
| | loc_info | LOC_INFO_UPDATED_1 | |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | forb_plmn | FORB_PLMN_NONE | |
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (7) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (8) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_ECL | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (9) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO_ATT | |

| | | |
|------|------------------|-------------------------|
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (10) | MMR_REG_CNF | |
| | plmn | PLMN_123_33 |
| (11) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

| | | | |
|----------|----------|----|---------|
| History: | 04.05.99 | LE | Initial |
| | 24.02.00 | HM | Revised |

4.19.5 MM404: Normal Service, Timeout T3211, LUP Reject Cause #17

Description: The location updating is finished with a location updating reject message and the cause #17 network failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM403

| | MMI / CM / SIM | MM | RR / DL |
|-----|-----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| | TIMEOUT (10000) | | |
| (5) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|---|---|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED | MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | RR_ESTABLISH_REQ estcs sdu { | ESTCS_SERV_REQ_BY_MM | |

```
component      MM
direction      UPLINK
pd             U_LOC_UPD_REQ
ti            TI_0
loc_upd_type    LOC_UPD_TYPE_ATTACH
ciph_key_num    CIPH_KEY_NUM_RES
loc_area_ident  LOC_AREA_ID_123_33_2147
mob_class_1     MOB_CLASS_1
mob_id         MOB_IDENT_IMSI
}
```

History: 04.05.99 LE Initial

4.19.6 MM405: Normal Service, Timeout T3211, LUP Reject Cause, 2.-4. attempt

Description: The location updating is finished with a location updating reject message and the cause #17 network failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM404

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (3) | RR_RELEASE_IND | |
| (4) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (5) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (6) | RR_ESTABLISH_CNF | |
| (7) | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (8) | RR_RELEASE_IND | |
| (9) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (10) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (11) | RR_ESTABLISH_CNF | |
| (12) | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (13) | RR_RELEASE_IND | |
| (14) | MDL_RELEASE_REQ | |
| (15) | RR_SYNC_REQ | |
| (16) | SIM_MM_UPDATE_REQ | |

Parametrization

| Primitive | Parameter | Value |
|-----------|-----------|-------|
|-----------|-----------|-------|

| | | |
|-----|---|--|
| (1) | RR_ESTABLISH_CNF param | NOT_USED |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (5) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (6) | RR_ESTABLISH_CNF param | NOT_USED |
| (7) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE |
| (8) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |

| | | |
|------|---|--|
| (10) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (11) | RR_ESTABLISH_CNF param | NOT_USED |
| (12) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE |
| (13) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (14) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (15) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (16) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |

History: 04.05.99 LE Initial

4.19.7 MM406: Updated, Periodic LUP

Description: MM receives a SIM-INSERT indication primitive and initiates cell selection by issuing a RR-ACTIVATE request primitive. Successful conclusion of cell selection is signalled by the receipt of a RR-ACTIVATE confirmation primitive. MM forwards the PLMN identification to MMI in the form of a MMR-REG confirmation primitive. The periodic location updating timer is started.

Preamble: MM022

| MMI / CM | MM | RR / DL |
|---------------------------------|-------------------------|---------|
| | | |
| COMMAND (MM CONFIG T3212_CNT=5) | | |
| (1) SIM_MM_INSERT_IND | | |
| | | |
| | | |
| (2) MMR_REG_REQ | | |
| | | |
| | | |
| (3) | RR_ACTIVATE_REQ | |
| | | |
| | | |
| (4) | RR_ACTIVATE_CNF | |
| | | |
| | | |
| (5) MMR_REG_CNF | | |
| | | |
| | | |
| TIMEOUT (55000) | | |
| (6) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | | |
| | | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------------|---------------------|-------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (2) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (3) RR_ACTIVATE_REQ | | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_ECL | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |

| | | | |
|-----|------------------|----------------|-------------------------|
| (4) | RR_ACTIVATE_CNF | op | OP_MODE_SIM |
| | | mm_info | MM_INFO_PER |
| | | cid | CELL_ID_1122 |
| | | plmn | PLMN_123_33 |
| | | lac | LAC_2147 |
| | | power | RF_CLASS_2 |
| | | gprs_indic | GPRS_NO |
| (5) | MMR_REG_CNF | plmn | PLMN_123_33 |
| (6) | RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | | sdu | |
| | | { | |
| | | component | MM |
| | | direction | UPLINK |
| | | pd | U_LOC_UPD_REQ |
| | | ti | TI_0 |
| | | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | | ciph_key_num | CIPH_KEY_NUM_RES |
| | | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | | mob_class_1 | MOB_CLASS_1 |
| | | mob_id | MOB_IDENT_IMSI |
| | | } | |

| | | | |
|----------|----------|----|---------|
| History: | 04.05.99 | LE | Initial |
| | 24.02.00 | HM | Revised |

4.19.8 MM407: Normal Service, Timeout T3211, LUP Reject Cause #17

Description: The location updating is finished with a location updating reject message and the cause #17 network failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM406

| | MMI / CM / SIM | MM | RR / DL |
|-----------------|----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| TIMEOUT (10000) | | | |
| (5) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|---|---|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED | MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | RR_ESTABLISH_REQ estcs sdu { | ESTCS_SERV_REQ_BY_MM | |

```
component      MM
direction      UPLINK
pd             U_LOC_UPD_REQ
ti             TI_0
loc_upd_type    LOC_UPD_TYPE_PERIODIC
ciph_key_num    CIPH_KEY_NUM_RES
loc_area_ident  LOC_AREA_ID_123_33_2147
mob_class_1     MOB_CLASS_1
mob_id         MOB_IDENT_IMSI
}
```

History: 04.05.99 LE Initial

4.19.9 MM408: Normal Service, Timeout T3211, LUP Reject Cause, 2.-4. attempt

Description: The location updating is finished with a location updating reject message and the cause #17 network failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM407

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (3) | RR_RELEASE_IND | |
| (4) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (5) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (6) | RR_ESTABLISH_CNF | |
| (7) | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (8) | RR_RELEASE_IND | |
| (9) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (10) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (11) | RR_ESTABLISH_CNF | |
| (12) | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (13) | RR_RELEASE_IND | |
| (14) | MDL_RELEASE_REQ | |
| (15) | RR_SYNC_REQ | |
| (16) | SIM_MM_UPDATE_REQ | |
| (17) | MMR_NREG_IND | |

Parametrization

| Primitive | Parameter | Value |
|---|--|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE | |
| (3) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |
| (6) RR_ESTABLISH_CNF param | NOT_USED | |
| (7) RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE | |
| (8) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |

| | | |
|-------|---|--|
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (10) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (11) | RR_ESTABLISH_CNF param | NOT_USED |
| (12) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE |
| (13) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (14) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (15) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (16) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |

| | | |
|------|----------------|----------------------|
| (17) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | RC_NETWORK_FAILURE |

| | | | |
|----------|----------|----|-------------------------------|
| History: | 04.05.99 | LE | Initial |
| | 15.01.01 | HM | Revised (last NREG_IND added) |

4.19.10 MM409: Normal Service, Timeout T3211, RR Release before end of proc

Description: The RR connection is established and released before receiving an answer by the network. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM403

| MMI / CM / SIM | MM | RR / DL |
|-----------------|---|---------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_RELEASE_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |

Parametrization

| Primitive | Parameter | Value |
|---|--|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (3) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (4) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |

History: 04.05.99 LE Initial

4.19.11 MM410: Normal Service, T3211, RR Release before end of proc, 2.-4. attempt

Description: The RR connection is established and released before receiving an answer by the network. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM409

| MMI / CM / SIM | MM | RR / DL |
|-----------------|---|---------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_RELEASE_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (5) | RR_ESTABLISH_CNF | |
| (6) | RR_RELEASE_IND | |
| (7) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (8) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (9) | RR_ESTABLISH_CNF | |
| (10) | RR_RELEASE_IND | |
| (11) | MDL_RELEASE_REQ | |
| (12) | RR_SYNC_REQ | |
| (13) | SIM_MM_UPDATE_REQ | |
| (14) | MMR_NREG_IND | |

Parametrization

| Primitive | Parameter | Value |
|-------------------------------|------------|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_RELEASE_IND relcs | RELCS_NORM | |

| | | |
|------|------------------|-------------------------|
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (3) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (4) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (5) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (6) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (7) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (8) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (9) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |

| | | |
|------|-------------------|-----------------------------|
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (14) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|----------------------------|
| History: | 04.05.99 | LE | Initial |
| | 25.01.01 | HM | Revised (last MMR_NREG_IND |
| added) | | | |

4.19.12 MM411: Normal Service, T3211, RR Release before end of proc

Description: The RR connection is established and released before receiving an answer by the network. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM406

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_RELEASE_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |

Parametrization

| Primitive | Parameter | Value |
|---|--|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (3) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (4) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |

History: 04.05.99 LE Initial

4.19.13 MM412: Normal Service, T3211, RR Release before end of proc, 2.-4. attempt

Description: The RR connection is established and released before receiving an answer by the network. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM411

| MMI / CM / SIM | MM | RR / DL |
|-----------------|---|---------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_RELEASE_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (5) | RR_ESTABLISH_CNF | |
| (6) | RR_RELEASE_IND | |
| (7) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (8) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (9) | RR_ESTABLISH_CNF | |
| (10) | RR_RELEASE_IND | |
| (11) | MDL_RELEASE_REQ | |
| (12) | RR_SYNC_REQ | |
| (13) | SIM_MM_UPDATE_REQ | |
| (14) | MMR_NREG_IND | |

Parametrization

| Primitive | Parameter | Value |
|-------------------------------|------------|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_RELEASE_IND relcs | RELCS_NORM | |

| | | |
|------|------------------|-------------------------|
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (3) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (4) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (5) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (6) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (7) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (8) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (9) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |

| | | |
|------|-------------------|-----------------------------|
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (14) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|----------------------------|
| History: | 04.05.99 | LE | Initial |
| | 25.01.01 | HM | Revised (last MMR_NREG_IND |
| added) | | | |

4.19.14 MM413: Normal Service, T3211, Timeout T3210

Description: The RR connection is established and no answer receives from the network. After timeout of T3210 the RR connection is aborted. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM403

| MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------------|-------|
| (1) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (2) | RR_ABORT_REQ | |
| | *=====>* | |
| (3) | RR_RELEASE_IND | |
| | *<=====* | |
| (4) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (10000) | | |
| (5) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|--|--|--------------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_ABORT_REQ abcs | ABCS_NORM | |
| (3) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 | |

| | | | | |
|----------|----------|----|----------------|-------------------------|
| | mob_id | | MOB_IDENT_IMSI | |
| | } | | | |
| History: | 04.05.99 | LE | | Initial |
| | 27.04.01 | HM | | Changed abort behaviour |

4.19.15 MM414: Normal Service, T3211, Timeout T3210, 2.-4. attempt

Description: The RR connection is established and no answer of the network receives. After time-out of T3210 the connection is aborted. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM413

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (2) | RR_ABORT_REQ | |
| | *=====>* | |
| (3) | RR_RELEASE_IND | |
| | *<=====* | |
| (4) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (10000) | | |
| (5) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (6) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (7) | RR_ABORT_REQ | |
| | *=====>* | |
| (8) | RR_RELEASE_IND | |
| | *<=====* | |
| (9) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (10000) | | |
| (10) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (11) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (12) | RR_ABORT_REQ | |
| | *=====>* | |
| (13) | RR_RELEASE_IND | |
| | *<=====* | |
| (14) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (15) | RR_SYNC_REQ | |
| | *=====>* | |
| (16) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| (17) | MMR_NREG_IND | |
| | *<=====* | |

Parametrization

| Primitive | Parameter | Value |
|--|--|-------|
| (6) RR_ESTABLISH_CNF param | NOT_USED | |
| (7) RR_ABORT_REQ abcs | ABCS_NORM | |
| (8) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (9) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (10) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |
| (11) RR_ESTABLISH_CNF param | NOT_USED | |
| (12) RR_ABORT_REQ abcs | ABCS_NORM | |
| (13) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (14) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (15) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |

| | | |
|------|---|---|
| (16) | RR_ESTABLISH_CNF param | NOT_USED |
| (17) | RR_ABORT_REQ abcs | ABCS_NORM |
| (18) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (19) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (20) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (21) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (22) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_RC_NONE |

| | | | |
|----------|----------|----|-------------------------|
| History: | 04.05.99 | LE | Initial |
| | 27.04.01 | HM | Changed abort behaviour |

4.19.16 MM415: Normal Service, T3211, Timeout T3210

Description: The RR connection is established and there is no answer by the network. After time-out of T3210 a connection abort is processed. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM406

| MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------------|-------|
| (1) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (2) | RR_ABORT_REQ | |
| | *=====>* | |
| (3) | RR_RELEASE_IND | |
| | *<=====* | |
| (4) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (10000) | | |
| (5) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|--|--|--------------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_ABORT_REQ abcs | ABCS_NORM | |
| (3) RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 | |

mob_id
}

MOB_IDENT_IMSI

| | | | |
|----------|----------|----|-------------------------|
| History: | 04.05.99 | LE | Initial |
| | 27.04.01 | HM | Changed abort behaviour |

4.19.17 MM416: Normal Service, T3211, Timeout T3210, 2.-4. attempt

Description: The RR connection is established and there is no answer by the network. After timeout T3210 the connection is aborted. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM415

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| | *<===== | * |
| TIMEOUT (17000) | | |
| (2) | RR_ABORT_REQ | |
| | *=====> | * |
| (3) | RR_RELEASE_IND | |
| | *<===== | * |
| (4) | MDL_RELEASE_REQ | |
| | *=====> | * |
| TIMEOUT (10000) | | |
| (5) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====> | * |
| (6) | RR_ESTABLISH_CNF | |
| | *<===== | * |
| TIMEOUT (17000) | | |
| (7) | RR_ABORT_REQ | |
| | *=====> | * |
| (8) | RR_RELEASE_IND | |
| | *<===== | * |
| (9) | MDL_RELEASE_REQ | |
| | *=====> | * |
| TIMEOUT (10000) | | |
| (10) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====> | * |
| (11) | RR_ESTABLISH_CNF | |
| | *<===== | * |
| TIMEOUT (17000) | | |
| (12) | RR_ABORT_REQ | |
| | *=====> | * |
| (13) | RR_RELEASE_IND | |
| | *<===== | * |
| (14) | MDL_RELEASE_REQ | |
| | *=====> | * |
| (15) | RR_SYNC_REQ | |
| | *=====> | * |
| (16) | SIM_MM_UPDATE_REQ | |
| | *<===== | * |
| (17) | MMR_NREG_IND | |
| | *<===== | * |

Parametrization

| | Primitive | Parameter | Value |
|------|---|--|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_ABORT_REQ abcs | ABCS_NORM | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |
| (6) | RR_ESTABLISH_CNF param | NOT_USED | |
| (7) | RR_ABORT_REQ abcs | ABCS_NORM | |
| (8) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (10) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |

| | | |
|------|---|---|
| (11) | RR_ESTABLISH_CNF param | NOT_USED |
| (12) | RR_ABORT_REQ abcs | ABCS_NORM |
| (13) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (14) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (15) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (16) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (17) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_RC_NONE |

| | | | |
|----------|----------|----|-------------------------|
| History: | 04.05.99 | LE | Initial |
| | 27.04.01 | HM | Changed abort behaviour |

4.19.18 MM417: Normal Service, T3211, RR connection failure

Description: The RR connection is established and released before receiving an answer by the network due to a radio link failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM403

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_ABORT_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |

Parametrization

| Primitive | Parameter | Value |
|---|-----------|--|
| (1) RR_ESTABLISH_CNF param | | NOT_USED |
| (2) RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 |
| (3) MDL_RELEASE_REQ ch_type sapi | | NOT_PRESENT_8BIT SAPI_0 |
| (4) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |

History: 04.05.99 LE Initial

4.19.19 MM418: Normal Service, T3211, RR Connection Failure, 2.-4. attempt

Description: The RR connection is established and released before receiving an answer by the network due to a radio link failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM417

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_ABORT_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (5) | RR_ESTABLISH_CNF | |
| (5) | RR_ABORT_IND | |
| (6) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (7) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (8) | RR_ESTABLISH_CNF | |
| (9) | RR_ABORT_IND | |
| (10) | MDL_RELEASE_REQ | |
| (11) | RR_SYNC_REQ | |
| (12) | SIM_MM_UPDATE_REQ | |

Parametrization

| Primitive | Parameter | Value |
|--|---|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_ABORT_IND op abcs plmn_avail plmn | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED | |

| | | |
|------|------------------|-------------------------|
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (3) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (4) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (5) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (6) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (7) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (8) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (9) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (10) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |

| | | |
|------|-------------------|-----------------------------|
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |

History: 04.05.99 LE Initial

4.19.20 MM419: Normal Service, T3211, RR Connection Failure

Description: The RR connection is established and released before receiving an answer by the network due to a radio link failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM406

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_ABORT_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |

Parametrization

| Primitive | Parameter | Value |
|---|-----------|--|
| (1) RR_ESTABLISH_CNF param | | NOT_USED |
| (2) RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 |
| (3) MDL_RELEASE_REQ ch_type sapi | | NOT_PRESENT_8BIT SAPI_0 |
| (4) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |

History: 04.05.99 LE Initial

4.19.21 MM420: Normal Service, T3211, RR Connection Failure, 2.-4. attempt

Description: The RR connection is established and released before receiving an answer by the network due to a radio link failure. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM419

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| (2) | RR_ABORT_IND | |
| (3) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (5) | RR_ESTABLISH_CNF | |
| (6) | RR_ABORT_IND | |
| (7) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (8) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (9) | RR_ESTABLISH_CNF | |
| (10) | RR_ABORT_IND | |
| (11) | MDL_RELEASE_REQ | |
| (12) | RR_SYNC_REQ | |
| (13) | SIM_MM_UPDATE_REQ | |

Parametrization

| Primitive | Parameter | Value |
|--|-----------|---|
| (1) RR_ESTABLISH_CNF param | | NOT_USED |
| (2) RR_ABORT_IND op abcs plmn_avail plmn | | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED |

| | | |
|------|------------------|-------------------------|
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (3) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (4) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (5) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (6) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (7) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (8) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (9) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (10) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |

| | | |
|------|-------------------|-----------------------------|
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |

History: 04.05.99 LE Initial

4.19.22 MM421: Normal Service, T3211, Random Access Failure

Description: An Random Access Failure occurs. After timeout T3213 the next attempt is started which fails with the same cause. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM403

| MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------------|-------|
| (1) | RR_RELEASE_IND | |
| | *<===== | |
| (2) | MDL_RELEASE_REQ | |
| | *=====> | |
| TIMEOUT (2000) | | |
| (3) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====> | |
| (4) | RR_RELEASE_IND | |
| | *<===== | |
| (5) | MDL_RELEASE_REQ | |
| | *=====> | |
| TIMEOUT (10000) | | |
| (6) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====> | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|-------------------------|-------|
| (1) RR_RELEASE_IND | | |
| relcs | RELCS_RND_ACC_FAIL | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (2) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (3) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_ATTACH | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

| | | |
|-------|---|--|
| (4) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (5) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |

History: 04.05.99 LE Initial

4.19.23 MM422: Normal Service, T3211, Random Access Failure, 2.-4. attempt

Description: A random access failure occurs. T3213 is started. The next attempt fails due to the same cause. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM421

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_RELEASE_IND | |
| (2) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (3) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (4) | RR_RELEASE_IND | |
| (5) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (6) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (7) | RR_RELEASE_IND | |
| (8) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (9) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (10) | RR_RELEASE_IND | |
| (11) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (12) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (13) | RR_RELEASE_IND | |
| (14) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (15) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (16) | RR_RELEASE_IND | |
| (17) | MDL_RELEASE_REQ | |
| (18) | RR_SYNC_REQ | |

| | | |
|--------|---|--|
| (8) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (9) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (10) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (12) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (13) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (14) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (15) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES |

| | | |
|------|-------------------|------------------------------|
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (16) | RR_RELEASE_IND | |
| | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (17) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (18) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNC_CS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (19) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |

History: 04.05.99 LE Initial

4.19.24 MM423: Normal Service, T3211, Random Access Failure

Description: A random access failure occurs. T3213 is started. After timeout a new attempt is started. The attempt fails due to the same cause. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM406

| MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------------|-------|
| (1) | RR_RELEASE_IND | |
| | *<=====* | |
| (2) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (2000) | | |
| (3) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (4) | RR_RELEASE_IND | |
| | *<=====* | |
| (5) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (10000) | | |
| (6) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|-------------------------|-------|
| (1) RR_RELEASE_IND | | |
| relcs | RELCS_RND_ACC_FAIL | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (2) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (3) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_PERIODIC | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

| | | |
|-------|---|--|
| (4) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (5) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |

History: 04.05.99 LE Initial

4.19.25 MM424: Normal Service, T3211, Random Access Failure, 2.-4. attempt

Description: A random access failure occurs. T3213 is started. The next attempt fails due to the same cause. The update status is UPDATED and the stored LAI is equal to the one received on the BCCH from the current serving cell and the attempt counter is smaller than 4. The MS shall keep the update status to UPDATED, the MM IDLE substate after the RR connection release is NORMAL SERVICE. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered.

Preamble: MM423

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_RELEASE_IND | |
| (2) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (3) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (4) | RR_RELEASE_IND | |
| (5) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (6) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (7) | RR_RELEASE_IND | |
| (8) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (9) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (10) | RR_RELEASE_IND | |
| (11) | MDL_RELEASE_REQ | |
| TIMEOUT (10000) | | |
| (12) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (13) | RR_RELEASE_IND | |
| (14) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (15) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (16) | RR_RELEASE_IND | |
| (17) | MDL_RELEASE_REQ | |
| (18) | RR_SYNC_REQ | |

| | | |
|--------|---|--|
| (8) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (9) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (10) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (12) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (13) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (14) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (15) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES |

| | | |
|------|-------------------|------------------------------|
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (16) | RR_RELEASE_IND | |
| | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (17) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (18) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNC_CS_TMSI_CKSN_KC_INVALID |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (19) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |

History: 04.05.99 LE Initial

4.19.26 MM425: Random access delayed

Description: MM receives a RR-RELEASE indication primitive from RR; Normal Location Updating cannot be carried out because of random access delay. MM issues a MDL-RELEASE request primitive. After T3122 timeout in RR a new attempt is started.

Preamble: MM401

| | MMI / CM / SIM | MM | RR / DL |
|-----------------|----------------|-------------------------|---------|
| (1) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| TIMEOUT (30000) | | | |
| (3) | | RR_SYNC_IND | |
| | | *<=====* | |
| (4) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|-------------------------|-------|
| (1) RR_RELEASE_IND | | |
| relcs | RELCS_RND_ACC_DELAY | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (2) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (3) RR_SYNC_IND | | |
| ciph | NOT_USED | |
| mm_info | NOT_USED | |
| bcch_info | NOT_USED | |
| synccs | SYNCCS_T3122_TIM_OUT | |
| chm | CHM_NOT_PRESENT | |
| (4) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 09.07.97 HK Initial

4.19.27 MM426: Random access barred

Description: MM receives a RR-RELEASE indication primitive from RR; Normal Location Updating cannot be carried out because of access barred. MM issues a MDL-RELEASE request primitive. After access control class changes in RR a new attempt is started.

Preamble: MM401

| | MMI / CM / SIM | MM | RR / DL |
|-----------------|----------------|-------------------------|---------|
| (1) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| TIMEOUT (30000) | | | |
| (3) | | RR_SYNC_IND | |
| | | *<=====* | |
| (4) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|-------------------------|-------|
| (1) RR_RELEASE_IND | | |
| relcs | RELCS_ACCESS_BARRED | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (2) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (3) RR_SYNC_IND | | |
| ciph | NOT_USED | |
| mm_info | NOT_USED | |
| bcch_info | NOT_USED | |
| synccs | SYNCCS_ACC_CLS_CHA | |
| chm | CHM_NOT_PRESENT | |
| (4) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 09.07.97 HK Initial

4.19.28 MM427: Not Updated in Current LA, Start Normal Location Updating

Description: MM receives a SIM-INSERT indication primitive and initiates cell selection by issuing a RR-ACTIVATE request primitive. Successful conclusion of cell selection is signalled by the receipt of a RR-ACTIVATE confirmation primitive. MM forwards the PLMN identification to MMI in the form of a MMR-REG confirmation primitive. A normal location updating is started.

Preamble: MM022

| MMI / CM | MM | RR / DL |
|---------------------------------|-------------------------|---------|
| | | |
| COMMAND (MM CONFIG T3212_CNT=5) | | |
| (1) SIM_MM_INSERT_IND | | |
| | *=====>* | |
| (2) MMR_REG_REQ | | |
| | *=====>* | |
| (3) | RR_ACTIVATE_REQ | |
| | *=====>* | |
| (4) | RR_ACTIVATE_CNF | |
| | *<=====* | |
| (5) MMR_REG_CNF | | |
| | *<=====* | |
| (6) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------------------------|---------------------|--------------|
| (22) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_2 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (23) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (24) RR_ACTIVATE_REQ | | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_ECL | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (25) RR_ACTIVATE_CNF | | |
| op | OP_MODE_SIM | |

| | |
|-----------------------|-------------------------|
| mm_info | MM_INFO_PER |
| cid | CELL_ID_1122 |
| plmn | PLMN_123_33 |
| lac | LAC_2147 |
| power | RF_CLASS_2 |
| gprs_indic | GPRS_NO |
| (26) MMR_REG_CNF | |
| plmn | PLMN_123_33 |
| (27) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti | TI_0 |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_0002 |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |

| | | | |
|----------|----------|----|---------|
| History: | 04.05.99 | LE | Initial |
| | 24.02.00 | HM | Revised |

4.19.29 MM600: Normal Service, T3211, Anite Behaviour

Description: The radio link failure in the preamble is realized by the Anite by simply switching off the BCCH carrier. This leads to a cell reselection problem in RR and a cell selection failure is indicated to MM. RR retries the synchronisation and forwards a RR ACTIVATE IND to MM indicating that it is back to full service.

Preamble: MM406

| | MMI / CM / SIM | MM | RR / DL |
|------|-----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_ABORT_IND | |
| | | *<=====* | |
| (3) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| | TIMEOUT (10000) | | |
| (4) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (5) | | RR_ABORT_IND | |
| | | *<=====* | |
| (6) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (7) | MMR_NREG_IND | | |
| | | *<=====* | |
| | TIMEOUT (20000) | | |
| (8) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (9) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (10) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (11) | | RR_ABORT_IND | |
| | | *<=====* | |
| (12) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| | TIMEOUT (10000) | | |
| (13) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (14) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (15) | | RR_ABORT_IND | |
| | | *<=====* | |
| (16) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| | TIMEOUT (10000) | | |
| (17) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (18) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (19) | | RR_ABORT_IND | |
| | | *<=====* | |
| (20) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (21) | | RR_SYNC_REQ | |
| | | *=====>* | |

```
(22) | SIM_MM_UPDATE_REQ | |
      | *<===== | |
(23) | MMR_NREG_IND | |
      | *<===== | |
      | | |
```

Parametrization

| Primitive | Parameter | Value |
|--|--|-------|
| (45) RR_ESTABLISH_CNF param | NOT_USED | |
| (46) RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 | |
| (47) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (48) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI | |
| (49) RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_SIM_NO_SERV ABCS_CEL_SEL_FAIL NO_PLMN_FOUND NOT_USED NOT_USED RF_CLASS_2 | |
| (50) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (51) MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_NO_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_RC_NONE | |
| (52) RR_ACTIVATE_IND op mm_info cid plmn | OP_MODE_SIM MM_INFO_PER CELL_ID_1122 PLMN_123_33 | |

| | | |
|------|------------------|-------------------------|
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (53) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (54) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (55) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (56) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (57) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (58) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (59) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (60) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |

| | | | |
|-------|-------------------|---|--|
| (61) | RR_ESTABLISH_REQ | estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_PERIODIC CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (62) | RR_ESTABLISH_CNF | param | NOT_USED |
| (63) | RR_ABORT_IND | op abcs plmn_avail plmn rxlevel power | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 |
| (64) | MDL_RELEASE_REQ | ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (65) | RR_SYNC_REQ | op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (66) | SIM_MM_UPDATE_REQ | loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (67) | MMR_NREG_IND | nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 18.06.01 | HM | Revised |

4.20 MM Idle Mode Behaviour (Attempt to Update)

4.20.1 MM428: Attempt to Update, Timeout T3211, LUP Reject Cause #17

Description: The location updating is finished with a location updating reject message and the cause #17 network failure. The update status is NOT UPDATED. The MS shall delete the location information and enter the MM IDLE substate ATTEMPTING TO UPDATE after the RR connection release. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again.

Preamble: MM427

| | MMI/CM/SIM | MM | RR/DL |
|-----|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | | |
| | | *<=====* | |
| | TIMEOUT (10000) | | |
| (7) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|--|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_REJ ti TI_0 rej_cause } | MM DOWNLINK RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT | |

- (5) RR_SYNC_REQ
op NOT_USED
cksnNOT_USED
kcv NOT_USED
tmsi NOT_USED
plmn NOT_USED
lac NOT_USED
synccs SYNCCS_TMSI_CKSN_KC_INVAL
accnNOT_USED
thplmn NOT_USED
- (6) SIM_MM_UPDATE_REQ
loc_info LOC_INFO_123_33_FEFF
bcch_inf NOT_USED
forb_plmn NOT_USED
cksnCKSN_RES
kc KC_DELETED_SIM
cell_identity CELL_ID_1122
- (7) RR_ESTABLISH_REQ
estcs ESTCS_SERV_REQ_BY_MM
sdu
{
component MM
direction UPLINK
pd U_LOC_UPD_REQ
ti TI_0
loc_upd_type LOC_UPD_TYPE_NORMAL
ciph_key_num CIPH_KEY_NUM_RES
loc_area_ident LOC_AREA_ID_123_33_FEFF
mob_class_1 MOB_CLASS_1
mob_id MOB_IDENT_IMSI
}

History: 04.05.99 LE Initial

4.20.2 MM429: Attempt to update, Timeout T3211, LUP Reject Cause, 2.-4. attempt

Description: The location updating is finished with a location updating reject message and the cause #17 network failure. The update status is NOT UPDATED. The MS is in MM IDLE substate ATTEMPTING TO UPDATE after the RR connection release. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again. After the 4. Attempt the MM IDLE substate ATTEMPTING TO UPDATE is entered and no new location updating is triggered.

Preamble: MM428

| | MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| TIMEOUT (10000) | | | |
| (7) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (8) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (9) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (10) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (11) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (12) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (13) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| TIMEOUT (10000) | | | |
| (14) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (15) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (16) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (17) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (18) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (19) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (20) | SIM_MM_UPDATE_REQ | | |

```

    *<=====
(21) |      MMR_NREG_IND      |
    *<=====
TIMEOUT (20000)
    |                      |
    
```

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|---|---|--------------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_REJ ti TI_0 rej_cause } | MM DOWNLINK RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT | |
| (5) | RR_SYNC_REQ op NOT_USED cksnNOT_USED kcv NOT_USED tmsi NOT_USED plmn lac NOT_USED synccs acc NOT_USED thplmn | NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED | |
| (6) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksnCKSN_RES kc KC_DELETED_SIM cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CELL_ID_1122 | |
| (7) | RR_ESTABLISH_REQ estcs sdu { component direction pd U_LOC_UPD_REQ ti TI_0 loc_upd_type | ESTCS_SERV_REQ_BY_MM MM UPLINK LOC_UPD_TYPE_NORMAL | |

| | | |
|------|-------------------|---------------------------|
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (8) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (9) | RR_DATA_IND | |
| | d1 NOT_USED | |
| | d2 NOT_USED | |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd D_LOC_UPD_REJ | |
| | ti TI_0 | |
| | rej_cause | RC_NETWORK_FAILURE |
| | } | |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi SAPI_0 | |
| (12) | RR_SYNC_REQ | |
| | op NOT_USED | |
| | cksn NOT_USED | |
| | kcv NOT_USED | |
| | tmsi NOT_USED | |
| | plmn | NOT_USED |
| | lac NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVAL |
| | acc NOT_USED | |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn CKSN_RES | |
| | kc KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 |
| (14) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd U_LOC_UPD_REQ | |
| | ti TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |

| | | |
|------|--|--|
| | mob_id } | MOB_IDENT_IMSI |
| (15) | RR_ESTABLISH_CNF param | NOT_USED |
| (16) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_REJ ti TI_0 rej_cause } | MM DOWNLINK RC_NETWORK_FAILURE |
| (17) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK |
| (18) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT |
| (19) | RR_SYNC_REQ op NOT_USED cksn NOT_USED kcv NOT_USED tmsi NOT_USED plmn lac NOT_USED synccs acc NOT_USED thplmn | NOT_USED SYNC_CS_TMSI_CKSN_KC_INVALID NOT_USED |
| (20) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn CKSN_RES kc KC_DELETED_SIM cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CELL_ID_1122 |
| (21) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID RC_NETWORK_FAILURE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.3 MM430: Not Updated, Periodic LUP

Description: MM has processed four unsuccessful location updates and stays in the MM idle sub-state ATTEMPTING TO UPDATE. After timeout of the periodic location updating timer a new set of normal location updates is started.

Preamble: MM429

| | | |
|-----------------|-------------------------|-------|
| MMI/CM | MM | RR/DL |
| | | |
| TIMEOUT (55000) | | |
| (1) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------------------|-------------------------|--------------|
| (1) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 04.05.99 LE Initial

4.20.4 MM431: Periodic not updated, Timeout T3211, LUP Reject Cause #17

Description: The MS is not updated. After timeout of T3212 a new attempt is made. The MS remains in ATTEMPTING TO UPDATE state. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again

Preamble: MM430

| | MMI/CM/SIM | MM | RR/DL |
|------|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| | TIMEOUT (10000) | | |
| (7) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (8) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (9) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (10) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (11) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (12) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (13) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| | TIMEOUT (10000) | | |
| (14) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (15) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (16) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (17) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (18) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (19) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (20) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| | TIMEOUT (10000) | | |
| (21) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |

```

(22) | | | *=====>*
      | | | | RR_ESTABLISH_CNF |
      | | | *<=====*
```

```

(23) | | | | RR_DATA_IND |
      | | | | (LOCATION UPDATING REJ) |
      | | | *<=====*
```

```

(24) | | | | RR_RELEASE_IND |
      | | | *<=====*
```

```

(25) | | | | MDL_RELEASE_REQ |
      | | | *=====>*
(26) | | | | RR_SYNC_REQ |
      | | | *=====>*
```

```

(27) | | | SIM_MM_UPDATE_REQ |
      *<=====*
```

```

(28) | | | MMR_NREG_IND |
      *<=====*
```

TIMEOUT (20000)

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--|---|--------------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVAL NOT_USED NOT_USED | |
| (6) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn | LOC_INFO_123_33_FEFF NOT_USED NOT_USED | |

| | | |
|------|-------------------|-----------------------------|
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (7) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (8) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (9) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_REJ |
| | tiTI_0 | |
| | rej_cause | RC_NETWORK_FAILURE |
| | } | |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |

| | | |
|------|--|--|
| (14) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti TI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (15) | RR_ESTABLISH_CNF param | NOT_USED |
| (16) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE |
| (17) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (18) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (19) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNC_CS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (20) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (21) | RR_ESTABLISH_REQ estcs sdu { | ESTCS_SERV_REQ_BY_MM |

| | |
|------------------------|-----------------------------|
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti_TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (22) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (23) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_REQ |
| ti_TI_0 | |
| rej_cause | RC_NETWORK_FAILURE |
| } | |
| (24) RR_RELEASE_IND | |
| relcs | RELCS_NORM |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (25) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (26) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (27) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (28) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | RC_NETWORK_FAILURE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.5 MM432: Attempt to Update, Normal, T3211, RR Release before end of proc

Description: The RR connection is established and released before receiving an answer by the network. The MS shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again.

Preamble: MM428

| | MMI/CM/SIM | MM | RR/DL |
|------|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<===== | |
| (2) | | RR_RELEASE_IND | |
| | | *<===== | |
| (3) | | MDL_RELEASE_REQ | |
| | | *=====> | |
| (4) | | RR_SYNC_REQ | |
| | | *=====> | |
| (5) | SIM_MM_UPDATE_REQ | | |
| | *<===== | | |
| | TIMEOUT (10000) | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====> | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<===== | |
| (8) | | RR_RELEASE_IND | |
| | | *<===== | |
| (9) | | MDL_RELEASE_REQ | |
| | | *=====> | |
| (10) | | RR_SYNC_REQ | |
| | | *=====> | |
| (11) | SIM_MM_UPDATE_REQ | | |
| | *<===== | | |
| | TIMEOUT (10000) | | |
| (12) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====> | |
| (13) | | RR_ESTABLISH_CNF | |
| | | *<===== | |
| (14) | | RR_RELEASE_IND | |
| | | *<===== | |
| (15) | | MDL_RELEASE_REQ | |
| | | *=====> | |
| (16) | | RR_SYNC_REQ | |
| | | *=====> | |
| (17) | SIM_MM_UPDATE_REQ | | |
| | *<===== | | |
| (18) | MMR_NREG_IND | | |
| | *<===== | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---------------------------|-----------|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |

| | | |
|------|--|--|
| (2) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (3) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (4) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (5) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti_TI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (7) | RR_ESTABLISH_CNF param | NOT_USED |
| (8) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (10) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID |

| | | |
|------|-------------------|-----------------------------|
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (11) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (12) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti_TL_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (13) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (14) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (15) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (16) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (17) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (18) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.6 MM433: Periodic, Attempt to Update, T3211, RR Release before end of proc

Description: After timeout of the periodic location updating timer a new set of four attempts for normal location updating is started.

Preamble: MM432

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| TIMEOUT (55000) | | |
| (1) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (2) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (3) | RR_RELEASE_IND | |
| | *<=====* | |
| (4) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (5) | RR_SYNC_REQ | |
| | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (7) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (8) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (9) | RR_RELEASE_IND | |
| | *<=====* | |
| (10) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (11) | RR_SYNC_REQ | |
| | *=====>* | |
| (12) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (13) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (14) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (15) | RR_RELEASE_IND | |
| | *<=====* | |
| (16) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (17) | RR_SYNC_REQ | |
| | *=====>* | |
| (18) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (19) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (20) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (21) | RR_RELEASE_IND | |
| | *<=====* | |
| (22) | MDL_RELEASE_REQ | |

| | | |
|------|-------------------|-----------------------------|
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (8) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (9) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (10) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (11) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (12) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (13) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (14) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (15) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |

| | | |
|------|-------------------|-----------------------------|
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (16) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (17) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (18) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (19) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (20) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (21) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (22) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (23) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |

| | | | |
|------|-------------------|----------------|----------------------|
| (24) | SIM_MM_UPDATE_REQ | loc_info | LOC_INFO_123_33_FEFF |
| | | bcch_inf | NOT_USED |
| | | forb_plmn | NOT_USED |
| | | cksn | CKSN_RES |
| | | kc | KC_DELETED_SIM |
| | | cell_identity | CELL_ID_1122 |
| (19) | MMR_NREG_IND | nreg_cs | NREG_LIMITED_SERVICE |
| | | search_running | SEARCH_NOT_RUNNING |
| | | new_forb_plmn | PLMN_NO_ID |
| | | limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.7 MM434: Attempt to Update, Normal, T3211, Timeout T3210

Description: The RR connection is established and no answer receives from the network. After timeout of T3210 the RR connection is aborted. The MS shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again.

Preamble: MM428

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (2) | RR_ABORT_REQ | |
| | *=====>* | |
| (3) | RR_RELEASE_IND | |
| | *<=====* | |
| (4) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (5) | RR_SYNC_REQ | |
| | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (7) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (8) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (9) | RR_ABORT_REQ | |
| | *=====>* | |
| (10) | RR_RELEASE_IND | |
| | *<=====* | |
| (11) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (12) | RR_SYNC_REQ | |
| | *=====>* | |
| (13) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (14) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (15) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (16) | RR_ABORT_REQ | |
| | *=====>* | |
| (17) | RR_RELEASE_IND | |
| | *<=====* | |
| (18) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (19) | RR_SYNC_REQ | |
| | *=====>* | |
| (20) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| (21) | MMR_NREG_IND | |
| | *<=====* | |

Parametrization

| | Primitive | Parameter | Value |
|------|---|--|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_ABORT_REQ abcs | ABCS_NORM | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED | |
| (6) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 | |
| (7) | RR_ESTABLISH_REQ estcs sdu { component direction pd tiTI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI | |
| (8) | RR_ESTABLISH_CNF param | NOT_USED | |
| (9) | RR_ABORT_REQ abcs | ABCS_NORM | |
| (10) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |

| | | |
|------|-------------------|---------------------------|
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVAL |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (14) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (15) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (16) | RR_ABORT_REQ | |
| | abcs | ABCS_NORM |
| (17) | RR_RELEASE_IND | |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (18) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (19) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVAL |
| | accc | NOT_USED |
| | thplmn | NOT_USED |

| | | | |
|------|-------------------|----------------|----------------------|
| (20) | SIM_MM_UPDATE_REQ | loc_info | LOC_INFO_123_33_FEFF |
| | | bcch_inf | NOT_USED |
| | | forb_plmn | NOT_USED |
| | | cksn | CKSN_RES |
| | | kc | KC_DELETED_SIM |
| | | cell_identity | CELL_ID_1122 |
| (21) | MMR_NREG_IND | nreg_cs | NREG_LIMITED_SERVICE |
| | | search_running | SEARCH_NOT_RUNNING |
| | | new_forb_plmn | PLMN_NO_ID |
| | | limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|---------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 27.04.01 | HM | Change of abort behaviour |

4.20.8 MM435: Periodic, Attempt to Update, T3211, Timeout T3210

Description: After timeout of the periodic location updating timer a new set of four attempts for normal location updating is started.

Preamble: MM434

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| TIMEOUT (55000) | | |
| (1) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (2) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (3) | RR_ABORT_REQ | |
| | *=====>* | |
| (4) | RR_RELEASE_IND | |
| | *<=====* | |
| (5) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (6) | RR_SYNC_REQ | |
| | *=====>* | |
| (7) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (8) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (9) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (10) | RR_ABORT_REQ | |
| | *=====>* | |
| (11) | RR_RELEASE_IND | |
| | *<=====* | |
| (12) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (13) | RR_SYNC_REQ | |
| | *=====>* | |
| (14) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (15) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (16) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| TIMEOUT (17000) | | |
| (17) | RR_ABORT_REQ | |
| | *=====>* | |
| (18) | RR_RELEASE_IND | |
| | *<=====* | |
| (19) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (20) | RR_SYNC_REQ | |
| | *=====>* | |
| (21) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |

```

(22) | | RR_ESTABLISH_REQ |
      | | (LOCATION UPDATING REQ) |
      | | *=====>* |
(23) | | RR_ESTABLISH_CNF |
      | | *<=====* |
TIMEOUT (17000)
(24) | | RR_ABORT_REQ |
      | | *=====>* |
(25) | | RR_RELEASE_IND |
      | | *<=====* |
(26) | | MDL_RELEASE_REQ |
      | | *=====>* |
(27) | | RR_SYNC_REQ |
      | | *=====>* |
(28) | | SIM_MM_UPDATE_REQ |
      | | *<=====* |
(29) | | MMR_NREG_IND |
      | | *<=====* |
      | | | |
    
```

Parametrization

| Primitive | Parameter | Value |
|----------------------|-----------------------------|-------|
| (1) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (2) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (3) RR_ABORT_REQ | | |
| abcs | ABCS_NORM | |
| (4) RR_RELEASE_IND | | |
| relcs | RELCS_ABNORM_UNSPEC | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (5) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (6) RR_SYNC_REQ | | |
| op | NOT_USED | |
| cksn | NOT_USED | |
| kcv | NOT_USED | |
| tmsi | NOT_USED | |
| plmn | NOT_USED | |
| lac | NOT_USED | |
| syncs | SYNCCS_TMSI_CKSN_KC_INVALID | |

| | |
|------------------------|-----------------------------|
| acc | NOT_USED |
| thplmn | NOT_USED |
| (7) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (8) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti | TI_0 |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (9) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (10) RR_ABORT_REQ | |
| abcs | ABCS_NORM |
| (11) RR_RELEASE_IND | |
| relcs | RELCS_ABNORM_UNSPEC |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (12) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (13) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (14) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (15) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |

| | |
|---|--|
| <pre> { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } (16) RR_ESTABLISH_CNF param (17) RR_ABORT_REQ abcs (18) RR_RELEASE_IND relcs sapi gprs_resumption (19) MDL_RELEASE_REQ ch_type sapi (20) RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn (21) SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity (22) RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } (23) RR_ESTABLISH_CNF param </pre> | <pre> MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI NOT_USED ABCS_NORM RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK NOT_PRESENT_8BIT SAPI_0 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI NOT_USED </pre> |
|---|--|

| | | | |
|------|-------------------|--|-----------------------------|
| (24) | RR_ABORT_REQ | | |
| | abcs | | ABCS_NORM |
| (25) | RR_RELEASE_IND | | |
| | relcs | | RELCS_ABNORM_UNSPEC |
| | sapi | | SAPI_0 |
| | gprs_resumption | | GPRS_RESUMPTION_NOT_ACK |
| (26) | MDL_RELEASE_REQ | | |
| | ch_type | | NOT_PRESENT_8BIT |
| | sapi | | SAPI_0 |
| (27) | RR_SYNC_REQ | | |
| | op | | NOT_USED |
| | cksn | | NOT_USED |
| | kcv | | NOT_USED |
| | tmsi | | NOT_USED |
| | plmn | | NOT_USED |
| | lac | | NOT_USED |
| | synccs | | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | | NOT_USED |
| | thplmn | | NOT_USED |
| (28) | SIM_MM_UPDATE_REQ | | |
| | loc_info | | LOC_INFO_123_33_FEFF |
| | bcch_inf | | NOT_USED |
| | forb_plmn | | NOT_USED |
| | cksn | | CKSN_RES |
| | kc | | KC_DELETED_SIM |
| | cell_identity | | CELL_ID_1122 |
| (20) | MMR_NREG_IND | | |
| | nreg_cs | | NREG_LIMITED_SERVICE |
| | search_running | | SEARCH_NOT_RUNNING |
| | new_forb_plmn | | PLMN_NO_ID |
| | limited_cause | | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 27.04.01 | HM | Changed abort behaviour |

4.20.9 MM436: Attempt to Update, Normal, T3211, RR connection failure

Description: The RR connection is established and a radio link failure is detected. The MS shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again.

Preamble: MM428

| | MMI/CM/SIM | MM | RR/DL |
|-----------------|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_ABORT_IND | |
| | | *<=====* | |
| (3) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (4) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (5) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| TIMEOUT (10000) | | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (8) | | RR_ABORT_IND | |
| | | *<=====* | |
| (9) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (10) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (11) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| TIMEOUT (10000) | | | |
| (12) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (13) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (14) | | RR_ABORT_IND | |
| | | *<=====* | |
| (15) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (16) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (17) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (18) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|--------------------------------|------------------|-------|
| (29) RR_ESTABLISH_CNF param | NOT_USED | |
| (30) RR_ABORT_IND op | OP_MODE_TEST_SIM | |

| | | |
|------|-------------------|-----------------------------|
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (31) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (32) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (33) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (34) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (35) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (36) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (37) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (38) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |

| | |
|------------------------|-----------------------------|
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (39) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (40) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti | TI_0 |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (41) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| (42) RR_ABORT_IND | |
| op | OP_MODE_TEST_SIM |
| abcs | ABCS_RAD_LNK_FAIL |
| plmn_avail | NOT_USED |
| plmn | NOT_USED |
| rxlevel | NOT_USED |
| power | RF_CLASS_2 |
| (43) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (44) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (45) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |

| | |
|-------------------|----------------------|
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (46) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.10 MM437: Periodic, Attempt to Update, T3211, RR Connection Failure

Description: After timeout of the periodic location updating timer a new set of four attempts for normal location updating is started.

Preamble: MM436

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| TIMEOUT (55000) | | |
| (1) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (2) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (3) | RR_ABORT_IND | |
| | *<=====* | |
| (4) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (5) | RR_SYNC_REQ | |
| | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (7) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (8) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (9) | RR_ABORT_IND | |
| | *<=====* | |
| (10) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (11) | RR_SYNC_REQ | |
| | *=====>* | |
| (12) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (13) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (14) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (15) | RR_ABORT_IND | |
| | *<=====* | |
| (16) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (17) | RR_SYNC_REQ | |
| | *=====>* | |
| (18) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (19) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (20) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (21) | RR_ABORT_IND | |
| | *<=====* | |
| (22) | MDL_RELEASE_REQ | |
| | *=====>* | |

```

(23) | | | RR_SYNC_REQ | |
      | | | *=====>* | |
(24) | | SIM_MM_UPDATE_REQ | |
      | *<=====* | |
(25) | | MMR_NREG_IND | |
      | *<=====* | |
      | | | | |
    
```

Parametrization

| Primitive | Parameter | Value |
|------------------------|-----------------------------|-------|
| (28) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (29) RR_ESTABLISH_CNF | | |
| param | NOT_USED | |
| (30) RR_ABORT_IND | | |
| op | OP_MODE_TEST_SIM | |
| abcs | ABCS_RAD_LNK_FAIL | |
| plmn_avail | NOT_USED | |
| plmn | NOT_USED | |
| rxlevel | NOT_USED | |
| power | RF_CLASS_2 | |
| (31) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (32) RR_SYNC_REQ | | |
| op | NOT_USED | |
| cksn | NOT_USED | |
| kcv | NOT_USED | |
| tmsi | NOT_USED | |
| plmn | NOT_USED | |
| lac | NOT_USED | |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID | |
| acc | NOT_USED | |
| thplmn | NOT_USED | |
| (33) SIM_MM_UPDATE_REQ | | |
| loc_info | LOC_INFO_123_33_FEFF | |
| bcch_inf | NOT_USED | |
| forb_plmn | NOT_USED | |
| cksn | CKSN_RES | |
| kc | KC_DELETED_SIM | |
| cell_identity | CELL_ID_1122 | |

| | | |
|------|-------------------|-----------------------------|
| (34) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (35) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (36) | RR_ABORT_IND | |
| | op | OP_MODE_TEST_SIM |
| | abcs | ABCS_RAD_LNK_FAIL |
| | plmn_avail | NOT_USED |
| | plmn | NOT_USED |
| | rxlevel | NOT_USED |
| | power | RF_CLASS_2 |
| (37) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (38) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acct | NOT_USED |
| | thplmn | NOT_USED |
| (39) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (40) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |

| | | |
|------|---|--|
| | mob_id } | MOB_IDENT_IMSI |
| (41) | RR_ESTABLISH_CNF param | NOT_USED |
| (42) | RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 |
| (43) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (44) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (45) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (46) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (47) | RR_ESTABLISH_CNF param | NOT_USED |
| (48) | RR_ABORT_IND op abcs plmn_avail plmn rxlevel power | OP_MODE_TEST_SIM ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 |

| | | |
|------|-------------------|-----------------------------|
| (49) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (50) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (51) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (52) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.11 MM438: Attempt to Update, Normal, T3211, RR connection failure

Description: The RR connection establishment fails due to random access failure. After timeout of T3213 a second attempt is started. This attempt fails due to the same failure. The MS shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again.

Preamble: MM428

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| (1) | RR_RELEASE_IND | |
| (2) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (3) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (4) | RR_RELEASE_IND | |
| (5) | MDL_RELEASE_REQ | |
| (6) | RR_SYNC_REQ | |
| (7) | SIM_MM_UPDATE_REQ | |
| TIMEOUT (10000) | | |
| (8) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (9) | RR_RELEASE_IND | |
| (10) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (11) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (12) | RR_RELEASE_IND | |
| (13) | MDL_RELEASE_REQ | |
| (14) | RR_SYNC_REQ | |
| (15) | SIM_MM_UPDATE_REQ | |
| TIMEOUT (10000) | | |
| (16) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (17) | RR_RELEASE_IND | |
| (18) | MDL_RELEASE_REQ | |
| TIMEOUT (2000) | | |
| (19) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (20) | RR_RELEASE_IND | |

```

(21) | | MDL_RELEASE_REQ |
| | *=====>*
(22) | | RR_SYNC_REQ |
| | *=====>*
(23) | | SIM_MM_UPDATE_REQ |
*<=====*
(24) | | MMR_NREG_IND |
*<=====*
TIMEOUT (10000)
| | |
    
```

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------------------------|-----------------------------|--------------|
| (68) RR_RELEASE_IND | | |
| relcs | RELCS_RND_ACC_FAIL | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (69) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (70) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| tiTI_0 | | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (71) RR_RELEASE_IND | | |
| relcs | RELCS_RND_ACC_FAIL | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (72) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (73) RR_SYNC_REQ | | |
| op | NOT_USED | |
| cksn | NOT_USED | |
| kcv | NOT_USED | |
| tmsi | NOT_USED | |
| plmn | NOT_USED | |
| lac | NOT_USED | |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID | |
| acc | NOT_USED | |
| thplmn | NOT_USED | |
| (74) SIM_MM_UPDATE_REQ | | |
| loc_info | LOC_INFO_123_33_FEFF | |
| bcch_inf | NOT_USED | |

| | | |
|------|------------------|-----------------------------|
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (75) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (76) | RR_RELEASE_IND | |
| | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (77) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (78) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (79) | RR_RELEASE_IND | |
| | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (80) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (81) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | syncs | SYNCCS_TMSI_CKSN_KC_INVALID |

| | | |
|------|-------------------|-------------------------|
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (82) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (83) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti_TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (84) | RR_RELEASE_IND | |
| | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (85) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (86) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti_TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (87) | RR_RELEASE_IND | |
| | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (88) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (89) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |

| | |
|------------------------|-----------------------------|
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| accc | NOT_USED |
| thplmn | NOT_USED |
| (90) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (91) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.12 MM439: Periodic, Attempt to Update, T3211, Random Access Failure

Description: After timeout of the periodic location updating timer a new set of four attempts for normal location updating is started.

Preamble: MM438

| MMI/CM/SIM | MM | RR/DL |
|-----------------|---|-------|
| TIMEOUT (55000) | | |
| (1) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |
| | *=====>* | |
| (2) | RR_RELEASE_IND | |
| | *<=====* | |
| (3) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (2000) | | |
| (4) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |
| | *=====>* | |
| (5) | RR_RELEASE_IND | |
| | *<=====* | |
| (6) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (7) | RR_SYNC_REQ | |
| | *=====>* | |
| (8) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (9) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |
| | *=====>* | |
| (10) | RR_RELEASE_IND | |
| | *<=====* | |
| (11) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (2000) | | |
| (12) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |
| | *=====>* | |
| (13) | RR_RELEASE_IND | |
| | *<=====* | |
| (14) | MDL_RELEASE_REQ | |
| | *=====>* | |
| (15) | RR_SYNC_REQ | |
| | *=====>* | |
| (16) | SIM_MM_UPDATE_REQ | |
| | *<=====* | |
| TIMEOUT (10000) | | |
| (17) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |
| | *=====>* | |
| (18) | RR_RELEASE_IND | |
| | *<=====* | |
| (19) | MDL_RELEASE_REQ | |
| | *=====>* | |
| TIMEOUT (2000) | | |
| (20) | RR_ESTABLISH_REQ (LOCATION_UPDATING_REQ) | |
| | *=====>* | |

```

(21) | | RR_RELEASE_IND |
| | *<=====
(22) | | MDL_RELEASE_REQ |
| | *=====>*
(23) | | RR_SYNC_REQ |
| | *=====>*
(24) | SIM_MM_UPDATE_REQ |
| *<=====
TIMEOUT (10000)
(25) | | RR_ESTABLISH_REQ |
| | (LOCATION UPDATING REQ) |
| | *=====>*
(26) | | RR_RELEASE_IND |
| | *<=====
(27) | | MDL_RELEASE_REQ |
| | *=====>*
TIMEOUT (2000)
(28) | | RR_ESTABLISH_REQ |
| | (LOCATION UPDATING REQ) |
| | *=====>*
(29) | | RR_RELEASE_IND |
| | *<=====
(30) | | MDL_RELEASE_REQ |
| | *=====>*
(31) | | RR_SYNC_REQ |
| | *=====>*
(32) | SIM_MM_UPDATE_REQ |
| *<=====
(33) | MMR_NREG_IND |
| *<=====
| |
    
```

Parametrization

| Primitive | Parameter | Value |
|-----------------------|-------------------------|-------|
| (92) RR_ESTABLISH_REQ | ESTCS_SERV_REQ_BY_MM | |
| estcs | | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti_Tl_0 | | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |
| (93) RR_RELEASE_IND | RELCS_RND_ACC_FAIL | |
| relcs | | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (94) MDL_RELEASE_REQ | NOT_PRESENT_8BIT | |
| ch_type | | |
| sapi | SAPI_0 | |

| | | |
|------------------------|--|--|
| (95) RR_ESTABLISH_REQ | estcs sdu { component direction pd ti TI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (96) RR_RELEASE_IND | relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (97) MDL_RELEASE_REQ | ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (98) RR_SYNC_REQ | op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNC_CS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (99) SIM_MM_UPDATE_REQ | loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (100) RR_ESTABLISH_REQ | estcs sdu { component direction pd ti TI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (101) RR_RELEASE_IND | relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |

| | | |
|-------|-------------------|-----------------------------|
| (102) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (103) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (104) | RR_RELEASE_IND | |
| | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (105) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (106) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (107) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (108) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | tiTI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

| | | |
|-------------------------|---|--|
| (109) RR_RELEASE_IND | relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (110) MDL_RELEASE_REQ | ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (111) RR_ESTABLISH_REQ | estcs sdu { component direction pd tiTI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (112) RR_RELEASE_IND | relcs sapi gprs_resumption | RELCS_RND_ACC_FAIL SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (113) MDL_RELEASE_REQ | ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (114) RR_SYNC_REQ | op cksn kcv tmsi plmn lac synccs accc thplmn | NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED NOT_USED |
| (115) SIM_MM_UPDATE_REQ | loc_info bcch_inf forb_plmn cksn kc cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CKSN_RES KC_DELETED_SIM CELL_ID_1122 |
| (116) RR_ESTABLISH_REQ | estcs sdu { component direction pd tiTI_0 loc_upd_type ciph_key_num | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES |

| | |
|-------------------------|-----------------------------|
| loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (117) RR_RELEASE_IND | |
| relcs | RELCS_RND_ACC_FAIL |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (118) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (119) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti_TL_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (120) RR_RELEASE_IND | |
| relcs | RELCS_RND_ACC_FAIL |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (121) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (122) RR_SYNC_REQ | |
| op | NOT_USED |
| cksn | NOT_USED |
| kcv | NOT_USED |
| tmsi | NOT_USED |
| plmn | NOT_USED |
| lac | NOT_USED |
| synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| acc | NOT_USED |
| thplmn | NOT_USED |
| (123) SIM_MM_UPDATE_REQ | |
| loc_info | LOC_INFO_123_33_FEFF |
| bcch_inf | NOT_USED |
| forb_plmn | NOT_USED |
| cksn | CKSN_RES |
| kc | KC_DELETED_SIM |
| cell_identity | CELL_ID_1122 |
| (124) MMR_NREG_IND | |
| nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | MMR_RC_NONE |

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.13 MM440: Random access delayed

Description: MM receives a RR-RELEASE indication primitive from RR; Normal Location Updating cannot be carried out because of random access delay. MM issues a MDL-RELEASE request primitive. After T3122 timeout in RR a new attempt is started.

Preamble: MM427

| MMI / CM / SIM | MM | RR / DL |
|-----------------|---|---------|
| (1) | RR_RELEASE_IND | |
| (2) | MDL_RELEASE_REQ | |
| TIMEOUT (30000) | | |
| (3) | RR_SYNC_IND | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|-------------------------|-------|
| (125) RR_RELEASE_IND | | |
| relcs | RELCS_RND_ACC_DELAY | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (126) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (127) RR_SYNC_IND | | |
| ciph | NOT_USED | |
| mm_info | NOT_USED | |
| bcch_info | NOT_USED | |
| synccs | SYNCCS_T3122_TIM_OUT | |
| chm | CHM_NOT_PRESENT | |
| (128) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti TI_0 | | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_0002 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 09.07.97 HK Initial

4.20.14 MM441: Random access barred

Description: MM receives a RR-RELEASE indication primitive from RR; Normal Location Updating cannot be carried out because of access barred. MM issues a MDL-RELEASE request primitive. After access control class changes in RR a new attempt is started.

Preamble: MM427

| MMI / CM / SIM | MM | RR / DL |
|-----------------|---|---------|
| (1) | RR_RELEASE_IND | |
| (2) | MDL_RELEASE_REQ | |
| TIMEOUT (30000) | | |
| (3) | RR_SYNC_IND | |
| (4) | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|-------------------------|-------|
| (129) RR_RELEASE_IND | | |
| relcs | RELCS_ACCESS_BARRED | |
| sapi | SAPI_0 | |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (130) MDL_RELEASE_REQ | | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (131) RR_SYNC_IND | | |
| ciph | NOT_USED | |
| mm_info | NOT_USED | |
| bcch_info | NOT_USED | |
| synccs | SYNCCS_ACC_CLS_CHA | |
| chm | CHM_NOT_PRESENT | |
| (132) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti TI_0 | | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_0002 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 09.07.97 HK Initial

4.20.15 MM442: Normal Service, IMSI Detach, Power OFF, Est Cnf

Description: MM is in IDLE Normal Service state. It is switched off. An IMSI Detach followed by the deactivation of the lower layer is started.

[=MM445]

Preamble: MM403

| | MMI / CM / SIM | MM | RR / DL |
|------|----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (8) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (9) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (10) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (11) | | RR_DEACTIVATE_REQ | |
| | | *=====>* | |
| (12) | MMR_NREG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |

| | | |
|------|---|--|
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (5) | MMR_NREG_REQ cs | CS_POW_OFF |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti mob_class_1 mob_id } | ESTCS_MOB_ORIG_CAL_BY_SS_SMS MM UPLINK U_IMSI_DETACH_IND TI_0 MOB_CLASS_1 MOB_IDENT_IMSI |
| (7) | RR_ESTABLISH_CNF param | NOT_USED |
| (8) | RR_ABORT_REQ abcs | ABCS_NORM |
| (9) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (10) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (11) | RR_DEACTIVATE_REQ param | NOT_USED |
| (12) | MMR_NREG_CNF cs | CS_POW_OFF |

| | | | |
|----------|----------|----|-------------------------|
| History: | 05.05.99 | LE | Initial |
| | 30.08.00 | HM | Revised |
| | 27.04.01 | HM | Changed T3220 behaviour |

4.20.16 MM443: Normal Service, IMSI Detach, Power OFF, Rel Ind

Description: MM is in IDLE Normal Service state. It is switched off. An IMSI Detach followed by the deactivation of the lower layer is started.

Preamble: MM403

| | MMI/CM/SIM | MM | RR/DL |
|------|--------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (9) | | RR_DEACTIVATE_REQ | |
| | | *=====>* | |
| (10) | MMR_NREG_CNF | | |
| | *<=====* | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | MMR_NREG_REQ cs | CS_POW_OFF | |

| | | | |
|----------|-------------------|------------------------------|---------|
| (6) | RR_ESTABLISH_REQ | ESTCS_MOB_ORIG_CAL_BY_SS_SMS | |
| | estcs | | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti_Tl_0 | | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (7) | RR_RELEASE_IND | RELCS_NORM | |
| | relcs | | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (8) | MDL_RELEASE_REQ | NOT_PRESENT_8BIT | |
| | ch_type | | |
| | sapi | SAPI_0 | |
| (9) | RR_DEACTIVATE_REQ | NOT_USED | |
| | param | | |
| (10) | MMR_NREG_CNF | CS_POW_OFF | |
| | cs | | |
| History: | 05.05.99 | LE | Initial |
| | 30.08.00 | HM | Revised |

4.20.17 MM444: Normal Service, IMSI Detach, Power OFF, Radio Link Failure

Description: MM is in IDLE Normal Service state. It is switched off. An IMSI Detach followed by the deactivation of the lower layer is started.

Preamble: MM403

| | MMI/CM/SIM | MM | RR/DL |
|------|--------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_ABORT_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (9) | | RR_DEACTIVATE_REQ | |
| | | *=====>* | |
| (10) | MMR_NREG_CNF | | |
| | *<=====* | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | MMR_NREG_REQ cs | CS_POW_OFF | |

| | | | |
|----------|---------------------|------------------------------|---------|
| (6) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_MOB_ORIG_CAL_BY_SS_SMS | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti TI_0 | | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (7) | RR_ABORT_IND | | |
| | op OP_MODE_TEST_SIM | | |
| | abcs | ABCS_RAD_LNK_FAIL | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (8) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (9) | RR_DEACTIVATE_REQ | | |
| | param | NOT_USED | |
| (10) | MMR_NREG_CNF | | |
| | cs | CS_POW_OFF | |
| History: | 05.05.99 | LE | Initial |
| | 30.08.00 | HM | Revised |

4.20.18 MM446: Normal Service, IMSI Detach, SIM Remove by SIM, Est Cnf

Description: MM is in IDLE Normal Service state. The SIM manager has detected a SIM Remove. An IMSI Detach is processed. After timeout T3220 in state IMSI DETACH INITIATED; the MS enters the IDLE NO IMSI state.

[=MM449]

Preamble: MM403

| | MMI/CM/SIM | MM | RR/DL |
|------|----------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | SIM_REMOVE_IND | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (8) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (9) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (10) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (11) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (12) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-------|-----------------|--------------------|-------------------------|
| (133) | param | RR_ESTABLISH_CNF | NOT_USED |
| (134) | d1 | RR_DATA_IND | NOT_USED |
| | d2 | | NOT_USED |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_LOC_UPD_REJ | |
| | ti | TI_0 | |
| | rej_cause | RC_NETWORK_FAILURE | |
| | } | | |
| (135) | relcs | RR_RELEASE_IND | RELCS_NORM |
| | sapi | | SAPI_0 |
| | gprs_resumption | | GPRS_RESUMPTION_NOT_ACK |

| | | | |
|----------|---|--|---|
| (136) | ch_type sapi | MDL_RELEASE_REQ NOT_PRESENT_8BIT SAPI_0 | |
| (137) | error | SIM_REMOVE_IND NOT_USED | |
| (138) | estcs sdu { component direction pd ti mob_class_1 mob_id } | RR_ESTABLISH_REQ ESTCS_MOB_ORIG_CAL_BY_SS_SMS MM UPLINK U_IMSI_DETACH_IND TI_0 MOB_CLASS_1 MOB_IDENT_IMSI | |
| (139) | param | RR_ESTABLISH_CNF NOT_USED | |
| (140) | abcs | RR_ABORT_REQ ABCS_NORM | |
| (141) | relcs sapi gprs_resumption | RR_RELEASE_IND RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (142) | ch_type sapi | MDL_RELEASE_REQ NOT_PRESENT_8BIT SAPI_0 | |
| (143) | abcs | RR_ABORT_REQ ABCS_SIM_REM | |
| (144) | nreg_cs search_running new_forb_plmn limited_cause | MMR_NREG_IND NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| History: | 05.05.99 02.03.00 07.01.01 18.04.01 27.04.01 | LE HM HM HM HM | Initial Revised (search_running) Adaption caused by GPRS integration Revised (nreg_cs) Changed behaviour of T3220 |

4.20.19 MM447: Normal Service, IMSI Detach, SIM Remove by SIM, Rel Ind

Description: MM is in IDLE Normal Service state. The SIM manager has detected a SIM Remove. An IMSI Detach is processed. The RR connection establishment fails and the MS enters the IDLE NO IMSI state.

Preamble: MM403

| | MMI / CM / SIM | MM | RR / DL |
|------|----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | SIM_REMOVE_IND | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (9) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (10) | MMR_NREG_IND | | |
| | *<=====* | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (5) | SIM_REMOVE_IND error | NOT_USED | |

| | | | |
|----------|------------------|------------------------------|-------------------------------------|
| (6) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_MOB_ORIG_CAL_BY_SS_SMS | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti TI_0 | | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (7) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (8) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (9) | RR_ABORT_REQ | | |
| | abcs | ABCS_SIM_REM | |
| (10) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_REMOVED | |
| History: | 05.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 07.01.01 | HM | Adaption caused by GPRS integration |
| | 18.04.01 | HM | Revised (nreg_cs) |

4.20.20 MM448: Normal Service, IMSI Detach, SIM Remove by SIM, Radio Link Fail

Description: MM is in IDLE Normal Service state. The SIM manager has detected a SIM Remove. An IMSI Detach is processed. After radio link failure, the MS enters the IDLE NO IMSI state.

Preamble: MM403

| | MMI/CM/SIM | MM | RR/DL |
|------|----------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | SIM_REMOVE_IND | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_ABORT_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (9) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (10) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |

| | | | |
|----------|--|--|---|
| (5) | SIM_REMOVE_IND error | NOT_USED | |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd tiTI_0 mob_class_1 mob_id } (7) | ESTCS_MOB_ORIG_CAL_BY_SS_SMS MM UPLINK U_IMSI_DETACH_IND MOB_CLASS_1 MOB_IDENT_IMSI | |
| | RR_ABORT_IND op OP_MODE_TEST_SIM abcs plmn_avail plmn rxlevel power | ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 | |
| (8) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (9) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (10) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| History: | 05.05.99 02.03.00 07.01.01 18.04.01 | LE HM HM HM | Initial Revised (search_running) Adaption caused by GPRS integration Revised (nreg_cs) |

4.20.21 MM450: Normal Service, IMSI Detach, SIM Remove by MMI, Est Cnf

Description: MM is in IDLE Normal Service state. The MMI requests limited service. An IMSI Detach is processed. After timeout T3220 in state IMSI DETACH INITIATED; the MS enters the IDLE NO IMSI state.

[=MM453]

Preamble: MM403

| | MMI / CM / SIM | MM | RR / DL |
|------|----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (8) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (9) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (10) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (11) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (12) | MMR_NREG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ TI_0 RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |

| | | |
|----------|---|--|
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (5) | MMR_NREG_REQ cs | CS_SIM_REM |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti mob_class_1 mob_id } | ESTCS_MOB_ORIG_CAL_BY_SS_SMS MM UPLINK U_IMSI_DETACH_IND TI_0 MOB_CLASS_1 MOB_IDENT_IMSI |
| (7) | RR_ESTABLISH_CNF param | NOT_USED |
| (8) | RR_ABORT_REQ abcs | ABCS_NORM |
| (9) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (10) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (11) | RR_ABORT_REQ abcs | ABCS_SIM_REM |
| (12) | MMR_NREG_CNF cs | CS_SIM_REM |
| History: | 05.05.99 30.08.00 30.04.01 | LE Initial HM Revised HM Revised |

4.20.22 MM451: Normal Service, IMSI Detach, SIM Remove by MMI, Rel Ind

Description: MM is in IDLE Normal Service state. MMI requests limited service. An IMSI Detach is processed. The RR connection establishment is released by the network and the MS enters the IDLE NO IMSI state.

Preamble: MM403

| | MMI / CM / SIM | MM | RR / DL |
|------|----------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (8) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (9) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (10) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (11) | MMR_NREG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |

| | | | |
|----------|--|--|--------------------|
| (5) | MMR_NREG_REQ cs | CS_SIM_REM | |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd tiTI_0 mob_class_1 mob_id } (7) | ESTCS_MOB_ORIG_CAL_BY_SS_SMS MM UPLINK U_IMSI_DETACH_IND MOB_CLASS_1 MOB_IDENT_IMSI | |
| | RR_ESTABLISH_CNF param | NOT_USED | |
| (8) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (10) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (11) | MMR_NREG_CNF cs | CS_SIM_REM | |
| History: | 05.05.99 30.08.00 | LE HM | Initial Revised |

4.20.23 MM452: Normal Service, IMSI Detach, SIM Remove by MMI, Radio Link Fail

Description: MM is in IDLE Normal Service state. MMI has requested limited service. An IMSI Detach is processed. After radio link failure, the MS enters the IDLE NO IMSI state.

Preamble: MM403

| | MMI/CM/SIM | MM | RR/DL |
|------|--------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (8) | | RR_ABORT_IND | |
| | | *<=====* | |
| (9) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (10) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (11) | MMR_NREG_CNF | | |
| | *<=====* | | |
| | | | |

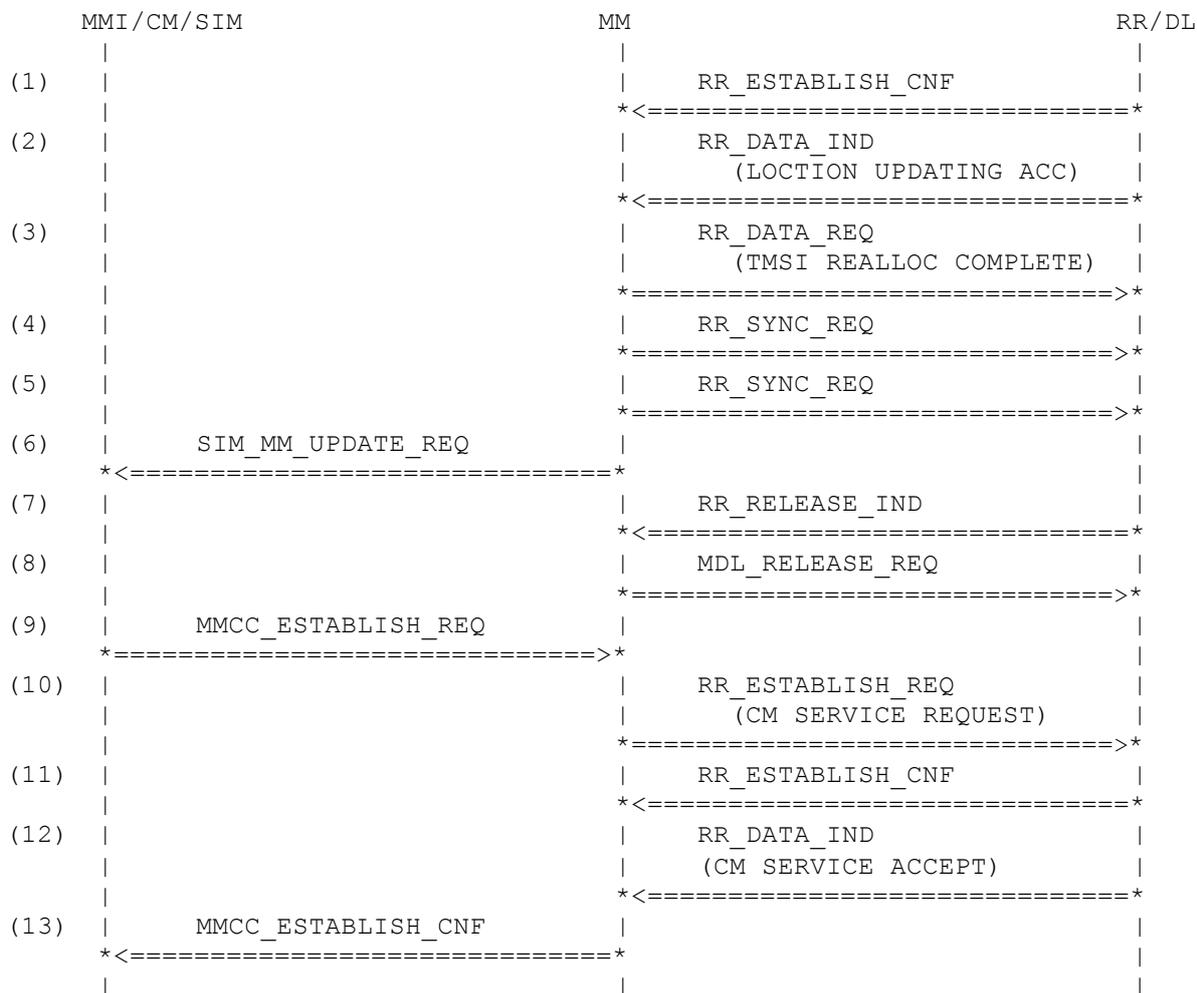
Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 d2 sdu { component direction pd ti TI_0 rej_cause } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_REJ RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |

| | | | |
|----------|--|--|--------------------|
| (5) | MMR_NREG_REQ cs | CS_SIM_REM | |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd tiTI_0 mob_class_1 mob_id } (7) | ESTCS_MOB_ORIG_CAL_BY_SS_SMS MM UPLINK U_IMSI_DETACH_IND MOB_CLASS_1 MOB_IDENT_IMSI | |
| | RR_ESTABLISH_CNF param | NOT_USED | |
| (8) | RR_ABORT_IND op OP_MODE_TEST_SIM abcs plmn_avail plmn rxlevel power | ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 | |
| (9) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (10) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (11) | MMR_NREG_CNF cs | CS_SIM_REM | |
| History: | 05.05.99 30.08.00 | LE HM | Initial Revised |

4.20.24 MM454: IMSI Attach and CM Connection Establishment

Description: MM is switched on, processes an IMSI attach and starts a connection establishment.
Preamble: MM403



Parametrization

| | Primitive | Parameter | Value |
|-----|--|---|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_ACCEPT ti TI_0 loc_area_ident mob_id follow_proceed } | MM DOWNLINK LOC_AREA_ID_123_33_2147 MOB_IDENT_NEW_TMSI NOT_USED | |

- (3) RR_DATA_REQ
 - d1 NOT_USED
 - d2 NOT_USED
 - sdu
 - {
 - component MM
 - direction UPLINK
 - pd U_TMSI_REALLOC_COMP
 - ti TI_0
 - }

- (4) RR_SYNC_REQ
 - op NOT_USED
 - cksn NOT_USED
 - kcv NOT_USED
 - tmsi MOB_ID_NEW_TMSI
 - plmn NOT_USED
 - lac NOT_USED
 - synccs NOT_USED
 - acc NOT_USED
 - thplmn NOT_USED

- (5) RR_SYNC_REQ
 - op NOT_USED
 - cksn NOT_USED
 - kcv NOT_USED
 - tmsi NOT_USED
 - plmn PLMN_123_33
 - lac LAC_2147
 - synccs SYNCCS_LAI_ALLOW
 - acc NOT_USED
 - thplmn NOT_USED

- (6) SIM_MM_UPDATE_REQ
 - loc_info LOC_INFO_UPDATED_5
 - bcch_inf BCCH_INF_1
 - forb_plmn NOT_USED
 - cksn CKSN_RES
 - kc KC_DELETED_SIM
 - cell_identity CELL_ID_1122

- (7) RR_RELEASE_IND
 - relcs RELCS_NORM
 - sapi SAPI_0
 - gprs_resumption GPRS_RESUMPTION_NOT_ACK

- (8) MDL_RELEASE_REQ
 - ch_type NOT_PRESENT_8BIT
 - sapi SAPI_0

- (9) MMCC_ESTABLISH_REQ
 - ti TI_2
 - prio PRIO_NORM_CALL
 - estcs ESTCS_MOB_ORIG_SPCH

- (10) RR_ESTABLISH_REQ
 - estcs ESTCS_MOB_ORIG_SPCH_CAL_BY_CC
 - sdu
 - {
 - component MM
 - direction UPLINK
 - pd U_CM_SERV_REQ

```
ti    TI_0
cm_serv_type      ST_MOC
cip_key_num       CIPH_KEY_NUM_RES
mob_class_2       MOB_CLASS_2
mob_id            MOB_IDENT_NEW_TMSI
}

(11)  RR_ESTABLISH_CNF
      param        NOT_USED

(12)  RR_DATA_IND
      d1           NOT_USED
      d2           NOT_USED
      sdu
      {
      component    MM
      direction    DOWNLINK
      pd           D_CM_SERV_ACCEPT
      ti           TI_0
      }

(13)  MMCC_ESTABLISH_CNF
      ti           TI_2
```

History: 23.04.99 LE Initial

4.20.25 MM455: Connection Active, IMSI Detach, Power OFF, Timeout T3220

Description: MM is in Connection Active state. It is switched off. An IMSI Detach is started. After timeout of T3220 deactivation of the lower layer is started.

Preamble: MM454

| | MMI/CM/SIM | MM | RR/DL |
|----------------|------------------|-------------------|-------|
| (1) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (2) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (3) | | RR_DATA_REQ | |
| | | *=====>* | |
| TIMEOUT (2000) | | | |
| (4) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (5) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (6) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (7) | | RR_DEACTIVATE_REQ | |
| | | *=====>* | |
| (8) | MMR_NREG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|-------|
| (1) | MMR_NREG_REQ | | |
| | cs | CS_POW_OFF | |
| (2) | MMCC_RELEASE_IND | | |
| | ti | TI_2 | |
| | relcs | NOT_USED | |
| (3) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti | TI_0 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_NEW_TMSI | |
| | } | | |
| (4) | RR_ABORT_REQ | | |
| | abcs | ABCS_NORM | |
| (5) | RR_RELEASE_IND | | |
| | relcs | RELCS_ABNORM_UNSPEC | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (6) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |

(7) RR_DEACTIVATE_REQ
param

NOT_USED

(8) MMR_NREG_CNF
cs

CS_POW_OFF

History:

05.05.99
30.08.00
27.04.01

LE
HM
HM

Initial
Revised
Changed T3220 behaviour

4.20.26 MM456: Connection Active, IMSI Detach, Power OFF, Rel Ind

Description: MM is in Connection Active state. It is switched off. An IMSI Detach is started. The network releases the RR-Connection .Deactivation of the lower layer is started.

Preamble: MM454

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------------|-------------------|-------|
| (1) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (2) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (3) | | RR_DATA_REQ | |
| | | *=====>* | |
| (4) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (5) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (6) | | RR_DEACTIVATE_REQ | |
| | | *=====>* | |
| (7) | MMR_NREG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|------|---|--|-------|
| (68) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (69) | MMCC_RELEASE_IND ti relcs | TI_2 NOT_USED | |
| (70) | RR_DATA_REQ d1 d2 sdu { component direction pd ti mob_class_1 mob_id } | NOT_USED NOT_USED MM UPLINK U_IMSI_DETACH_IND TI_0 MOB_CLASS_1 MOB_IDENT_NEW_TMSI | |
| (71) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (72) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (73) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (74) | MMR_NREG_CNF cs | CS_POW_OFF | |

| | | | |
|----------|----------|----|---------|
| History: | 05.05.99 | LE | Initial |
| | 30.08.00 | HM | Revised |

4.20.27 MM457: Connection Active, IMSI Detach, Power OFF, Radio Link Failure

Description: MM is in Connection Active state. It is switched off. An IMSI Detach is started. A radio link failure occurs. Deactivation of the lower layer is started.

Preamble: MM454

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------------|-------------------|-------|
| (1) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (2) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (3) | | RR_DATA_REQ | |
| | *=====>* | | |
| (4) | | RR_ABORT_IND | |
| | *<=====* | | |
| (5) | | MDL_RELEASE_REQ | |
| | *=====>* | | |
| (6) | | RR_DEACTIVATE_REQ | |
| | *=====>* | | |
| (7) | MMR_NREG_CNF | | |
| | *<=====* | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|-------------------|--------------------|-------|
| (1) | MMR_NREG_REQ | | |
| | cs | CS_POW_OFF | |
| (2) | MMCC_RELEASE_IND | | |
| | ti TI_2 | | |
| | relcs | NOT_USED | |
| (3) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti TI_0 | | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_NEW_TMSI | |
| | } | | |
| (4) | RR_ABORT_IND | | |
| | op | OP_MODE_TEST_SIM | |
| | abcs | ABCS_RAD_LNK_FAIL | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (5) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (6) | RR_DEACTIVATE_REQ | | |
| | param | NOT_USED | |

| | | | |
|----------|--------------|----|------------|
| (7) | MMR_NREG_CNF | | CS_POW_OFF |
| | cs | | |
| History: | 05.05.99 | LE | Initial |
| | 30.08.00 | HM | Revised |

4.20.28 MM458: Active, IMSI Detach, SIM Remove by SIM, Rel Ind

Description: MM is in active state. The SIM manager has detected a SIM Remove. All CM connections are released. An IMSI Detach is processed. The network releases the RR connection and the MS enters the IDLE NO IMSI state.

Preamble: MM454

| | MMI / CM / SIM | MM | RR / DL |
|-----|------------------|-----------------|---------|
| (1) | SIM_REMOVE_IND | | |
| (2) | MMCC_RELEASE_IND | | |
| (3) | | RR_DATA_REQ | |
| (4) | | RR_RELEASE_IND | |
| (5) | | MDL_RELEASE_REQ | |
| (6) | | RR_ABORT_REQ | |
| (7) | MMR_NREG_IND | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|--|-------|
| (1) | SIM_REMOVE_IND error | NOT_USED | |
| (2) | MMCC_RELEASE_IND ti TI_2 relcs | NOT_USED | |
| (3) | RR_DATA_REQ d1 d2 sdu { component direction pd ti TI_0 mob_class_1 mob_id } | MM UPLINK U_IMSI_DETACH_IND MOB_CLASS_1 MOB_IDENT_NEW_TMSI | |
| (4) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (5) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (6) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (7) | MMR_NREG_IND nreg_cs | NREG_LIMITED_SERVICE | |

| | | | |
|----------|----------------|----|---------------------------------|
| | search_running | | SEARCH_NOT_RUNNING |
| | new_forb_plmn | | PLMN_NO_ID |
| | limited_cause | | MMR_SIM_INVALID_REMOVED |
| History: | 05.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 07.01.01 | HM | Adaption after GPRS integration |

4.20.29 MM459: Active, IMSI Detach, SIM Remove by SIM, Radio Link Fail

Description: MM is in active state. The SIM manager has detected a SIM Remove. All CM connections are released. An IMSI Detach is processed. After radio link failure, the MS enters the IDLE NO IMSI state.

Preamble: MM454

| | MMI / CM / SIM | MM | RR / DL |
|-----|------------------|-----------------|---------|
| (1) | SIM_REMOVE_IND | | |
| (2) | MMCC_RELEASE_IND | | |
| (3) | | RR_DATA_REQ | |
| (4) | | RR_ABORT_IND | |
| (5) | | MDL_RELEASE_REQ | |
| (6) | | RR_ABORT_REQ | |
| (7) | MMR_NREG_IND | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|--|-------|
| (1) | SIM_REMOVE_IND error | NOT_USED | |
| (2) | MMCC_RELEASE_IND ti TI_2 relcs | NOT_USED | |
| (3) | RR_DATA_REQ d1 d2 sdu { component direction pd ti TI_0 mob_class_1 mob_id } | MM UPLINK U_IMSI_DETACH_IND MOB_CLASS_1 MOB_IDENT_NEW_TMSI | |
| (4) | RR_ABORT_IND op OP_MODE_TEST_SIM abcs plmn_avail plmn rxlevel power | ABCS_RAD_LNK_FAIL NOT_USED NOT_USED NOT_USED RF_CLASS_2 | |
| (5) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (6) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |

(7) MMR_NREG_IND
nreg_cs
search_running
new_forb_plmn
limited_cause

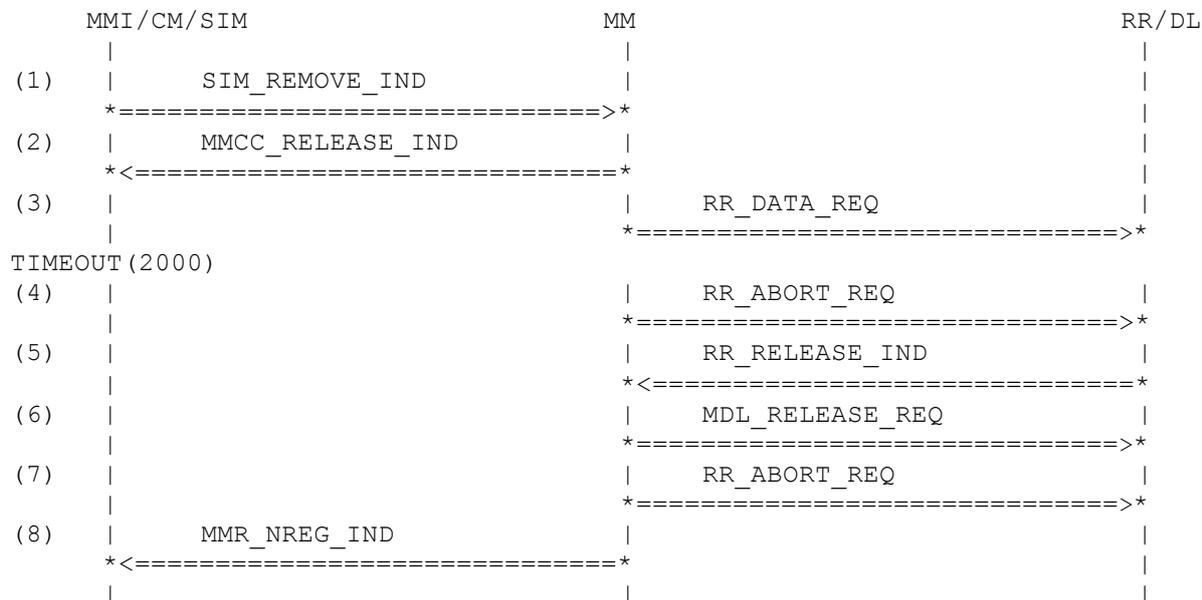
NREG_LIMITED_SERVICE
SEARCH_NOT_RUNNING
PLMN_NO_ID
MMR_SIM_INVALID_REMOVED

| | | | |
|----------|----------|----|---------------------------------|
| History: | 05.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 07.01.01 | HM | Adaption after GPRS integration |

4.20.30 MM460: Active, IMSI Detach, SIM Remove by SIM, T3220 Timeout

Description: MM is in active state. The SIM manager has detected a SIM Remove. All CM connections are released. An IMSI Detach is processed. After timeout T3220, the MS enters the IDLE NO IMSI state.

Preamble: MM454



Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|-------|
| (1) | SIM_REMOVE_IND | | |
| | error | NOT_USED | |
| (2) | MMCC_RELEASE_IND | | |
| | ti TI_2 | | |
| | relcs | NOT_USED | |
| (3) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti TI_0 | | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_NEW_TMSI | |
| | } | | |
| (4) | RR_ABORT_REQ | | |
| | abcs | ABCS_NORM | |
| (5) | RR_RELEASE_IND | | |
| | relcs | RELCS_ABNORM_UNSPEC | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (6) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |

| | | | |
|----------|----------------|-------------------------|---------------------------------|
| (7) | RR_ABORT_REQ | | |
| | abcs | ABCS_SIM_REM | |
| (8) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_REMOVED | |
| History: | 05.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 07.01.01 | HM | Adaption after GPRS integration |
| | 27.04.01 | HM | Changed T3220 behaviour |

4.20.31 MM461: Active, IMSI Detach, SIM Remove by MMI, Rel Ind

Description: MM is in active state. MMI requests limited service. All CM connections are released. An IMSI Detach is processed. The RR connection is released by the network and the MS enters the IDLE NO IMSI state.

Preamble: MM454

| | MMI / CM / SIM | MM | RR / DL |
|-----|------------------|-----------------|---------|
| (1) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (2) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (3) | | RR_DATA_REQ | |
| | | *=====>* | |
| (4) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (5) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (6) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (7) | MMR_NREG_CNF | | |
| | *<=====* | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--|--|-------|
| (1) | MMR_NREG_REQ cs | CS_SIM_REM | |
| (2) | MMCC_RELEASE_IND ti TI_2 relcs | NOT_USED | |
| (3) | RR_DATA_REQ d1 d2 sdu { component direction pd ti TI_0 mob_class_1 mob_id } | MM UPLINK U_IMSI_DETACH_IND MOB_CLASS_1 MOB_IDENT_NEW_TMSI | |
| (4) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_NORM SAPI_0 GPRS_RESUMPTION_NOT_ACK | |
| (5) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (6) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (7) | MMR_NREG_CNF cs | CS_SIM_REM | |

| | | | |
|----------|----------|----|---------|
| History: | 05.05.99 | LE | Initial |
| | 31.08.00 | HM | Revised |

4.20.32 MM462: Active, IMSI Detach, SIM Remove by MMI, Radio Link Fail

Description: MM is in active state. MMI has requested limited service. All CM connections are released. An IMSI Detach is processed. After radio link failure, the MS enters the IDLE NO IMSI state.

Preamble: MM454

| | MMI / CM / SIM | MM | RR / DL |
|-----|------------------|-----------------|---------|
| (1) | MMR_NREG_REQ | | |
| (2) | MMCC_RELEASE_IND | | |
| (3) | | RR_DATA_REQ | |
| (4) | | RR_ABORT_IND | |
| (5) | | MDL_RELEASE_REQ | |
| (6) | | RR_ABORT_REQ | |
| (7) | MMR_NREG_CNF | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---------------------|--------------------|-------|
| (1) | MMR_NREG_REQ | | |
| | cs | CS_SIM_REM | |
| (2) | MMCC_RELEASE_IND | | |
| | ti TI_2 | | |
| | relcs | NOT_USED | |
| (3) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti TI_0 | | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_NEW_TMSI | |
| | } | | |
| (4) | RR_ABORT_IND | | |
| | op OP_MODE_TEST_SIM | | |
| | abcs | ABCS_RAD_LNK_FAIL | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (5) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (6) | RR_ABORT_REQ | | |
| | abcs | ABCS_SIM_REM | |

(7) MMR_NREG_CNF
cs

CS_SIM_REM

History: 05.05.99
31.08.00

LE
HM

Initial
Revised

4.20.33 MM463: Active, IMSI Detach, SIM Remove by MMI, T3220 Timeout

Description: MM is in Active state. MMI has requested limited service. All CM connections are released. An IMSI Detach is processed. After timeout T3220, the MS enters the IDLE NO IMSI state.

Preamble: MM454

| | MMI / CM / SIM | MM | RR / DL |
|-----|------------------|-----------------|---------|
| (1) | MMR_NREG_REQ | | |
| | *=====>* | | |
| (2) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (3) | | RR_DATA_REQ | |
| | *=====>* | | |
| (4) | | RR_ABORT_REQ | |
| | *=====>* | | |
| (5) | | RR_RELEASE_IND | |
| | *<=====* | | |
| (6) | | MDL_RELEASE_REQ | |
| | *=====>* | | |
| (7) | | RR_ABORT_REQ | |
| | *=====>* | | |
| (8) | MMR_NREG_CNF | | |
| | *<=====* | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|-------|
| (1) | MMR_NREG_REQ | | |
| | cs | CS_SIM_REM | |
| (2) | MMCC_RELEASE_IND | | |
| | ti TI_2 | | |
| | relcs | NOT_USED | |
| (3) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IMSI_DETACH_IND | |
| | ti TI_0 | | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_NEW_TMSI | |
| | } | | |
| (4) | RR_ABORT_REQ | | |
| | abcs | ABCS_NORM | |
| (5) | RR_RELEASE_IND | | |
| | relcs | RELCS_ABNORM_UNSPEC | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (6) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |

| | | | |
|----------|--------------|--------------|---------|
| (7) | RR_ABORT_REQ | | |
| | abcs | ABCS_SIM_REM | |
| (8) | MMR_NREG_CNF | | |
| | cs | CS_SIM_REM | |
| History: | 05.05.99 | LE | Initial |
| | 31.08.00 | HM | Revised |
| | 30.04.01 | HM | Revised |

4.20.34 MM464: Attempt to update, change of location area identification

Description: The MS is in attempting to update state. RR indicates a change of location area identification. A normal location updating is started.

Preamble: MM431

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------------|-------------------------|-------|
| (75) RR_ACTIVATE_IND | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_0002 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (76) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 04.05.99 LE Initial

4.20.35 MM465: Attempt to update, change of cell, random access failure

Description: The MS is in attempting to update state. The state was entered due to random access failure. RR indicates a change of cell. A normal location updating is started.

Preamble: MM439

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------------|-------------------------|-------|
| (77) RR_ACTIVATE_IND | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1123 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (78) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 04.05.99 LE Initial

4.20.36 MM466: Attempt to update, change of cell, RR connection failure

Description: The MS is in attempting to update state. The state was entered due to RR connection failure. RR indicates a change of cell. A normal location updating is started.

Preamble: MM438

| | MMI/CM/SIM | MM | RR/DL |
|-----|------------|-------------------------|-------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------------|----------------|-------------------------|
| (79) RR_ACTIVATE_IND | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1123 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (80) RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

History: 04.05.99 LE Initial

4.20.37 MM467: Attempt to update, change of cell, Release before end of proc

Description: The MS is in attempting to update state. The state was entered due to release before end of procedure with cause different to abnormal release, unspecified. RR indicates a change of cell. A normal location updating is started.

Preamble: MM432

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-------------------------|---------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|----------------------|----------------|-------------------------|
| (1) RR_ACTIVATE_IND | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1123 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (2) RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

History: 04.05.99 LE Initial

4.20.38 MM468: Attempt to update, change of cell, Release before end of proc

Description: The MS is in attempting to update state. The state was entered due to release before end of procedure with cause to abnormal release, unspecified. RR indicates a change of cell. A normal location updating is started.

Preamble: MM428

| | MMI/CM/SIM | MM | RR/DL |
|------|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (3) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (4) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (5) | SIM_MM_UPDATE_REQ | | |
| | | *<=====* | |
| | TIMEOUT (10000) | | |
| (6) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (7) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (8) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (9) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (10) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (11) | SIM_MM_UPDATE_REQ | | |
| | | *<=====* | |
| | TIMEOUT (10000) | | |
| (12) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (13) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (14) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (15) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (16) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (17) | SIM_MM_UPDATE_REQ | | |
| | | *<=====* | |
| (18) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| | TIMEOUT (10000) | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---------------------------|-----------|-------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |

| | | |
|------|--|---|
| (2) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK |
| (3) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT |
| (4) | RR_SYNC_REQ op NOT_USED cksnNOT_USED kcv NOT_USED tmsi NOT_USED plmn lac NOT_USED synccs accnNOT_USED thplmn | NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED |
| (5) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksnCKSN_RES kc KC_DELETED_SIM cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CELL_ID_1122 |
| (6) | RR_ESTABLISH_REQ estcs sdu { component direction pd U_LOC_UPD_REQ ti TI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |
| (7) | RR_ESTABLISH_CNF param | NOT_USED |
| (8) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK |
| (9) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT |
| (10) | RR_SYNC_REQ op NOT_USED cksnNOT_USED kcv NOT_USED tmsi NOT_USED plmn lac NOT_USED synccs | NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID |

| | | |
|------|-------------------|-----------------------------|
| | accnNOT_USED | |
| | thplmn | NOT_USED |
| (11) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksnCKSN_RES | |
| | kc KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 |
| (12) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd U_LOC_UPD_REQ | |
| | ti TL_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (13) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (14) | RR_RELEASE_IND | |
| | relcs | RELCS_ABNORM_UNSPEC |
| | sapi SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (15) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi SAPI_0 | |
| (16) | RR_SYNC_REQ | |
| | op NOT_USED | |
| | cksnNOT_USED | |
| | kcv NOT_USED | |
| | tmsi NOT_USED | |
| | plmn | NOT_USED |
| | lac NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | accnNOT_USED | |
| | thplmn | NOT_USED |
| (17) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksnCKSN_RES | |
| | kc KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 |
| (18) | RR_ACTIVATE_IND | |
| | op OP_MODE_SIM | |
| | mm_info | MM_INFO |
| | cid CELL_ID_1123 | |
| | plmn | PLMN_123_33 |
| | lac LAC_2147 | |

power
gprs_indic

RF_CLASS_2
GPRS_NO

History: 04.05.99 LE Initial

4.20.39 MM469: Attempt to update, change of cell, Location Updating Request

Description: The MS is in attempting to update state. The state was entered due to location updating request. with cause different from retry upon entry into a new cell. RR indicates a change of cell. No normal location updating shall be started.

Preamble: MM429

| MMI / CM / SIM | MM | RR / DL |
|----------------|-----------------|---------|
| (1) | | |
| | RR_ACTIVATE_IND | |
| | *<=====* | |
| | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|---------------------|------------------|--------------|
| (1) RR_ACTIVATE_IND | | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1123 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |

History: 04.05.99 LE Initial

4.20.40 MM470: Attempt to update, change of cell, Location updating reject

Description: The MS is in attempting to update state. The state was entered due to location updating reject with the cause retry upon entry into a new cell. RR indicates a change of cell. A normal location updating is started.

Preamble: MM428

```

(1) | | RR_ESTABLISH_CNF |
| | *<=====|
(2) | | RR_DATA_IND |
| | (LOCATION UPDATING REJ) |
| | *<=====|
(3) | | RR_RELEASE_IND |
| | *<=====|
(4) | | MDL_RELEASE_REQ |
| | *=====>|
(5) | | RR_SYNC_REQ |
| | *=====>|
(6) | | SIM_MM_UPDATE_REQ |
| | *<=====|
TIMEOUT (10000)
(7) | | RR_ESTABLISH_REQ |
| | (LOCATION UPDATING REQ) |
| | *=====>|
(8) | | RR_ESTABLISH_CNF |
| | *<=====|
(9) | | RR_DATA_IND |
| | (LOCATION UPDATING REJ) |
| | *<=====|
(10) | | RR_RELEASE_IND |
| | *<=====|
(11) | | MDL_RELEASE_REQ |
| | *=====>|
(12) | | RR_SYNC_REQ |
| | *=====>|
(13) | | SIM_MM_UPDATE_REQ |
| | *<=====|
TIMEOUT (10000)
(14) | | RR_ESTABLISH_REQ |
| | (LOCATION UPDATING REQ) |
| | *=====>|
(15) | | RR_ESTABLISH_CNF |
| | *<=====|
(16) | | RR_DATA_IND |
| | (LOCATION UPDATING REJ) |
| | *<=====|
(17) | | RR_RELEASE_IND |
| | *<=====|
(18) | | MDL_RELEASE_REQ |
| | *=====>|
(19) | | RR_SYNC_REQ |
| | *=====>|
(20) | | SIM_MM_UPDATE_REQ |
| | *<=====|
(21) | | MMR_NREG_IND |
| | *<=====|
TIMEOUT (20000)
(22) | | RR_ACTIVATE_IND |
| | *<=====|
(23) | | RR_ESTABLISH_REQ |
| |
    
```

```

    |                                     | (LOCATION UPDATING REQ) |
    |                                     | *=====>*           |
    |                                     |                         |
    
```

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--|--|--------------|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_REJ ti TI_0 rej_cause } | MM DOWNLINK RC_NETWORK_FAILURE | |
| (3) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK | |
| (4) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT | |
| (5) | RR_SYNC_REQ op NOT_USED cksn NOT_USED kcv NOT_USED tmsi NOT_USED plmn lac NOT_USED synccs acc NOT_USED thplmn | NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED | |
| (6) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn CKSN_RES kc KC_DELETED_SIM cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CELL_ID_1122 | |
| (7) | RR_ESTABLISH_REQ estcs sdu { component direction pd U_LOC_UPD_REQ ti TI_0 loc_upd_type ciph_key_num loc_area_ident | ESTCS_SERV_REQ_BY_MM MM UPLINK LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF | |

| | | |
|------|-------------------|-----------------------------|
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (8) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (9) | RR_DATA_IND | |
| | d1 NOT_USED | |
| | d2 NOT_USED | |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd D_LOC_UPD_REJ | |
| | ti TI_0 | |
| | rej_cause | RC_NETWORK_FAILURE |
| | } | |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi SAPI_0 | |
| (12) | RR_SYNC_REQ | |
| | op NOT_USED | |
| | cksn NOT_USED | |
| | kcv NOT_USED | |
| | tmsi NOT_USED | |
| | plmn | NOT_USED |
| | lac NOT_USED | |
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc NOT_USED | |
| | thplmn | NOT_USED |
| (13) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn CKSN_RES | |
| | kc KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 |
| (14) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd U_LOC_UPD_REQ | |
| | ti TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

| | | |
|------|--|--|
| (15) | RR_ESTABLISH_CNF param | NOT_USED |
| (16) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_REJ ti TI_0 rej_cause } | MM DOWNLINK RC_RETRY_UPON_NEW_CELL |
| (17) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK |
| (18) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT |
| (19) | RR_SYNC_REQ op NOT_USED cksn NOT_USED kcv NOT_USED tmsi NOT_USED plmn lac NOT_USED synccs acc NOT_USED thplmn | NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED |
| (20) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn CKSN_RES kc KC_DELETED_SIM cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CELL_ID_1122 |
| (21) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_RC_RETRY_UPON_NEW_CELL |
| (22) | RR_ACTIVATE_IND op OP_MODE_SIM mm_info cid CELL_ID_1123 plmn lac LAC_2147 power gprs_indic | MM_INFO PLMN_123_33 RF_CLASS_2 GPRS_NO |
| (23) | RR_ESTABLISH_REQ estcs sdu { component | ESTCS_SERV_REQ_BY_MM MM |

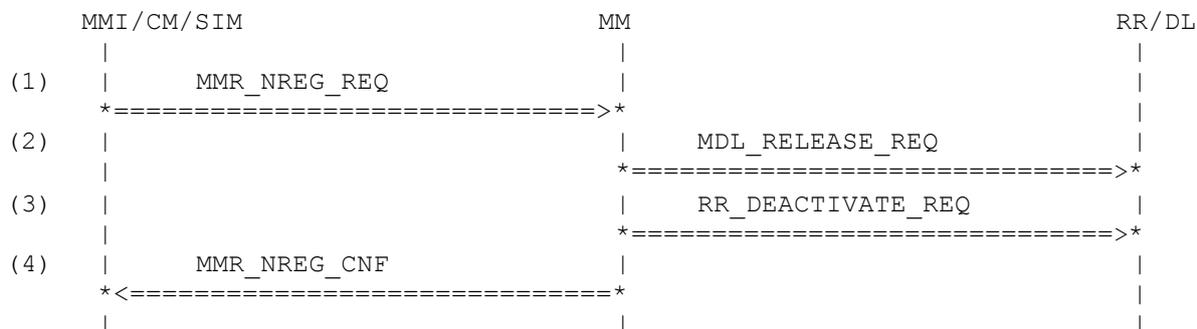
```
direction          UPLINK
pd  U_LOC_UPD_REQ
ti  TL_0
loc_upd_type       LOC_UPD_TYPE_NORMAL
ciph_key_num       CIPH_KEY_NUM_RES
loc_area_ident     LOC_AREA_ID_123_33_FEFF
mob_class_1        MOB_CLASS_1
mob_id             MOB_IDENT_IMSI
}
```

| | | | |
|----------|----------|----|--------------------------|
| History: | 04.05.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.20.41 MM471: Attempt to Update, IMSI Detach, Power OFF

Description: MM is in IDLE Attempting to update state. It is switched off. MM shall not perform IMSI Detach. It shall only deactivate the lower layer.

Preamble: MM429



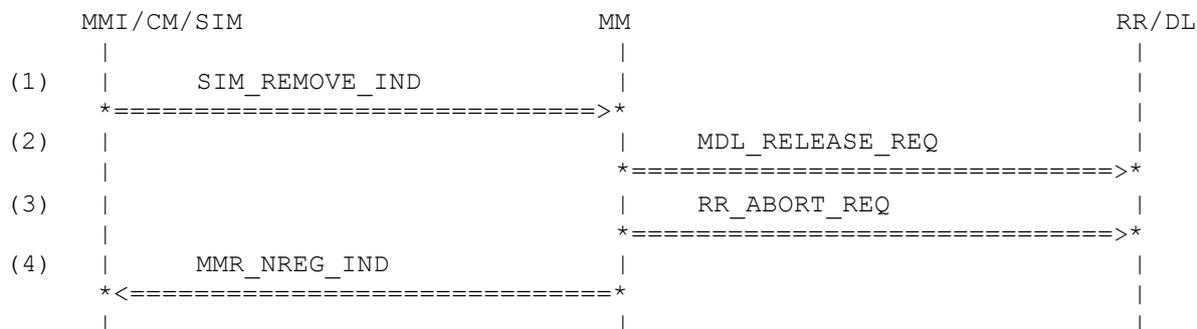
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 05.05.99 | LE | Initial |

4.20.42 MM472: Attempt to Update, IMSI Detach, SIM Remove by SIM

Description: MM is in Attempt to update state. The SIM manager has detected a SIM Remove. MM shall not process IMSI Detach. MM enters the IDLE NO IMSI state.

Preamble: MM429



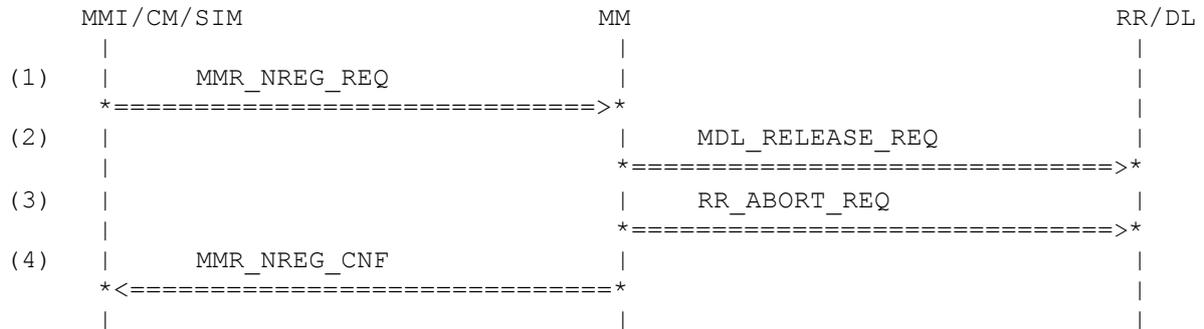
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|---|---|---|
| (11) | SIM_REMOVE_IND error | NOT_USED | |
| (12) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (13) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (14) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| History: | 05.05.99 02.03.00 07.01.01 18.04.01 | LE HM HM HM | Initial Revised (search_running) Adaption after GPRS integration Revised (nreg_cs) |

4.20.43 MM473: Attempt to Update, IMSI Detach, SIM Remove by MMI

Description: MM is in Attempt to Update state. The MMI requests limited service. An IMSI Detach shall not be processed. The MS enters the IDLE NO IMSI state.

Preamble: MM429



Parametrization

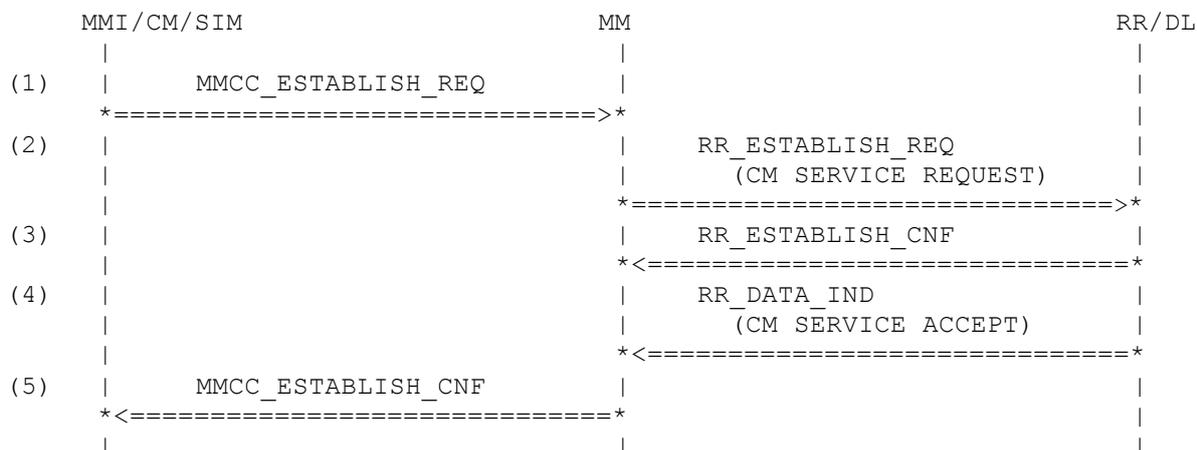
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_SIM_REM | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (4) | MMR_NREG_CNF cs | CS_SIM_REM | |

| | | | |
|----------|----------|----|---------|
| History: | 05.05.99 | LE | Initial |
| | 31.08.00 | HM | Revised |

4.20.44 MM474: Attempt to update, Emergency Call

Description: MM receives an establishment request from CC while in State 19.2 (Idle Attempting to Update). It then sends a CM SERVICE REQUEST message to the network. On receipt of a RR-ESTABLISH confirmation primitive from the network followed by a CM SERVICE ACCEPT message, MM issues as MMCC-ESTABLISH confirmation primitive.

Preamble: MM429



Parametrization

| | Primitive | Parameter | Value |
|-----|--------------------|---------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| | prio | PRIO_EMERG_CALL | |
| | estcs | ESTCS_MOB_ORIG_DATA | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_EMERG_CAL | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_CM_SERV_REQ | |
| | ti | TI_0 | |
| | cm_serv_type | ST_EMERGENCY | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | mob_class_2 | MOB_CLASS_2 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (3) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |
| (4) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |

```
    pd
    ti
    }
(5) MMCC_ESTABLISH_CNF
    ti
History:      09.07.97      HK      Initial
```

4.20.45 MM475: Attempt to update, CM connection request (I)

Description: MM receives a MMCC-ESTABLISH request primitive from CC in attempting to update state. This is a trigger to start location updating (with follow on request). MM stores the connection request until Location Updating has been completed. The location updating fails. After timeout in CC the connection attempt is cleared. In the next attempt the follow on request bit shall be cleared.

Preamble: MM429

| | MMI / CM / SIM | MM | RR / DL |
|------|--------------------|-------------------------|---------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | *=====>* | | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (3) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (4) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (5) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (6) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (7) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (8) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (9) | MMCC_RELEASE_REQ | | |
| | *=====>* | | |
| | TIMEOUT (10000) | | |
| (10) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|--------------------|-------------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_4 | |
| | prio | PRIO_NORM_CALL | |
| | estcs | ESTCS_MOB_ORIG_SPCH | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd U_LOC_UPD_REQ | | |
| | ti TI_0 | | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

| | | |
|------|--|---|
| (3) | RR_ESTABLISH_CNF param | NOT_USED |
| (4) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_REJ ti TI_0 rej_cause } | MM DOWNLINK RC_NETWORK_FAILURE |
| (5) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK |
| (6) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT |
| (7) | RR_SYNC_REQ op NOT_USED cksnNOT_USED kcv NOT_USED tmsi NOT_USED plmn lac NOT_USED synccs accnNOT_USED thplmn | NOT_USED SYNCCS_TMSI_CKSN_KC_INVALID NOT_USED |
| (8) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksnCKSN_RES kc KC_DELETED_SIM cell_identity | LOC_INFO_123_33_FEFF NOT_USED NOT_USED CELL_ID_1122 |
| (9) | MMCC_RELEASE_REQ ti | TI_4 |
| (10) | RR_ESTABLISH_REQ estcs sdu { component direction pd U_LOC_UPD_REQ ti TI_0 loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK LOC_UPD_TYPE_NORMAL CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_FEFF MOB_CLASS_1 MOB_IDENT_IMSI |

History: 15.09.97 DL Initial

4.20.46 MM476: Attempt to update, CM connection request (II)

Description: MM receives a MMCC-ESTABLISH request primitive from CC in attempting to update state. This is a trigger to start location updating (with follow on request). MM stores the connection request until Location Updating has been completed. The location updating fails. After timeout a second attempt is started. The follow on request bit shall be set. The location updating is successful indicating no follow on proceed. MM sends the CM SERVICE REQUEST message after establishment a new RR-connection after the release of the old one.

Preamble: MM429

| | MMI/CM/SIM | MM | RR/DL |
|-----------------|--------------------|---|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| (2) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (3) | | RR_ESTABLISH_CNF | |
| (4) | | RR_DATA_IND (LOCATION UPDATING REJ) | |
| (5) | | RR_RELEASE_IND | |
| (6) | | MDL_RELEASE_REQ | |
| (7) | | RR_SYNC_REQ | |
| (8) | SIM_MM_UPDATE_REQ | | |
| TIMEOUT (10000) | | | |
| (9) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (10) | | RR_ESTABLISH_CNF | |
| (11) | | RR_DATA_IND (LOCATION UPDATING ACC) | |
| (12) | | RR_DATA_REQ (TMSI REALLOC COMPLETE) | |
| (13) | | RR_SYNC_REQ | |
| (14) | | RR_SYNC_REQ | |
| (15) | MMR_REG_CNF | | |
| (16) | SIM_MM_UPDATE_REQ | | |
| (17) | | RR_RELEASE_IND | |
| (18) | | MDL_RELEASE_REQ | |
| (19) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |
| (20) | | RR_ESTABLISH_CNF | |

```

(21) | | RR_DATA_IND | |
      | | (CM SERVICE ACCEPT) | |
      | | *<===== | |
(22) | | MMCC_ESTABLISH_CNF | |
      | | *<===== | |
    
```

Parametrization

| | Primitive | Parameter | Value |
|-----|--------------------|-------------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_4 | |
| | prio | PRIO_NORM_CALL | |
| | estcs | ESTCS_MOB_ORIG_SPCH | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (3) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |
| (4) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_LOC_UPD_REJ | |
| | ti | TI_0 | |
| | rej_cause | RC_NETWORK_FAILURE | |
| | } | | |
| (5) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (6) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (7) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |

| | | |
|------|-------------------|-----------------------------|
| | synccs | SYNCCS_TMSI_CKSN_KC_INVALID |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (8) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_123_33_FEFF |
| | bcch_inf | NOT_USED |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (9) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (10) | | RR_ESTABLISH_CNF |
| | param | NOT_USED |
| (11) | | RR_DATA_IND |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | NOT_USED |
| | } | |
| (12) | | RR_DATA_REQ |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (13) | | RR_SYNC_REQ |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | MOB_ID_NEW_TMSI |
| | plmn | NOT_USED |
| | lac | NOT_USED |

| | | |
|------|-----------------|-------------------------|
| | synccs | NOT_USED |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (14) | | RR_SYNC_REQ |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | synccs | SYNC_CS_LAI_ALLOW |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (15) | | MMR_REG_CNF |
| | plmn | PLMN_123_33 |
| (16) | | SIM_MM_UPDATE_REQ |
| | loc_info | LOC_INFO_UPDATED_5 |
| | bcch_inf | BCCH_INF_1 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (17) | | RR_RELEASE_IND |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (18) | | MDL_RELEASE_REQ |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (19) | | RR_ESTABLISH_REQ |
| | estcs | ESTCS_MOB_ORIG_SPCH |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_CM_SERV_REQ |
| | ti | TI_0 |
| | cm_serv_type | ST_MOC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | mob_class_2 | MOB_CLASS_2 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | } | |
| (20) | | RR_ESTABLISH_CNF |
| | param | NOT_USED |
| (21) | | RR_DATA_IND |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_CM_SERV_ACCEPT |
| | ti | TI_0 |
| | } | |

4.20.47 MM477: Attempt to update, CM connection request (III)

Description: MM receives a MMCC-ESTABLISH request primitive from CC in attempting to update state. This is a trigger to start location updating (with follow on request). MM stores the connection request until Location Updating has been completed. The follow on request bit shall be set. The location updating is successful indicating no follow on proceed. MM doesn't release the connection request, after release of RR and layer 2 connection a RR_ESTABLISH_REQ is sent to establish the call.

Preamble: MM429

| | MMI/CM/SIM | MM | RR/DL |
|------|--------------------|---|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| (2) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (3) | | RR_ESTABLISH_CNF | |
| (4) | | RR_DATA_IND (LOCATION UPDATING ACC) | |
| (5) | | RR_DATA_REQ (TMSI REALLOC COMPLETE) | |
| (6) | | RR_SYNC_REQ | |
| (7) | | RR_SYNC_REQ | |
| (8) | MMR_REG_CNF | | |
| (9) | SIM_MM_UPDATE_REQ | | |
| (10) | | RR_RELEASE_IND | |
| (11) | | MDL_RELEASE_REQ | |
| (12) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|--------------|-------------------------|
| (1) MMCC_ESTABLISH_REQ | ti | TI_4 |
| | prio | PRIO_NORM_CALL |
| | estcs | ESTCS_MOB_ORIG_SPCH |
| (2) RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL |

| | | |
|-----|-------------------|-------------------------|
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (3) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (4) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | NOT_USED |
| | } | |
| (5) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (6) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | MOB_ID_NEW_TMSI |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_USED |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (7) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | synccs | SYNCCS_LAI_ALLOW |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (8) | MMR_REG_CNF | |
| | plmn | PLMN_123_33 |
| (9) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_5 |
| | bcch_inf | BCCH_INF_1 |

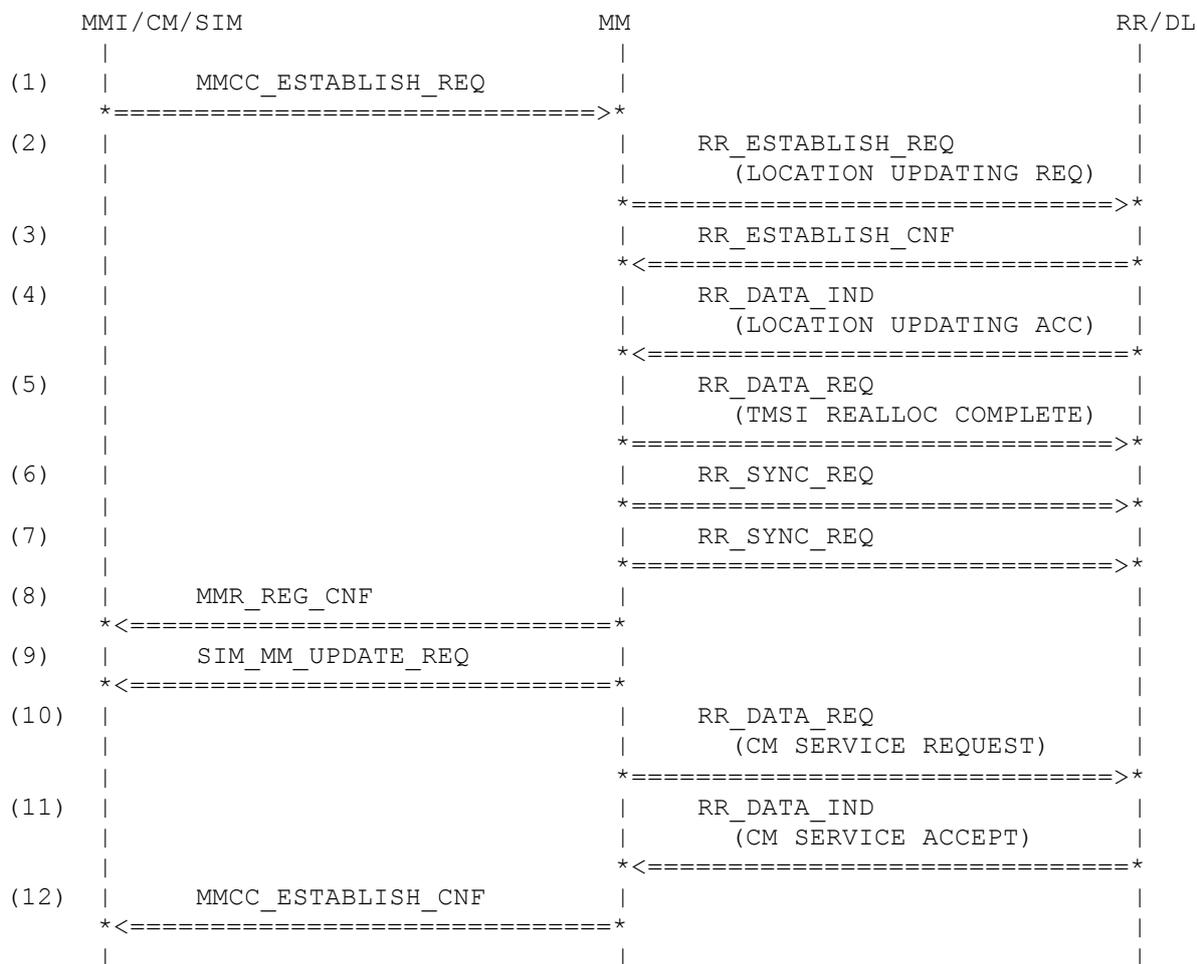
| | | |
|------|-----------------|-------------------------------|
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (10) | | RR_RELEASE_IND |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | | MDL_RELEASE_REQ |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | | RR_ESTABLISH_REQ |
| | estcs | ESTCS_MOB_ORIG_SPCH_CAL_BY_CC |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_CM_SERV_REQ |
| | ti | TI_0 |
| | cm_serv_type | ST_MOC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | mob_class_2 | MOB_CLASS_2 |
| | mob_id | MOB_IDENT_TMSI |
| | } | |

| | | | |
|----------|----------|----|---------|
| History: | 15.09.97 | DL | Initial |
| | 16.02.00 | HM | Revised |

4.20.48 MM478: Attempt to update, CM connection request (IV)

Description: MM receives a MMCC-ESTABLISH request primitive from CC in attempting to update state. This is a trigger to start location updating (with follow on request). MM stores the connection request until Location Updating has been completed. The follow on request shall be set. The location updating is successful indicating follow on proceed. MM sends the CM SERVICE REQUEST on the existing RR-connection.

Preamble: MM429



Parametrization

| Primitive | Parameter | Value |
|------------------------|--------------|-------------------------|
| (1) MMCC_ESTABLISH_REQ | ti | TI_4 |
| | prio | PRIO_NORM_CALL |
| | estcs | ESTCS_MOB_ORIG_SPCH |
| (2) RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | { |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL |

| | | |
|-----|-------------------|-------------------------|
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_FEFF |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (3) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (4) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | TRUE |
| | } | |
| (5) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (6) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | MOB_ID_NEW_TMSI |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_USED |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (7) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | synccs | SYNCCS_LAI_ALLOW |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (8) | MMR_REG_CNF | |
| | plmn | PLMN_123_33 |
| (9) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_5 |
| | bcch_inf | BCCH_INF_1 |

| | | |
|------|---------------|--------------------|
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (10) | | RR_DATA_REQ |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_CM_SERV_REQ |
| | ti | TI_0 |
| | cm_serv_type | ST_MOC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | mob_class_2 | MOB_CLASS_2 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | } | |
| (11) | | RR_DATA_IND |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_CM_SERV_ACCEPT |
| | ti | TI_0 |
| | } | |
| (12) | | MMCC_ESTABLISH_CNF |
| | ti | TI_4 |

History: 15.09.97 DL Initial

4.21 MM Idle Mode Behaviour (Limited Service)

4.21.1 MM479: Limited Service State

Description: MM receives a SIM-INSERT indication primitive and initiates cell selection by issuing a RR-ACTIVATE request primitive. RR indicates only limited service. The periodic location updating timer shall not be started.

Preamble: MM022

| MMI / CM | MM | RR / DL |
|---------------------------------|-----------------|---------|
| | | |
| COMMAND (MM CONFIG T3212_CNT=6) | | |
| (1) SIM_MM_INSERT_IND | | |
| *=====>* | | |
| (2) MMR_REG_REQ | | |
| *=====>* | | |
| (3) | RR_ACTIVATE_REQ | |
| | *=====>* | |
| (4) | RR_ACTIVATE_CNF | |
| | *<=====* | |
| (5) MMR_NREG_IND | | |
| *<=====* | | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------------|----------------------|-------|
| (1) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (2) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |
| (3) RR_ACTIVATE_REQ | | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_ECL | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (4) RR_ACTIVATE_CNF | | |
| op | OP_MODE_SIM_LIM_SERV | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_44 | |

| | | | |
|----------|----------------|----------------------|--------------------------|
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (5) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| History: | 04.05.99 | LE | Initial |
| | 24.02.00 | HM | Revised |
| | 02.03.00 | HM | Revised (search_running) |

4.21.2 MM480: Limited, not perform Periodic LUP

Description: The testcase waits 70 seconds. If the periodic LUP timer is started in the preamble, the testcase will fail, else MM has the expected behaviour. T3212 is decreased to 60 seconds by a dynamic config.

Preamble: MM479

| | | |
|-----------------|----|---------|
| MMI / CM | MM | RR / DL |
| | | |
| TIMEOUT (70000) | | |
| | | |

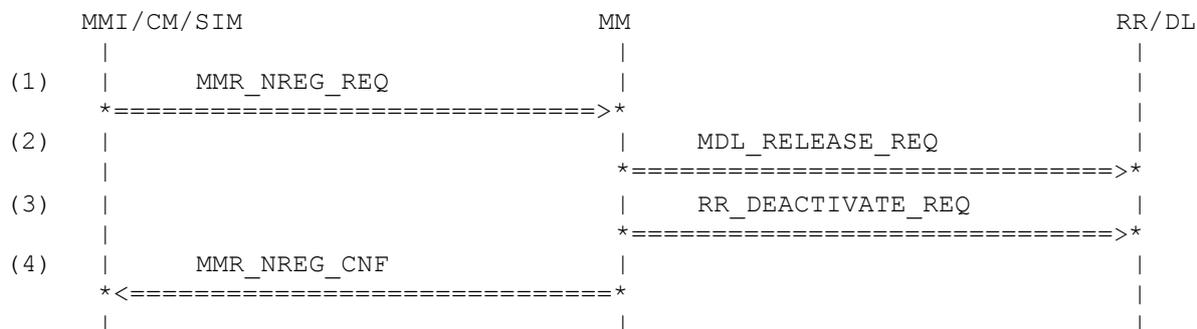
Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> | |
|------------------|------------------|--------------|---------|
| History: | 09.06.99 | LE | Initial |

4.21.3 MM481: Limited, IMSI Detach, Power OFF

Description: MM is in IDLE limited service state. It is switched off. MM shall not perform IMSI Detach. It shall only deactivate the lower layer.

Preamble: MM479



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 09.06.99 | LE | Initial |

4.21.4 MM482: Limited, IMSI Detach, SIM Remove by SIM

Description: MM is in Limited service state. The SIM manager has detected a SIM Remove. MM shall not process IMSI Detach. MM enters the IDLE NO IMSI state.

Preamble: MM479

| | MMI/CM/SIM | MM | RR/DL |
|-----|----------------|-----------------|-------|
| (1) | SIM_REMOVE_IND | | |
| (2) | | MDL_RELEASE_REQ | |
| (3) | | RR_ABORT_REQ | |
| (4) | MMR_NREG_IND | | |

Parametrization

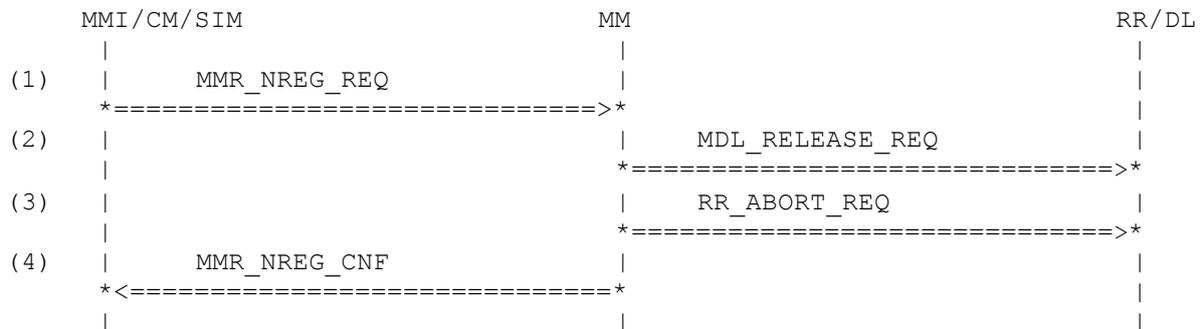
| | Primitive | Parameter | Value |
|-----|---|---|-------|
| (1) | SIM_REMOVE_IND error | NOT_USED | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (4) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |

| History: | Version | Author | Description |
|----------|----------|--------|---------------------------------|
| | 09.06.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |
| | 07.01.01 | HM | Adaption after GPRS integration |

4.21.5 MM483: Limited, IMSI Detach, SIM Remove by MMI

Description: MM is in Limited service state. The MMI requests limited service. An IMSI Detach shall not be processed. The MS enters the IDLE NO IMSI state.

Preamble: MM479



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_SIM_REM | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (4) | MMR_NREG_CNF cs | CS_SIM_REM | |

| | | | |
|----------|----------|----|---------|
| History: | 09.06.99 | LE | Initial |
| | 31.08.00 | HM | Revised |

4.21.6 MM484: Limited, Call attempts, Emergency Calls

Description: MM is in idle limited service state. It shall reject all requests from CM entities except emergency calls. First the rejects are tested, then an emergency call. Then the whole sequence is tested again to check coming back in limited service state.

Preamble: MM479

| | MMI/CM/SIM | MM | RR/DL |
|----------------|---------------------|--|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| (2) | MMCC_RELEASE_IND | | |
| (3) | MMSS_ESTABLISH_REQ | | |
| (4) | MMSS_RELEASE_IND | | |
| (5) | MMSMS_ESTABLISH_REQ | | |
| (6) | MMSMS_RELEASE_IND | | |
| (7) | MMCC_ESTABLISH_REQ | | |
| (8) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |
| (9) | | RR_ESTABLISH_CNF | |
| (10) | | RR_DATA_IND (CM SERVICE ACCEPT) | |
| (11) | MMCC_ESTABLISH_CNF | | |
| (12) | MMCC_RELEASE_REQ | | |
| TIMEOUT (5000) | | | |
| (13) | | RR_ABORT_REQ | |
| (14) | | RR_RELEASE_IND | |
| (15) | | MDL_RELEASE_REQ | |
| (16) | MMCC_ESTABLISH_REQ | | |
| (17) | MMCC_RELEASE_IND | | |
| (18) | MMSS_ESTABLISH_REQ | | |
| (19) | MMSS_RELEASE_IND | | |
| (20) | MMSMS_ESTABLISH_REQ | | |
| (21) | MMSMS_RELEASE_IND | | |
| (22) | MMCC_ESTABLISH_REQ | | |
| (23) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |

```

(24) | | RR_ESTABLISH_CNF |
| | *<=====|
(25) | | RR_DATA_IND |
| | (CM SERVICE ACCEPT) |
| | *<=====|
(26) | MMCC_ESTABLISH_CNF |
*<=====|
(27) | MMCC_RELEASE_REQ |
*=====>|
TIMEOUT (5000)
(28) | | RR_ABORT_REQ |
| | *=====>|
(29) | | RR_RELEASE_IND |
| | *<=====|
(30) | | MDL_RELEASE_REQ |
| | *=====>|
| | |
    
```

Parametrization

| | Primitive | Parameter | Value |
|-----|---------------------|-----------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_4 | |
| | prio | PRIO_NORM_CALL | |
| | estcs | ESTCS_MOB_ORIG_SPCH | |
| (2) | MMCC_RELEASE_IND | | |
| | ti | TI_4 | |
| | relcs | RELCS_NO_REGISTRATION | |
| (3) | MMSS_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| (4) | MMSS_RELEASE_IND | | |
| | ti | TI_3 | |
| | relcs | RELCS_NO_REGISTRATION | |
| (5) | MMSMS_ESTABLISH_REQ | | |
| | ti | TI_5 | |
| (6) | MMSMS_RELEASE_IND | | |
| | ti | TI_5 | |
| | relcs | RELCS_NO_REGISTRATION | |
| (7) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| | prio | PRIO_EMERG_CALL | |
| | estcs | ESTCS_MOB_ORIG_DATA | |
| (8) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_EMERG_CAL | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_CM_SERV_REQ | |
| | ti | TI_0 | |
| | cm_serv_type | ST_EMERGENCY | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | mob_class_2 | MOB_CLASS_2 | |

| | | |
|------|---|---|
| | mob_id } | MOB_IDENT_IMSI |
| (9) | RR_ESTABLISH_CNF param | NOT_USED |
| (10) | d1 d2 sdu { component direction pd ti } | RR_DATA_IND NOT_USED NOT_USED MM DOWNLINK D_CM_SERV_ACCEPT TI_0 |
| (11) | ti | MMCC_ESTABLISH_CNF TI_3 |
| (12) | ti | MMCC_RELEASE_REQ TI_3 |
| (13) | abcs | RR_ABORT_REQ ABCS_NORM |
| (14) | relcs sapi gprs_resumption | RR_RELEASE_IND RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (15) | ch_type sapi | MDL_RELEASE_REQ NOT_PRESENT_8BIT SAPI_0 |
| (16) | ti prio estcs | MMCC_ESTABLISH_REQ TI_4 PRIO_NORM_CALL ESTCS_MOB_ORIG_SPCH |
| (17) | ti relcs | MMCC_RELEASE_IND TI_4 RELCS_NO_REGISTRATION |
| (18) | ti | MMSS_ESTABLISH_REQ TI_3 |
| (19) | ti relcs | MMSS_RELEASE_IND TI_3 RELCS_NO_REGISTRATION |
| (20) | ti | MMSMS_ESTABLISH_REQ TI_5 |
| (21) | ti relcs | MMSMS_RELEASE_IND TI_5 RELCS_NO_REGISTRATION |
| (22) | ti prio estcs | MMCC_ESTABLISH_REQ TI_3 PRIO_EMERG_CALL ESTCS_MOB_ORIG_DATA |
| (23) | estcs | RR_ESTABLISH_REQ ESTCS_EMERG_CAL |

| | | | |
|------|-----------------|-------------------------|---------------------|
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_CM_SERV_REQ | |
| | ti | TI_0 | |
| | cm_serv_type | ST_EMERGENCY | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | mob_class_2 | MOB_CLASS_2 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (24) | param | RR_ESTABLISH_CNF | NOT_USED |
| (25) | d1 | RR_DATA_IND | NOT_USED |
| | d2 | RR_DATA_IND | NOT_USED |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_CM_SERV_ACCEPT | |
| | ti | TI_0 | |
| | } | | |
| (26) | ti | MMCC_ESTABLISH_CNF | TI_3 |
| (27) | ti | MMCC_RELEASE_REQ | TI_3 |
| (28) | abcs | RR_ABORT_REQ | ABCS_NORM |
| (29) | relcs | RR_RELEASE_IND | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (30) | ch_type | MDL_RELEASE_REQ | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 | |

| | | | |
|----------|----------|----|---------|
| History: | 09.06.99 | LE | Initial |
| | 26.01.01 | HM | Revised |

4.21.7 MM485: Limited, new cell, new LA, but only limited service

Description: MM is in service state Idle limited service. A.) A new cell is entered. B.) A new location area is entered. RR indicates only limited service. No reaction of MM is expected.

Preamble: MM479

Variants: <A>....

| | MMI / CM | MM | RR / DL |
|---------|--------------|-----------------|---------|
| (1) | | | |
| | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | | |
| | MMR_NREG_IND | | |
| | *<=====* | | |
| TIMEOUT | (10000) | | |
| | | | |

Parametrization

| Primitive | Parameter | Value | |
|---------------------|----------------|----------------------|------------------------------------|
| (1) RR_ACTIVATE_IND | op | OP_MODE_SIM_LIM_SERV | |
| | mm_info | MM_INFO | |
| <A> | cid | CELL_ID_1123 | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_44 | |
| <A> | lac | LAC_0002 | |
| | lac | LAC_0001 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) MMR_NREG_IND | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| History: | 09.06.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running, variants) |

4.21.8 MM487: Limited, new location area, full service

Description: MM is in service state Idle limited service. A new location area is entered. RR indicates full service. MM shall start normal location updating.

Preamble: MM479

| | MMI / CM | MM | RR / DL |
|-----|----------|-------------------------|---------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|------------------|-------------------------|-------|
| (1) | RR_ACTIVATE_IND | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |

History: 09.06.99 LE Initial

4.21.9 MM488: Limited Service, LUP Reject Cause #17

Description: The location updating is finished with a location updating reject message and the cause #17 network failure. The update status is NOT UPDATED and the the MM IDLE substate after the RR connection release is idle attempting to update. The MS shall memorize the location updating type used in the location updating procedure. It shall start timer T3211 when the RR connection is released. When timer T3211 expires the location updating procedure is triggered again with the memorized location updating type.

Preamble: MM487

| | MMI/CM/SIM | MM | RR/DL |
|-----|-------------------|-------------------------|-------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING REJ) | |
| | | *<=====* | |
| (3) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (4) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| | TIMEOUT (10000) | | |
| (7) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|--|--|-------|
| (1) RR_ESTABLISH_CNF param | NOT_USED | |
| (2) RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_REJ ti TI_0 rej_cause } | MM DOWNLINK RC_NETWORK_FAILURE | |
| (3) RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK | |
| (4) MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT | |

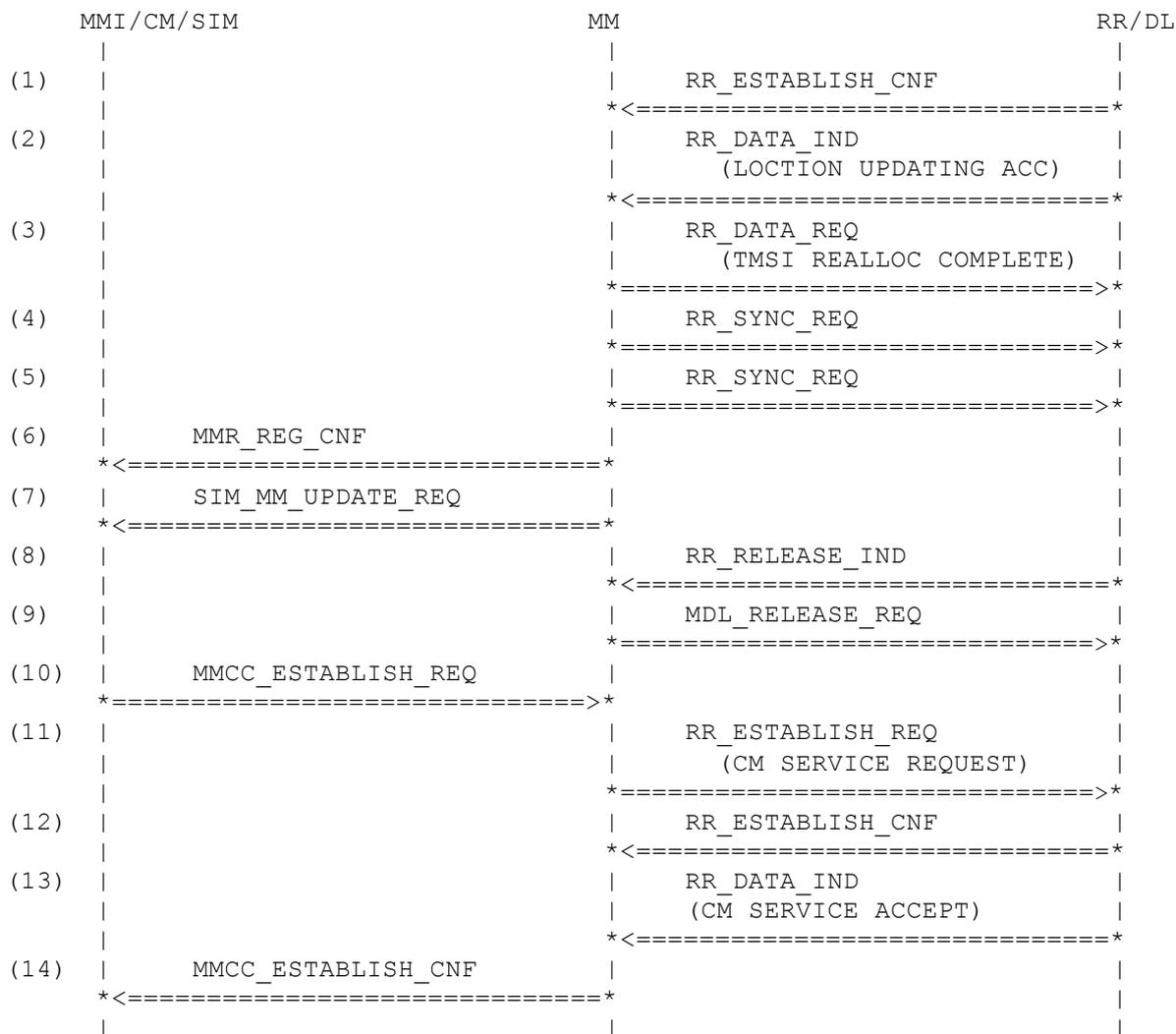
- (5) RR_SYNC_REQ
op NOT_USED
cksnNOT_USED
kcv NOT_USED
tmsi NOT_USED
plmn NOT_USED
lac NOT_USED
synccs SYNCCS_TMSI_CKSN_KC_INVALID
accnNOT_USED
thplmn NOT_USED
- (6) SIM_MM_UPDATE_REQ
loc_info LOC_INFO_123_33_FEFF
bcch_inf NOT_USED
forb_plmn NOT_USED
cksnCKSN_RES
kc KC_DELETED_SIM
cell_identity CELL_ID_1122
- (7) RR_ESTABLISH_REQ
estcs ESTCS_SERV_REQ_BY_MM
sdu
{
component MM
direction UPLINK
pd U_LOC_UPD_REQ
ti TI_0
loc_upd_type LOC_UPD_TYPE_NORMAL
ciph_key_num CIPH_KEY_NUM_RES
loc_area_ident LOC_AREA_ID_123_33_FEFF
mob_class_1 MOB_CLASS_1
mob_id MOB_IDENT_IMSI
}

History: 09.06.99 LE Initial

4.21.10 MM489: Limited Service, Location updating accept

Description: MM is in idle limited service. After cell reselection a location updating is started. A connection establishment is started after successful location updating.

Preamble: MM487



Parametrization

| | Primitive | Parameter | Value |
|-----|---|----------------|---|
| (1) | RR_ESTABLISH_CNF param | NOT_USED | |
| (2) | RR_DATA_IND d1 NOT_USED d2 NOT_USED sdu { component direction pd D_LOC_UPD_ACCEPT ti TI_0 loc_area_ident mob_id | MM DOWNLINK | LOC_AREA_ID_123_33_0002 MOB_IDENT_NEW_TMSI |

| | | |
|------|--|--|
| | follow_proceed } | NOT_USED |
| (3) | RR_DATA_REQ d1 NOT_USED d2 NOT_USED sdu { component direction pd U_TMSI_REALLOC_COMP ti TI_0 } | MM UPLINK |
| (4) | RR_SYNC_REQ op NOT_USED cksn NOT_USED kcv NOT_USED tmsi MOB_ID_NEW_TMSI plmn lac NOT_USED synccs accc NOT_USED thplmn | NOT_USED NOT_USED NOT_USED NOT_USED |
| (5) | RR_SYNC_REQ op NOT_USED cksn NOT_USED kcv NOT_USED tmsi NOT_USED plmn lac LAC_0002 synccs accc NOT_USED thplmn | PLMN_123_33 SYNCCS_LAI_ALLOW NOT_USED |
| (6) | MMR_REG_CNF plmn | PLMN_123_33 |
| (7) | SIM_MM_UPDATE_REQ loc_info bcch_inf forb_plmn cksn CKSN_RES kc KC_DELETED_SIM cell_identity | LOC_INFO_UPDATED_3 BCCH_INF_1 NOT_USED CELL_ID_1122 |
| (8) | RR_RELEASE_IND relcs sapi SAPI_0 gprs_resumption | RELCS_NORM GPRS_RESUMPTION_NOT_ACK |
| (9) | MDL_RELEASE_REQ ch_type sapi SAPI_0 | NOT_PRESENT_8BIT |
| (10) | MMCC_ESTABLISH_REQ ti TI_2 prio PRIO_NORM_CALL estcs | ESTCS_MOB_ORIG_SPCH |
| (11) | RR_ESTABLISH_REQ estcs | ESTCS_MOB_ORIG_SPCH_CAL_BY_CC |

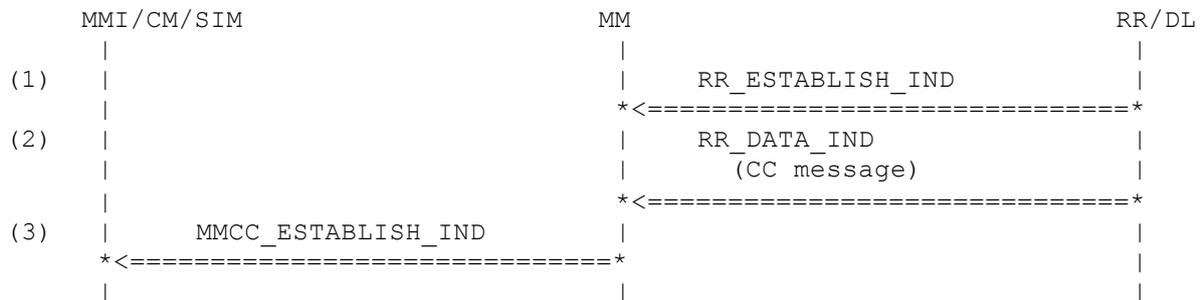
```
sdu
{
  component          MM
  direction          UPLINK
  pd U_CM_SERV_REQ
  ti TI_0
  cm_serv_type       ST_MOC
  ciph_key_num       CIPH_KEY_NUM_RES
  mob_class_2        MOB_CLASS_2
  mob_id              MOB_IDENT_NEW_TMSI
}
(12) RR_ESTABLISH_CNF
param NOT_USED
(13) RR_DATA_IND
d1 NOT_USED
d2 NOT_USED
sdu
{
  component          MM
  direction          DOWNLINK
  pd D_CM_SERV_ACCEPT
  ti TI_0
}
(14) MMCC_ESTABLISH_CNF
ti TI_2
```

History: 09.06.99 LE Initial

4.21.11 MM490: Limited Service, Mobile terminated Connection

Description: MM is in limited service state. RR will be paged. It is checked whether MM starts connection establishment.

Preamble: MM479



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|--------------------|------------------|--------------|
| (1) | RR_ESTABLISH_IND | | |
| | param | NOT_USED | |
| (2) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |
| (3) | MMCC_ESTABLISH_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | CC_MESSAGE | |

History: 09.06.99 LE Initial

4.22 MM Idle Mode Behaviour (No IMSI Service)

4.22.1 MM491: No IMSI State

Description: MM is in state idle no imsi and initiates cell selection by issuing a RR-ACTIVATE request primitive. RR indicates only limited service. The periodic location updating timer shall not be started.

Preamble: MM022

| MMI/CM | MM | RR/DL |
|---------------------------------|-----------------|-------|
| | | |
| COMMAND (MM CONFIG T3212_CNT=6) | | |
| (1) MMR_REG_REQ | | |
| *=====>* | | |
| (2) | RR_ACTIVATE_REQ | |
| | *=====>* | |
| (3) | RR_ACTIVATE_CNF | |
| | *<=====* | |
| (4) MMR_NREG_IND | | |
| *<=====* | | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|---------------------|----------------|-------------------------|
| (1) MMR_REG_REQ | service_mode | SERVICE_MODE_FULL |
| (2) RR_ACTIVATE_REQ | plmn | PLMN_NO_ID |
| | op | OP_MODE_NO_SIM_NO_SERV |
| | cksn | CKSN_RES |
| | kcv | KC_DELETED |
| | acc | ACC_CLASS_0000 |
| | imsi | MOB_ID_NO_ID |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_FF |
| | bcch_info | NOT_USED |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (3) RR_ACTIVATE_CNF | op | OP_MODE_NO_SIM_LIM_SERV |
| | mm_info | MM_INFO_PER |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_44 |
| | lac | LAC_0002 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (4) MMR_NREG_IND | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_NOT_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_SIM_INVALID_NOSIM |

History: 04.05.99 LE Initial
 02.03.00 HM Revised (search_running)

4.22.2 MM492: No lmsi, not perform Periodic LUP

Description: The testcase waits 70 seconds. If the periodic LUP timer is started in the preamble, the testcase will fail, else MM has the expected behaviour. T3212 is decreased to 60 seconds by a dynamic config.

Preamble: MM491

| | | |
|-----------------|----|---------|
| MMI / CM | MM | RR / DL |
| | | |
| TIMEOUT (70000) | | |
| | | |

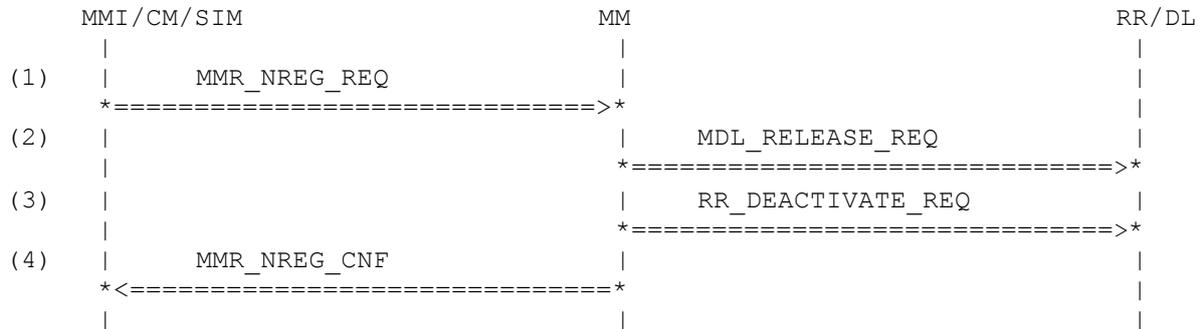
Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> | |
|------------------|------------------|--------------|---------|
| History: | 09.06.99 | LE | Initial |

4.2.2.3 MM493: No IMSI, IMSI Detach, Power OFF

Description: MM is in IDLE No IMSI service state. It is switched off. MM shall not perform IMSI Detach. It shall only deactivate the lower layer.

Preamble: MM491



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------------------------|----------------------------|--------------|
| (145) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (146) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (147) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (148) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 09.06.99 | LE | Initial |

4.22.4 MM494: No IMSI, Call attempts, Emergency Calls

Description: MM is in idle idle no IMSI service state. It shall reject all requests from CM entities except emergency calls. First the rejects are tested, then an emergency call. Then the whole sequence is tested again to check coming back in limited service state.

Preamble: MM491

| | MMI/CM/SIM | MM | RR/DL |
|----------------|---------------------|--|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| (2) | MMCC_RELEASE_IND | | |
| (3) | MMSS_ESTABLISH_REQ | | |
| (4) | MMSS_RELEASE_IND | | |
| (5) | MMSMS_ESTABLISH_REQ | | |
| (6) | MMSMS_RELEASE_IND | | |
| (7) | MMCC_ESTABLISH_REQ | | |
| (8) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |
| (9) | | RR_ESTABLISH_CNF | |
| (10) | | RR_DATA_IND (CM SERVICE ACCEPT) | |
| (11) | MMCC_ESTABLISH_CNF | | |
| (12) | MMCC_RELEASE_REQ | | |
| TIMEOUT (5000) | | | |
| (13) | | RR_ABORT_REQ | |
| (14) | | RR_RELEASE_IND | |
| (15) | | MDL_RELEASE_REQ | |
| (16) | MMCC_ESTABLISH_REQ | | |
| (17) | MMCC_RELEASE_IND | | |
| (18) | MMSS_ESTABLISH_REQ | | |
| (19) | MMSS_RELEASE_IND | | |
| (20) | MMSMS_ESTABLISH_REQ | | |
| (21) | MMSMS_RELEASE_IND | | |
| (22) | MMCC_ESTABLISH_REQ | | |
| (23) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |

```

(24) | | RR_ESTABLISH_CNF |
| | *<=====|
(25) | | RR_DATA_IND |
| | (CM SERVICE ACCEPT) |
| | *<=====|
(26) | MMCC_ESTABLISH_CNF |
*<=====|
(27) | MMCC_RELEASE_REQ |
*=====>|
TIMEOUT (5000)
(28) | | RR_ABORT_REQ |
| | *=====>|
(29) | | RR_RELEASE_IND |
| | *<=====|
(30) | | MDL_RELEASE_REQ |
| | *=====>|
| | |
    
```

Parametrization

| Primitive | Parameter | Value |
|--|-----------------|--|
| (1) MMCC_ESTABLISH_REQ ti prio estcs | TI_4 | PRIO_NORM_CALL ESTCS_MOB_ORIG_SPCH |
| (2) MMCC_RELEASE_IND ti relcs | TI_4 | RELCS_NO_REGISTRATION |
| (3) MMSS_ESTABLISH_REQ ti | TI_3 | |
| (4) MMSS_RELEASE_IND ti relcs | TI_3 | RELCS_NO_REGISTRATION |
| (5) MMSMS_ESTABLISH_REQ ti | TI_5 | |
| (6) MMSMS_RELEASE_IND ti relcs | TI_5 | RELCS_NO_REGISTRATION |
| (7) MMCC_ESTABLISH_REQ ti prio estcs | TI_3 | PRIO_EMERG_CALL ESTCS_MOB_ORIG_DATA |
| (8) RR_ESTABLISH_REQ estcs sdu { component direction pd ti cm_serv_type ciph_key_num mob_class_2 | ESTCS_EMERG_CAL | MM UPLINK U_CM_SERV_REQ TI_0 ST_EMERGENCY CIPH_KEY_NUM_RES MOB_CLASS_2 |

| | | |
|------|---|---|
| | mob_id } | MOB_IDENT_IMEI |
| (9) | RR_ESTABLISH_CNF param | NOT_USED |
| (10) | d1 d2 sdu { component direction pd ti } | RR_DATA_IND NOT_USED NOT_USED MM DOWNLINK D_CM_SERV_ACCEPT TI_0 |
| (11) | ti | MMCC_ESTABLISH_CNF TI_3 |
| (12) | ti | MMCC_RELEASE_REQ TI_3 |
| (13) | abcs | RR_ABORT_REQ ABCS_NORM |
| (14) | relcs sapi gprs_resumption | RR_RELEASE_IND RELCS_ABNORM_UNSPEC SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (15) | ch_type sapi | MDL_RELEASE_REQ NOT_PRESENT_8BIT SAPI_0 |
| (16) | ti prio estcs | MMCC_ESTABLISH_REQ TI_4 PRIO_NORM_CALL ESTCS_MOB_ORIG_SPCH |
| (17) | ti relcs | MMCC_RELEASE_IND TI_4 RELCS_NO_REGISTRATION |
| (18) | ti | MMSS_ESTABLISH_REQ TI_3 |
| (19) | ti relcs | MMSS_RELEASE_IND TI_3 RELCS_NO_REGISTRATION |
| (20) | ti | MMSMS_ESTABLISH_REQ TI_5 |
| (21) | ti relcs | MMSMS_RELEASE_IND TI_5 RELCS_NO_REGISTRATION |
| (22) | ti prio estcs | MMCC_ESTABLISH_REQ TI_3 PRIO_EMERG_CALL ESTCS_MOB_ORIG_DATA |
| (23) | estcs | RR_ESTABLISH_REQ ESTCS_EMERG_CAL |

| | | | |
|------|-----------------|-------------------------|---------------------|
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_CM_SERV_REQ | |
| | ti | TI_0 | |
| | cm_serv_type | ST_EMERGENCY | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | mob_class_2 | MOB_CLASS_2 | |
| | mob_id | MOB_IDENT_IMEI | |
| | } | | |
| (24) | param | RR_ESTABLISH_CNF | NOT_USED |
| (25) | d1 | RR_DATA_IND | NOT_USED |
| | d2 | RR_DATA_IND | NOT_USED |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_CM_SERV_ACCEPT | |
| | ti | TI_0 | |
| | } | | |
| (26) | ti | MMCC_ESTABLISH_CNF | TI_3 |
| (27) | ti | MMCC_RELEASE_REQ | TI_3 |
| (28) | abcs | RR_ABORT_REQ | ABCS_NORM |
| (29) | relcs | RR_RELEASE_IND | RELCS_ABNORM_UNSPEC |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (30) | ch_type | MDL_RELEASE_REQ | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 | |

| | | | |
|----------|----------|----|---------|
| History: | 09.06.99 | LE | Initial |
| | 26.01.01 | HM | Revised |

4.22.5 MM495: No IMSI, new cell, new LA, but only limited service

Description: MM is in service state Idle no IMSI. A.) A new cell is entered. B.) A new LA is entered. RR indicates only limited service. No reaction of MM is expected.

Preamble: MM491

Variants: <A>....

| | MMI / CM | MM | RR / DL |
|-----------------|--------------|-----------------|---------|
| (1) | | | |
| | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | MMR_NREG_IND | | |
| | *<=====* | | |
| TIMEOUT (10000) | | | |
| | | | |

Parametrization

| Primitive | Parameter | Value | |
|---------------------|-------------------------|--------------|------------------------------------|
| (3) RR_ACTIVATE_IND | | | |
| op | OP_MODE_NO_SIM_LIM_SERV | | |
| mm_info | MM_INFO | | |
| <A> | cid | CELL_ID_1123 | |
| | cid | CELL_ID_1122 | |
| plmn | PLMN_123_44 | | |
| <A> | lac | LAC_0002 | |
| | lac | LAC_0001 | |
| power | RF_CLASS_2 | | |
| gprs_indic | GPRS_NO | | |
| (4) MMR_NREG_IND | | | |
| nreg_cs | NREG_LIMITED_SERVICE | | |
| search_running | SEARCH_NOT_RUNNING | | |
| new_forb_plmn | PLMN_NO_ID | | |
| limited_cause | MMR_SIM_INVALID_NOSIM | | |
| History: | 09.06.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running, variants) |

4.23 MM Idle Mode Behaviour (No Cell available)

4.23.1 MM497: No Cell available indication from Normal Service

Description: MM is in state Idle Normal Service. RR indicates that no cell is available. MM enters the no cell available state.

Preamble: MM024

| | MMI / CM / SIM | MM | RR / DL |
|-----|----------------|-----------------|---------|
| (1) | | RR_ABORT_IND | |
| | | *<=====* | |
| (2) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (3) | MMR_NREG_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|----------|-----------------|----------------------------|--------------------------|
| (1) | RR_ABORT_IND | | |
| | op | OP_MODE_TEST_SIM_NO_SERV | |
| | abcs | ABCS_CEL_SEL_FAIL | |
| | plmn_avail | NOT_USED | |
| | plmn | NOT_USED | |
| | rxlevel | NOT_USED | |
| | power | RF_CLASS_2 | |
| (2) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (3) | MMR_NREG_IND | | |
| | nreg_cs | NREG_CELL_SELECTION_FAILED | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| History: | 09.06.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running) |

4.23.2 MM498: No Cell available, same cell

Description: MM is in service state No Cell available. RR indicates the availability of full service. It is the same cell as before. It is assumed that no location updating is started.

Preamble: MM497

| | MMI / CM | MM | RR / DL |
|-----|-------------|-----------------|---------|
| (1) | | | |
| | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | | |
| | MMR_REG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|-----------------|------------------|-------|
| (1) | RR_ACTIVATE_IND | | |
| | op | OP_MODE_TEST_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |

History: 03.05.99 LE Initial

4.23.3 MM499: No Cell available, same location area

Description: MM is in service state No Cell available. RR indicates the availability of full service. It is a different cell but the same location area. It is assumed that no location updating is started.

Preamble: MM497

| | MMI / CM | MM | RR / DL |
|-----|-------------|-----------------|---------|
| (1) | | | |
| | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | MMR_REG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

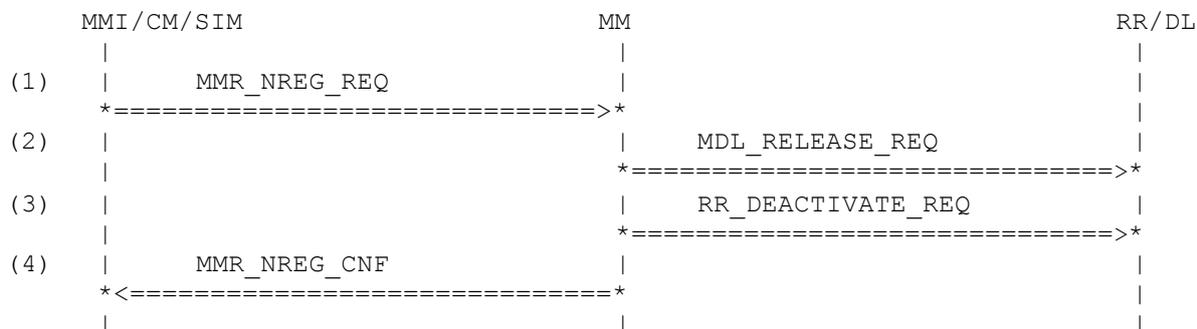
| | Primitive | Parameter | Value |
|-----|-----------------|------------------|-------|
| (1) | RR_ACTIVATE_IND | | |
| | op | OP_MODE_TEST_SIM | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1123 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |

History: 03.05.99 LE Initial

4.23.4 MM500: No IMSI, IMSI Detach, Power OFF

Description: MM is in IDLE No cell available service state. It is switched off. MM shall not perform IMSI Detach. It shall only deactivate the lower layer.

Preamble: MM497



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 09.06.99 | LE | Initial |

4.23.5 MM501: No Cell available, no IMSI Detach, SIM Remove by SIM

Description: MM is in no cell available state. The SIM manager has detected a SIM Remove. MM shall not process IMSI Detach. MM remains in the same state.

Preamble: MM497

| | MMI/CM/SIM | MM | RR/DL |
|-----|----------------|-----------------|-------|
| (1) | SIM_REMOVE_IND | | |
| (2) | | MDL_RELEASE_REQ | |
| (3) | | RR_ABORT_REQ | |
| (4) | MMR_NREG_IND | | |

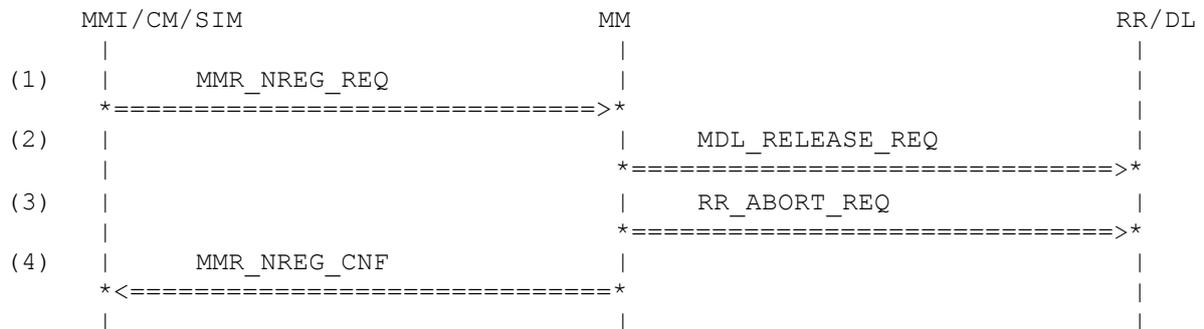
Parametrization

| | Primitive | Parameter | Value |
|----------|---|--|--|
| (50) | SIM_REMOVE_IND error | NOT_USED | |
| (51) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (52) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (53) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_NO_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_REMOVED | |
| History: | 05.05.99 02.03.00 07.01.01 | LE HM HM | Initial Revised (search_running) Adaption after GPRS integration |

4.23.6 MM502: No Cell available, IMSI Detach, SIM Remove by MMI

Description: MM is in no cell available state. The MMI requests limited service. An IMSI Detach shall not be processed. The MS remains in the same state.

Preamble: MM497



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_SIM_REM | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_ABORT_REQ abcs | ABCS_SIM_REM | |
| (4) | MMR_NREG_CNF cs | CS_SIM_REM | |

| | | | |
|----------|----------|----|---------|
| History: | 05.05.99 | LE | Initial |
| | 31.08.00 | HM | Revised |

4.23.7 MM503: No cell available, Call attempts by upper layer

Description: MM is in idle no cell available state. It shall reject all requests from CM entities including emergency calls.

Preamble: MM497

| | MMI / CM / SIM | MM | RR / DL |
|-----|---------------------|----|---------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | *=====>* | | |
| (2) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| (3) | MMSS_ESTABLISH_REQ | | |
| | *=====>* | | |
| (4) | MMSS_RELEASE_IND | | |
| | *<=====* | | |
| (5) | MMSMS_ESTABLISH_REQ | | |
| | *=====>* | | |
| (6) | MMSMS_RELEASE_IND | | |
| | *<=====* | | |
| (7) | MMCC_ESTABLISH_REQ | | |
| | *=====>* | | |
| (8) | MMCC_RELEASE_IND | | |
| | *<=====* | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|-----|---------------------|-----------------------|-------|
| (1) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_4 | |
| | prio | PRIO_NORM_CALL | |
| | estcs | ESTCS_MOB_ORIG_SPCH | |
| (2) | MMCC_RELEASE_IND | | |
| | ti | TI_4 | |
| | relcs | RELCS_NO_REGISTRATION | |
| (3) | MMSS_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| (4) | MMSS_RELEASE_IND | | |
| | ti | TI_3 | |
| | relcs | RELCS_NO_REGISTRATION | |
| (5) | MMSMS_ESTABLISH_REQ | | |
| | ti | TI_5 | |
| (6) | MMSMS_RELEASE_IND | | |
| | ti | TI_5 | |
| | relcs | RELCS_NO_REGISTRATION | |
| (7) | MMCC_ESTABLISH_REQ | | |
| | ti | TI_3 | |
| | prio | PRIO_EMERG_CALL | |
| | estcs | ESTCS_MOB_ORIG_DATA | |
| (8) | MMCC_RELEASE_IND | | |
| | ti | TI_3 | |
| | relcs | RELCS_NO_REGISTRATION | |

History: 09.06.99 LE Initial

4.23.8 MM504: No cell available, new cell, new LA, but only limited service

Description: MM is in service state Idle no cell available. A.) A new cell is entered. B.) A new LA is entered. RR indicates only limited service. No reaction of MM is expected.

Preamble: MM497

Variants: <A>....

| | MMI / CM | MM | RR / DL |
|---------|--------------|-----------------|---------|
| (1) | | | |
| | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | | |
| | MMR_NREG_IND | | |
| | *<=====* | | |
| TIMEOUT | (10000) | | |
| | | | |

Parametrization

| | Primitive | Parameter | Value |
|----------|-----------------|----------------------|------------------------------------|
| (1) | RR_ACTIVATE_IND | | |
| | op | OP_MODE_SIM_LIM_SERV | |
| | mm_info | MM_INFO | |
| | <A> | cid | CELL_ID_1123 |
| | | cid | CELL_ID_1122 |
| | plmn | PLMN_123_44 | |
| | <A> | lac | LAC_0002 |
| | | lac | LAC_0001 |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (2) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_RC_NONE | |
| History: | 09.06.99 | LE | Initial |
| | 02.03.00 | HM | Revised (search_running, variants) |

4.23.9 MM506: No Cell available, new cell, new location area, full service

Description: MM is in service state No cell available. A new cell is entered in a new location area. A normal location updating is started.

Preamble: MM497

| | MMI / CM | MM | RR/DL |
|-----|----------|-------------------------|-------|
| (1) | | RR_ACTIVATE_IND | |
| | | *<=====* | |
| (2) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====*> | |
| | | | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|----------------|-------------------------|
| (149) RR_ACTIVATE_IND | op | OP_MODE_SIM |
| | mm_info | MM_INFO |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_0002 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (150) RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| History: | 09.06.99 | LE Initial |

4.24 Additional registration testcases

4.24.1 MM520: MM needs IMSI ATTACH after switch on. Cell temporary barred

Description: The mobile is switched on. A SIM is inserted. The mobile station is updated on the cell, but an IMSI ATTACH is needed. The cell is barred. After a short period of time, an access class change is indicated. A second attempt is expected. The difference between this and MM520 is that here no registration attempt is tried before the SIM is inserted.

<A> Previous registration to limited service without SIM

 No previous registration to limited service

Variants: <A>....

Preamble: <A> MM022

 MM001

| | MMI / CM | MM | RR / DL |
|-----------------|-------------------|---|---------|
| (1) | SIM_MM_INSERT_IND | | |
| | *=====>* | | |
| (2) | MMR_REG_REQ | | |
| | *=====>* | | |
| (3) | | RR_ACTIVATE_REQ | |
| | *=====>* | | |
| (4) | | RR_ACTIVATE_CNF | |
| | *<=====* | | |
| (5) | MMR_REG_CNF | | |
| | *<=====* | | |
| (6) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | | |
| (7) | | RR_RELEASE_IND | |
| | *<=====* | | |
| (8) | | MDL_RELEASE_REQ | |
| | *=====>* | | |
| TIMEOUT (10000) | | | |
| (9) | | RR_SYNC_IND | |
| | *<=====* | | |
| (10) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|--------------------|-------|
| (15) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |

| | | |
|------|---|--|
| (16) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL |
| (17) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_ECL CELL_TEST_DISABLE GPRS_NO |
| (18) | RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_SIM MM_INFO_ATT CELL_ID_1122 PLMN_123_33 LAC_2147 RF_CLASS_2 GPRS_NO |
| (19) | MMR_REG_CNF plmn | PLMN_123_33 |
| (20) | RR_ESTABLISH_REQ estcs sdu { component direction pd ti loc_upd_type ciph_key_num loc_area_ident mob_class_1 mob_id } | ESTCS_SERV_REQ_BY_MM MM UPLINK U_LOC_UPD_REQ TI_0 LOC_UPD_TYPE_ATTACH CIPH_KEY_NUM_RES LOC_AREA_ID_123_33_2147 MOB_CLASS_1 MOB_IDENT_IMSI |
| (21) | RR_RELEASE_IND relcs sapi gprs_resumption | RELCS_ACCESS_BARRED SAPI_0 GPRS_RESUMPTION_NOT_ACK |
| (22) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 |
| (23) | RR_SYNC_IND ciph mm_info bcch_info syncs chm | NOT_USED NOT_USED NOT_USED SYNCCS_ACC_CLS_CHA CHM_NOT_PRESENT |
| (24) | RR_ESTABLISH_REQ estcs sdu | ESTCS_SERV_REQ_BY_MM |

```
{  
  component          MM  
  direction          UPLINK  
  pd                 U_LOC_UPD_REQ  
  ti                 TI_0  
  loc_upd_type       LOC_UPD_TYPE_ATTACH  
  ciph_key_num       CIPH_KEY_NUM_RES  
  loc_area_ident     LOC_AREA_ID_123_33_2147  
  mob_class_1        MOB_CLASS_1  
  mob_id             MOB_IDENT_IMSI  
}
```

History: 19.02.01 HM Initial

4.24.2 MM521: MM needs IMSI ATTACH after switch on. Cell temporary barred

Description: The mobile is switched on. A SIM is inserted. The mobile station is updated on the cell, but an IMSI ATTACH is needed. The cell is barred. A call attempt is made and rejected due to the fact that the cell is barred. After a short period of time, an access class change is indicated. A second attempt is expected.

<A> Previous registration to limited service without SIM

 No previous registration to limited service

Variants: <A>....

Preamble: <A> MM022

 MM001

| MMI / CM | MM | RR / DL |
|--------------------|-------------------------|---------|
| (1) | | |
| SIM_MM_INSERT_IND | | |
| *=====>* | | |
| (2) | | |
| MMR_REG_REQ | | |
| *=====>* | | |
| (3) | | |
| | RR_ACTIVATE_REQ | |
| | *=====>* | |
| (4) | | |
| | RR_ACTIVATE_CNF | |
| | *<=====* | |
| (5) | | |
| MMR_REG_CNF | | |
| *<=====* | | |
| (6) | | |
| | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (7) | | |
| | RR_RELEASE_IND | |
| | *<=====* | |
| (8) | | |
| | MDL_RELEASE_REQ | |
| | *=====>* | |
| (9) | | |
| MMCC_ESTABLISH_REQ | | |
| *=====>* | | |
| (10) | | |
| | RR_ESTABLISH_REQ | |
| | (CM SERVICE REQUEST) | |
| | *=====>* | |
| (11) | | |
| | RR_RELEASE_IND | |
| | *<=====* | |
| (12) | | |
| | MDL_RELEASE_REQ | |
| | *=====>* | |
| (13) | | |
| MMCC_RELEASE_IND | | |
| *<=====* | | |
| TIMEOUT (10000) | | |
| (14) | | |
| | RR_SYNC_IND | |
| | *<=====* | |
| (15) | | |
| | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|-----------|--------------------|
| (12) SIM_MM_INSERT_IND | | |
| op_mode | | NORMAL_SIM_INS |
| imsi_field | | IMSI_FIELD_1 |
| loc_info | | LOC_INFO_UPDATED_1 |
| acc_ctrl | | ACC_CTRL_1 |
| bcch_inf | | BCCH_INF_1 |

| | | |
|------|--------------------|-------------------------|
| | kc_n | KC_EMPTY |
| | pref_plmn | PREF_PLMN_NONE |
| | forb_plmn | FORB_PLMN_NONE |
| | phase | PHASE_2_SIM |
| | hplmn | THPLMN_01 |
| (25) | MMR_REG_REQ | |
| | service_mode | SERVICE_MODE_FULL |
| (26) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_123_33 |
| | op | OP_MODE_SIM_NO_SERV |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | accc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_ECL |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (27) | RR_ACTIVATE_CNF | |
| | op | OP_MODE_SIM |
| | mm_info | MM_INFO_ATT |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (28) | MMR_REG_CNF | |
| | plmn | PLMN_123_33 |
| (29) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (30) | RR_RELEASE_IND | |
| | relcs | RELCS_ACCESS_BARRED |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (31) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (32) | MMCC_ESTABLISH_REQ | |
| | ti | TI_2 |
| | prio | PRIO_NORM_CALL |
| | estcs | ESTCS_MOB_ORIG_SPCH |

- (33) RR_ESTABLISH_REQ
 estcs ESTCS_MOB_ORIG_SPCH_CAL_BY_CC
 sdu
 {
 component MM
 direction UPLINK
 pd U_CM_SERV_REQ
 ti TI_0
 cm_serv_type ST_MOC
 ciph_key_num CIPH_KEY_NUM_RES
 mob_class_2 MOB_CLASS_2
 mob_id MOB_IDENT_IMSI
 }
 (34) RR_RELEASE_IND
 relcs RELCS_ACCESS_BARRED
 sapi SAPI_0
 gprs_resumption GPRS_RESUMPTION_NOT_ACK
 (35) MDL_RELEASE_REQ
 ch_type NOT_PRESENT_8BIT
 sapi SAPI_0
 (36) MMCC_RELEASE_IND
 ti TI_2
 relcs RELCS_ACCESS_BARRED
 (37) RR_SYNC_IND
 ciph NOT_USED
 mm_info NOT_USED
 bcch_info NOT_USED
 synccs SYNC_CS_ACC_CLS_CHA
 chm CHM_NOT_PRESENT
 (38) RR_ESTABLISH_REQ
 estcs ESTCS_SERV_REQ_BY_MM
 sdu
 {
 component MM
 direction UPLINK
 pd U_LOC_UPD_REQ
 ti TI_0
 loc_upd_type LOC_UPD_TYPE_ATTACH
 ciph_key_num CIPH_KEY_NUM_RES
 loc_area_ident LOC_AREA_ID_123_33_2147
 mob_class_1 MOB_CLASS_1
 mob_id MOB_IDENT_IMSI
 }

History: 19.02.01 HM Initial

| | | | |
|------|------------------|----------------|----------------------|
| (41) | RR_ACTIVATE_REQ | plmn | PLMN_123_33 |
| | | op | OP_MODE_SIM_NO_SERV |
| | | cksn | CKSN_RES |
| | | kcv | KCV_EMPTY |
| | | acc | ACC_2143 |
| | | imsi | MOB_ID_IMSI |
| | | tmsi | MOB_ID_NO_ID |
| | | thplmn | THPLMN_01 |
| | | bcch_info | BCCH_INFO_ECL |
| | | cell_test | CELL_TEST_DISABLE |
| | | gprs_indic | GPRS_NO |
| (42) | RR_ABORT_IND | op | OP_MODE_SIM_LIM_SERV |
| | | abcs | ABCS_CEL_SEL_FAIL |
| | | plmn_avail | ONE_PLMN_FOUND |
| | | plmn | PLMN_LIST_LPLMN |
| | | rxlevel | RXLEVEL_20 |
| | | power | RF_CLASS_2 |
| (5) | MDL_RELEASE_REQ | ch_type | NOT_PRESENT_8BIT |
| | | sapi | SAPI_0 |
| (6) | MMR_NREG_IND | nreg_cs | NREG_LIMITED_SERVICE |
| | | search_running | SEARCH_RUNNING |
| | | new_forb_plmn | PLMN_NO_ID |
| | | limited_cause | MMR_RC_NONE |
| (7) | RR_ACTIVATE_REQ | plmn | PLMN_123_31 |
| | | op | OP_MODE_SIM_NO_SERV |
| | | cksn | CKSN_RES |
| | | kcv | KCV_EMPTY |
| | | acc | ACC_2143 |
| | | imsi | MOB_ID_IMSI |
| | | tmsi | MOB_ID_NO_ID |
| | | thplmn | THPLMN_01 |
| | | bcch_info | BCCH_INFO_1 |
| | | cell_test | CELL_TEST_DISABLE |
| | | gprs_indic | GPRS_NO |
| (8) | RR_ACTIVATE_CNF | op | OP_MODE_SIM |
| | | mm_info | MM_INFO_ATT |
| | | cid | CELL_ID_1122 |
| | | plmn | PLMN_123_31 |
| | | lac | LAC_2147 |
| | | power | RF_CLASS_2 |
| | | gprs_indic | GPRS_NO |
| (9) | RR_ESTABLISH_REQ | estcs | ESTCS_SERV_REQ_BY_MM |
| | | sdu | |
| | | { | |
| | | component | MM |
| | | direction | UPLINK |
| | | pd | U_LOC_UPD_REQ |
| | | ti | TI_0 |
| | | loc_upd_type | LOC_UPD_TYPE_NORMAL |

| | | |
|------|------------------|-------------------------|
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (10) | RR_RELEASE_IND | |
| | relcs | RELCS_ACCESS_BARRED |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (11) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (12) | RR_SYNC_IND | |
| | ciph | NOT_USED |
| | mm_info | NOT_USED |
| | bcch_info | NOT_USED |
| | synccs | SYNCCS_ACC_CLS_CHA |
| | chm | CHM_NOT_PRESENT |
| (13) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

History: 19.02.01 HM Initial

4.24.4 MM523: MM doesn't find LPLMN, needs NORMAL UPDATE, cell barred

Description: The mobile is switched on. A SIM is inserted. The mobile station doesn't find the requested PLMN, but another PLMN is available. A location updating attempt is performed, but the cell is barred. A call attempt is made and rejected due to the fact that the cell is barred. After some time the change of the access class is indicated by RR; the location updating attempt is started immediately.

Preamble: MM001

| | MMI / CM | MM | RR / DL |
|-----------------|--------------------|---|---------|
| (1) | SIM_MM_INSERT_IND | | |
| (2) | MMR_REG_REQ | | |
| (3) | | RR_ACTIVATE_REQ | |
| (4) | | RR_ABORT_IND | |
| (5) | | MDL_RELEASE_REQ | |
| (6) | MMR_NREG_IND | | |
| (7) | | RR_ACTIVATE_REQ | |
| (8) | | RR_ACTIVATE_CNF | |
| (9) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| (10) | | RR_RELEASE_IND | |
| (11) | | MDL_RELEASE_REQ | |
| (12) | MMCC_ESTABLISH_REQ | | |
| (13) | | RR_ESTABLISH_REQ (CM SERVICE REQUEST) | |
| (14) | | RR_RELEASE_IND | |
| (15) | | MDL_RELEASE_REQ | |
| (16) | MMCC_RELEASE_IND | | |
| TIMEOUT (10000) | | | |
| (17) | | RR_SYNC_IND | |
| (18) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |

Parametrization

| | Primitive | Parameter | Value |
|------|-------------------|-----------|----------------|
| (13) | SIM_MM_INSERT_IND | | |
| | op_mode | | NORMAL_SIM_INS |
| | imsi_field | | IMSI_FIELD_1 |

| | | |
|------|-----------------|----------------------|
| | loc_info | LOC_INFO_UPDATED_1 |
| | acc_ctrl | ACC_CTRL_1 |
| | bcch_inf | BCCH_INF_1 |
| | kc_n | KC_EMPTY |
| | pref_plmn | PREF_PLMN_NONE |
| | forb_plmn | FORB_PLMN_NONE |
| | phase | PHASE_2_SIM |
| | hplmn | THPLMN_01 |
| (14) | MMR_REG_REQ | |
| | service_mode | SERVICE_MODE_FULL |
| (15) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_123_33 |
| | op | OP_MODE_SIM_NO_SERV |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | acc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_ECL |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (16) | RR_ABORT_IND | |
| | op | OP_MODE_SIM_LIM_SERV |
| | abcs | ABCS_CEL_SEL_FAIL |
| | plmn_avail | ONE_PLMN_FOUND |
| | plmn | PLMN_LIST_LPLMN |
| | rxlevel | RXLEVEL_20 |
| | power | RF_CLASS_2 |
| (17) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (18) | MMR_NREG_IND | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| | search_running | SEARCH_RUNNING |
| | new_forb_plmn | PLMN_NO_ID |
| | limited_cause | MMR_RC_NONE |
| (19) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_123_31 |
| | op | OP_MODE_SIM_NO_SERV |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | acc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_1 |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (20) | RR_ACTIVATE_CNF | |
| | op | OP_MODE_SIM |
| | mm_info | MM_INFO_ATT |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_31 |
| | lac | LAC_2147 |

| | | |
|------|--------------------|-------------------------------|
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (21) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (22) | RR_RELEASE_IND | |
| | relcs | RELCS_ACCESS_BARRED |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (23) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (24) | MMCC_ESTABLISH_REQ | |
| | ti | TI_2 |
| | prio | PRIO_NORM_CALL |
| | estcs | ESTCS_MOB_ORIG_SPCH |
| (25) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_MOB_ORIG_SPCH_CAL_BY_CC |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_CM_SERV_REQ |
| | ti | TI_0 |
| | cm_serv_type | ST_MOC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | mob_class_2 | MOB_CLASS_2 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (26) | RR_RELEASE_IND | |
| | relcs | RELCS_ACCESS_BARRED |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (27) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (28) | MMCC_RELEASE_IND | |
| | ti | TI_2 |
| | relcs | RELCS_ACCESS_BARRED |
| (29) | RR_SYNC_IND | |
| | ciph | NOT_USED |
| | mm_info | NOT_USED |
| | bcch_info | NOT_USED |

| | | | |
|-----------------------|-------------------------|----|---------|
| synccs | SYNCCS_ACC_CLS_CHA | | |
| chm | CHM_NOT_PRESENT | | |
| (30) RR_ESTABLISH_REQ | | | |
| estcs | ESTCS_SERV_REQ_BY_MM | | |
| sdu | | | |
| { | | | |
| component | MM | | |
| direction | UPLINK | | |
| pd | U_LOC_UPD_REQ | | |
| ti | TI_0 | | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL | | |
| ciph_key_num | CIPH_KEY_NUM_RES | | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | | |
| mob_class_1 | MOB_CLASS_1 | | |
| mob_id | MOB_IDENT_IMSI | | |
| } | | | |
| History: | 19.02.01 | HM | Initial |

4.24.5 MM524: MM needs IMSI ATTACH after switch on. Cell temporary barred

Description: The mobile is switched on. A SIM is inserted. The mobile station is updated on the cell, but an IMSI ATTACH is needed. The cell is barred. After a short period of time, the coverage is lost. After some time, coverage is gained again on the first cell. An IMSI ATTACH is expected.

- <A> No service, access barred
- Limited service, access barred
- <C> No service, random access failure
- <D> Limited service, random access failure

[The newly introduced testcase currently doesn't run, the reason for this is a minor implementation problem in the protocol stack.]

Variants: <A>....<D>

Preamble: MM001

| | MMI/CM | MM | RR/DL |
|------|-------------------|---|-------|
| (1) | SIM_MM_INSERT_IND | | |
| | *=====>* | | |
| (2) | MMR_REG_REQ | | |
| | *=====>* | | |
| (3) | | RR_ACTIVATE_REQ | |
| | *=====>* | | |
| (4) | | RR_ACTIVATE_CNF | |
| | *<=====* | | |
| (5) | MMR_REG_CNF | | |
| | *<=====* | | |
| (6) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | | |
| (7) | | RR_RELEASE_IND | |
| | *<=====* | | |
| (8) | | MDL_RELEASE_REQ | |
| | *=====>* | | |
| (9) | | RR_ABORT_IND | |
| | *<=====* | | |
| (10) | | MDL_RELEASE_REQ | |
| | *=====>* | | |
| (11) | MMR_NREG_IND | | |
| | *<=====* | | |
| (12) | | RR_ACTIVATE_IND | |
| | *<=====* | | |
| (13) | | RR_ESTABLISH_REQ (LOCATION UPDATING REQ) | |
| | *=====>* | | |

Parametrization

| | Primitive | Parameter | Value |
|------|-------------------|--------------------|-------|
| (31) | SIM_MM_INSERT_IND | | |
| | op_mode | NORMAL_SIM_INS | |
| | imsi_field | IMSI_FIELD_1 | |
| | loc_info | LOC_INFO_UPDATED_1 | |
| | acc_ctrl | ACC_CTRL_1 | |
| | bcch_inf | BCCH_INF_1 | |
| | kc_n | KC_EMPTY | |
| | pref_plmn | PREF_PLMN_NONE | |
| | forb_plmn | FORB_PLMN_2 | |

| | | | |
|------|------------------|-------------------------|----------------------|
| | phase | PHASE_2_SIM | |
| | hplmn | THPLMN_01 | |
| (43) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (44) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_ECL | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (45) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO_ATT | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (46) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |
| (47) | RR_ESTABLISH_REQ | | |
| | estcs | ESTCS_SERV_REQ_BY_MM | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_LOC_UPD_REQ | |
| | ti | TI_0 | |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH | |
| | ciph_key_num | CIPH_KEY_NUM_RES | |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| | mob_class_1 | MOB_CLASS_1 | |
| | mob_id | MOB_IDENT_IMSI | |
| | } | | |
| (48) | RR_RELEASE_IND | | |
| | <A> | relcs | RELCS_ACCESS_BARRED |
| | | relcs | RELCS_ACCESS_BARRED |
| | <C> | relcs | RELCS_RND_ACC_FAIL |
| | <D> | relcs | RELCS_RND_ACC_FAIL |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (49) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| (50) | RR_ABORT_IND | | |
| | <A> | op | OP_MODE_SIM_NO_SERV |
| | | op | OP_MODE_SIM_LIM_SERV |
| | <C> | op | OP_MODE_SIM_NO_SERV |

| | | |
|----------------------------|-------------------------|----------------------|
| <D> | op | OP_MODE_SIM_LIM_SERV |
| abcs | ABCS_CEL_SEL_FAIL | |
| <A> | plmn_avail | NO_PLMN_FOUND |
| | plmn_avail | ONE_PLMN_FOUND |
| <C> | plmn_avail | NO_PLMN_FOUND |
| <D> | plmn_avail | ONE_PLMN_FOUND |
| plmn | PLMN_LIST_FORB | |
| rxlevel | RXLEVEL_20 | |
| power | RF_CLASS_2 | |
| (51) | MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT | |
| sapi | SAPI_0 | |
| (52) | MMR_NREG_IND | |
| <A> | nreg_cs | |
| NREG_CELL_SELECTION_FAILED | | |
| | nreg_cs | NREG_LIMITED_SERVICE |
| <C> | nreg_cs | |
| NREG_CELL_SELECTION_FAILED | | |
| <D> | nreg_cs | NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING | |
| new_forb_plmn | PLMN_NO_ID | |
| limited_cause | MMR_RC_NONE | |
| (53) | RR_ACTIVATE_IND | |
| op | OP_MODE_SIM | |
| mm_info | MM_INFO_ATT | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |
| (54) | RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_ATTACH | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_2147 | |
| mob_class_1 | MOB_CLASS_1 | |
| mob_id | MOB_IDENT_IMSI | |
| } | | |

History: 19.02.01 HM Initial

4.24.6 MM525: MM needs IMSI ATTACH after switch on in tunnel

Description: The mobile is switched on. A SIM was inserted which has an update state in the area. At switch on, there is no service as the switch on was in a tunnel. After some time, the mobile phone leaves the tunnel and MM receives an RR_ACTIVATE_IND which indicates a cell selection in the updated location area, but the IMSI ATTACH is of course still needed.

<A> No service after switch on
 Only limited service after switch on

Variants: <A>....

Preamble: MM001

| MMI / CM | MM | RR / DL |
|-------------------|-------------------------|---------|
| (1) | | |
| SIM_MM_INSERT_IND | | |
| *=====>* | | |
| (2) | | |
| MMR_REG_REQ | | |
| *=====>* | | |
| (3) | | |
| | RR_ACTIVATE_REQ | |
| | *=====>* | |
| (4) | | |
| | RR_ABORT_IND | |
| | *<=====* | |
| (5) | | |
| | MDL_RELEASE_REQ | |
| | *=====>* | |
| (6) | | |
| MMR_NREG_IND | | |
| *<=====* | | |
| (7) | | |
| | RR_ACTIVATE_IND | |
| | *<=====* | |
| (8) | | |
| | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|--------------|---------------------|-------|
| (151) | SIM_MM_INSERT_IND | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_2 | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (152) | MMR_REG_REQ | |
| service_mode | SERVICE_MODE_FULL | |
| (153) | RR_ACTIVATE_REQ | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_NO_SERV | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |

| | |
|----------------------------|------------------------------|
| bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |
| (154) | RR_ABORT_IND |
| <A> | op OP_MODE_SIM_NO_SERV |
| | op OP_MODE_SIM_LIM_SERV |
| abcs | ABCS_CEL_SEL_FAIL |
| <A> | plmn_avail NO_PLMN_FOUND |
| | plmn_avail ONE_PLMN_FOUND |
| plmn | PLMN_LIST_FORB |
| rxlevel | RXLEVEL_20 |
| power | RF_CLASS_2 |
| (155) | MDL_RELEASE_REQ |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (156) | MMR_NREG_IND |
| <A> | nreg_cs |
| NREG_CELL_SELECTION_FAILED | |
| | nreg_cs NREG_LIMITED_SERVICE |
| search_running | SEARCH_NOT_RUNNING |
| new_forb_plmn | PLMN_NO_ID |
| limited_cause | MMR_RC_NONE |
| (157) | RR_ACTIVATE_IND |
| op | OP_MODE_SIM |
| mm_info | MM_INFO_ATT |
| cid | CELL_ID_1122 |
| plmn | PLMN_123_33 |
| lac | LAC_2147 |
| power | RF_CLASS_2 |
| gprs_indic | GPRS_NO |
| (158) | RR_ESTABLISH_REQ |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti | TI_0 |
| loc_upd_type | LOC_UPD_TYPE_ATTACH |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_2147 |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MOB_IDENT_IMSI |
| } | |

History: 22.02.01 HM Initial

4.24.7 MM526: MM IDLE updated, T3212 running, manual network search I

Description: The mobile is switched on. A SIM was inserted. An IMSI ATTACH update is performed. After a while the user starts a manual network search. It is checked that this does not restart T3212.

Preamble: MM022

| MMI/CM | MM | RR/DL |
|---------------------------------|-------------------------|-------|
| COMMAND (MM CONFIG T3212_CNT=6) | | |
| (1) SIM_MM_INSERT_IND | | |
| | | |
| | | |
| (2) MMR_REG_REQ | | |
| | | |
| | | |
| (3) | RR_ACTIVATE_REQ | |
| | | |
| (4) | RR_ACTIVATE_CNF | |
| | | |
| (5) MMR_REG_CNF | | |
| | | |
| (6) MMR_PLMN_MODE_REQ | | |
| | | |
| (7) | RR_SYNC_REQ | |
| | | |
| (8) MMR_NET_REQ | | |
| | | |
| (9) | RR_ACTIVATE_REQ | |
| | | |
| (10) | RR_ABORT_IND | |
| | | |
| (11) MMR_PLMN_IND | | |
| | | |
| (12) MMR_PLMN_MODE_REQ | | |
| | | |
| (13) | RR_SYNC_REQ | |
| | | |
| TIMEOUT (55000) | | |
| (14) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|-----------------------|--------------------|-------|
| (7) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |
| (55) MMR_REG_REQ | | |
| service_mode | SERVICE_MODE_FULL | |

| | | | |
|------|-------------------|------------|------------------------|
| (56) | RR_ACTIVATE_REQ | plmn | PLMN_123_33 |
| | | op | OP_MODE_SIM_NO_SERV |
| | | cksn | CKSN_RES |
| | | kcv | KCV_EMPTY |
| | | acc | ACC_2143 |
| | | imsi | MOB_ID_IMSI |
| | | tmsi | MOB_ID_NO_ID |
| | | thplmn | THPLMN_01 |
| | | bcch_info | BCCH_INFO_ECL |
| | | cell_test | CELL_TEST_DISABLE |
| | | gprs_indic | GPRS_NO |
| (57) | RR_ACTIVATE_CNF | op | OP_MODE_SIM |
| | | mm_info | MM_INFO_PER |
| | | cid | CELL_ID_1122 |
| | | plmn | PLMN_123_33 |
| | | lac | LAC_2147 |
| | | power | RF_CLASS_2 |
| | | gprs_indic | GPRS_NO |
| (58) | MMR_REG_CNF | plmn | PLMN_123_33 |
| (59) | MMR_PLMN_MODE_REQ | mode | MODE_MAN |
| (60) | RR_SYNC_REQ | op | OP_MODE_SIM_2 |
| | | cksn | NOT_USED |
| | | kcv | NOT_USED |
| | | tmsi | NOT_USED |
| | | plmn | NOT_USED |
| | | lac | NOT_USED |
| | | synccs | NOT_PRESENT_16BIT |
| | | acc | NOT_USED |
| | | thplmn | NOT_USED |
| (61) | MMR_NET_REQ | param | NOT_USED |
| (62) | RR_ACTIVATE_REQ | plmn | PLMN_NO_ID |
| | | op | OP_MODE_SIM_NO_SERV_M |
| | | cksn | CKSN_NO_KEY |
| | | kcv | KC_DELETED |
| | | acc | ACC_CLASS_0000 |
| | | imsi | EMPTY_IMSI |
| | | tmsi | NOT_USED |
| | | thplmn | NOT_USED |
| | | bcch_info | NOT_USED |
| | | cell_test | CELL_TEST_DISABLE |
| | | gprs_indic | GPRS_NO |
| (63) | RR_ABORT_IND | op | OP_SIM_MAN_MMI_SRCH_FS |
| | | abcs | ABCS_CEL_SEL_FAIL |
| | | plmn_avail | TWO_PLMN_FOUND |
| | | plmn | PLMN_LIST_2_PLMN |

| | | |
|------|-------------------|-------------------------|
| | rxlevel | RXLEVEL_20_18 |
| | power | RF_CLASS_2 |
| (64) | MMR_PLMN_IND | |
| | res | RES_OK_USR_MST_SEL_PLMN |
| | plmn | PLMN_LIST_2_PLMN_A |
| | forb_ind | FORB_PLMN_ID |
| | rxlevel | RXLEVEL_20_18_A |
| (65) | MMR_PLMN_MODE_REQ | |
| | mode | MODE_AUTO |
| (66) | RR_SYNC_REQ | |
| | op | OP_SIM_AUTO_MMI_SRCH_NS |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_PRESENT_16BIT |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (67) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

History: 28.02.01 HM Initial

4.24.8 MM527: MM IDLE updated, T3212 running, manual network search II

Description: The mobile is switched on. A SIM was inserted. An IMSI ATTACH update is performed. After a while the user starts a manual network search. It is checked that this does not restart T3212.

Preamble: MM022

| MMI/CM | MM | RR/DL |
|---------------------------------|-------------------------|-------|
| | | |
| COMMAND (MM CONFIG T3212_CNT=6) | | |
| (1) SIM_MM_INSERT_IND | | |
| | | |
| | | |
| (2) MMR_REG_REQ | | |
| | | |
| | | |
| (3) | RR_ACTIVATE_REQ | |
| | | |
| (4) | RR_ACTIVATE_CNF | |
| | | |
| (5) MMR_REG_CNF | | |
| | | |
| TIMEOUT (35000) | | |
| (6) MMR_PLMN_MODE_REQ | | |
| | | |
| (7) | RR_SYNC_REQ | |
| | | |
| (8) MMR_NET_REQ | | |
| | | |
| (9) | RR_ACTIVATE_REQ | |
| | | |
| (10) | RR_ABORT_IND | |
| | | |
| (11) MMR_PLMN_IND | | |
| | | |
| (12) MMR_PLMN_MODE_REQ | | |
| | | |
| (13) | RR_SYNC_REQ | |
| | | |
| TIMEOUT (20000) | | |
| (14) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | | |
| | | |

Parametrization

| <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----------------------|--------------------|--------------|
| (8) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_01 | |

| | | |
|------|---|--|
| (68) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL |
| (69) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_ECL CELL_TEST_DISABLE GPRS_NO |
| (70) | RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_SIM MM_INFO_PER CELL_ID_1122 PLMN_123_33 LAC_2147 RF_CLASS_2 GPRS_NO |
| (71) | MMR_REG_CNF plmn | PLMN_123_33 |
| (72) | MMR_PLMN_MODE_REQ mode | MODE_MAN |
| (73) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | OP_MODE_SIM_2 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_PRESENT_16BIT NOT_USED NOT_USED |
| (74) | MMR_NET_REQ param | NOT_USED |
| (75) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_SIM_NO_SERV_M CKSN_NO_KEY KC_DELETED ACC_CLASS_0000 EMPTY_IMSI NOT_USED NOT_USED NOT_USED CELL_TEST_DISABLE GPRS_NO |
| (76) | RR_ABORT_IND op abcs plmn_avail | OP_SIM_MAN_MMI_SRCH_FS ABCS_CEL_SEL_FAIL TWO_PLMN_FOUND |

| | | |
|------|-------------------|-------------------------|
| | plmn | PLMN_LIST_2_PLMN |
| | rxlevel | RXLEVEL_20_18 |
| | power | RF_CLASS_2 |
| (77) | MMR_PLMN_IND | |
| | res | RES_OK_USR_MST_SEL_PLMN |
| | plmn | PLMN_LIST_2_PLMN_A |
| | forb_ind | FORB_PLMN_ID |
| | rxlevel | RXLEVEL_20_18_A |
| (78) | MMR_PLMN_MODE_REQ | |
| | mode | MODE_AUTO |
| (79) | RR_SYNC_REQ | |
| | op | OP_SIM_AUTO_MMI_SRCH_NS |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_PRESENT_16BIT |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (80) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_PERIODIC |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

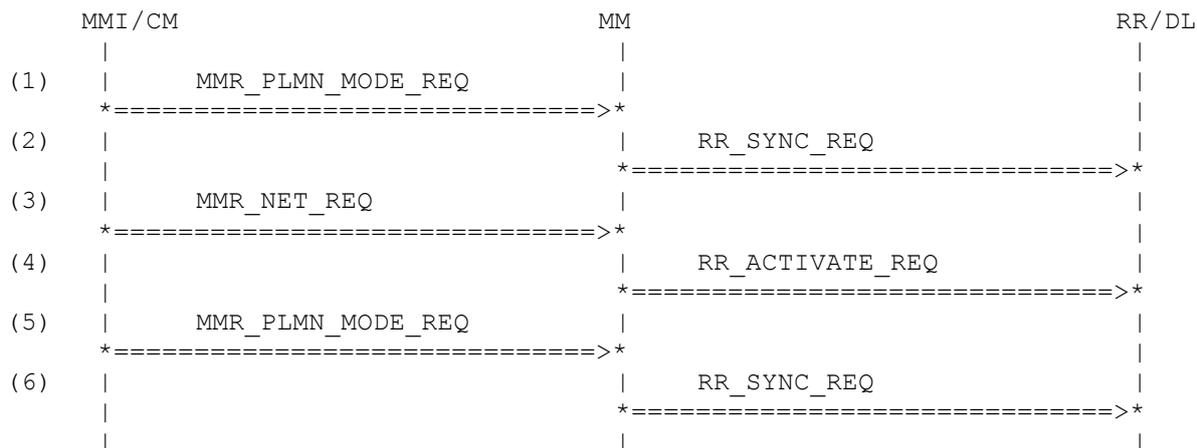
History: 28.02.01 HM Initial

4.25 Network search

4.25.1 MM530: Aborted manual NW search in MM_IDLE_ATTEMPT_TO_UPDATE

Description: The mobile is in MM_IDLE_ATTEMPT_TO_UPDATE state, manual network mode selected. The user starts a manual PLMN search. While this is running, the user aborts the operation. It is not expected that MM really stops searching PLMNs, but if a call attempt will be made in the next testcase, MM has to remember that it came from MM_IDLE_ATTEMPT_TO_UPDATE state.

Preamble: MM410



Parametrization

| | Primitive | Parameter | Value |
|------|---|--|-------|
| (81) | MMR_PLMN_MODE_REQ mode | MODE_MAN | |
| (82) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | OP_MODE_SIM_2 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_PRESENT_16BIT NOT_USED NOT_USED | |
| (83) | MMR_NET_REQ param | NOT_USED | |
| (84) | RR_ACTIVATE_REQ plmn op cksn kcv accc imsi tmsi thplmn bcch_info | PLMN_NO_ID OP_MODE_SIM_NO_SERV_M CKSN_NO_KEY KC_DELETED ACC_CLASS_0000 EMPTY_IMSI NOT_USED NOT_USED NOT_USED | |

| | | |
|------|-------------------|------------------------|
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (85) | MMR_PLMN_MODE_REQ | |
| | mode | MODE_MAN |
| (86) | RR_SYNC_REQ | |
| | op | OP_SIM_MAN_MMI_SRCH_NS |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_PRESENT_16BIT |
| | accc | NOT_USED |
| | thplmn | NOT_USED |

History: 28.02.01 HM Initial

4.25.2 MM531: MM_IDLE_ATTEMPT_TO_UPDATE, MO call

Description: The mobile is in MM_IDLE_ATTEMPT_TO_UPDATE or MM_PLMN_SEARCH_NORMAL_SERVICE state. The user makes a call attempt. As the mobile station was in MM_IDLE_ATTEMPT_TO_UPDATE state if it was not searching and the searching is now really stopped by the call attempt, it is expected that before the actual call attempt is made first a location updating procedure is performed.

Variants: <A>....
Preamble: <A> MM410
 MM530

| MMI/CM | MM | RR/DL |
|--------------------|-------------------------|-------|
| (1) | | |
| MMCC_ESTABLISH_REQ | | |
| *=====>* | | |
| (2) | RR_ESTABLISH_REQ | |
| | (LOCATION UPDATING REQ) | |
| | *=====>* | |
| (3) | RR_ESTABLISH_CNF | |
| | *<=====* | |
| (4) | RR_DATA_IND | |
| | (LOCATION UPDATING ACC) | |
| | *<=====* | |
| (5) | RR_DATA_REQ | |
| | (TMSI REALLOC COMPLETE) | |
| | *=====>* | |
| (6) | RR_SYNC_REQ | |
| | *=====>* | |
| (7) | RR_SYNC_REQ | |
| | *=====>* | |
| (8) | MMR_REG_CNF | |
| *<=====* | | |
| (9) | SIM_MM_UPDATE_REQ | |
| *<=====* | | |
| (10) | RR_DATA_REQ | |
| | (CM SERVICE REQ) | |
| | *=====>* | |
| | | |

Parametrization

| Primitive | Parameter | Value |
|------------------------|-------------------------|-------|
| (9) MMCC_ESTABLISH_REQ | | |
| ti | TI_3 | |
| prio | PRIO_NORM_CALL | |
| estcs | ESTCS_MOB_ORIG_DATA | |
| (10) RR_ESTABLISH_REQ | | |
| estcs | ESTCS_SERV_REQ_BY_MM | |
| sdu | | |
| { | | |
| component | MM | |
| direction | UPLINK | |
| pd | U_LOC_UPD_REQ | |
| ti | TI_0 | |
| loc_upd_type | LOC_UPD_TYPE_NORMAL_FOL | |
| ciph_key_num | CIPH_KEY_NUM_RES | |
| loc_area_ident | LOC_AREA_ID_123_33_FEFF | |

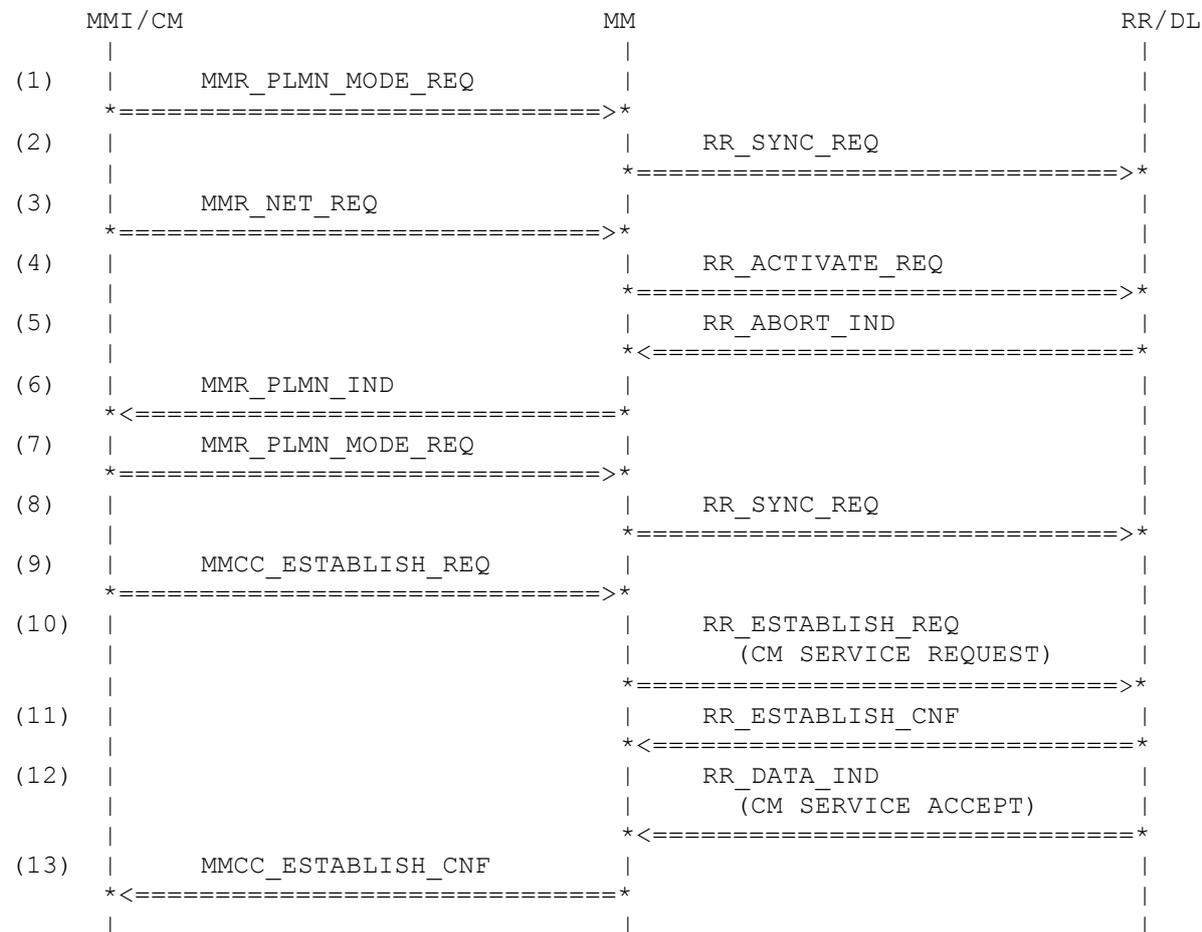
| | | |
|------|-------------------|-------------------------|
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (11) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (12) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | IE_FOLLOW_PROCEED |
| | } | |
| (13) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (14) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | MOB_ID_NEW_TMSI |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_USED |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (15) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | synccs | SYNCCS_LAI_ALLOW |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (16) | MMR_REG_CNF | |
| | plmn | PLMN_123_33 |
| (17) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_5 |
| | bcch_inf | BCCH_INF_1 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |

| | | | |
|------------------|--------------------|----|---------|
| kc | KC_DELETED_SIM | | |
| cell_identity | CELL_ID_1122 | | |
| (18) RR_DATA_REQ | | | |
| d1 | NOT_USED | | |
| d2 | NOT_USED | | |
| sdu | | | |
| { | | | |
| component | MM | | |
| direction | UPLINK | | |
| pd | U_CM_SERV_REQ | | |
| ti | TI_0 | | |
| cm_serv_type | ST_MOC | | |
| ciph_key_num | CIPH_KEY_NUM_RES | | |
| mob_class_2 | MOB_CLASS_2 | | |
| mob_id | MOB_IDENT_NEW_TMSI | | |
| } | | | |
| History: | 28.02.01 | HM | Initial |

4.25.3 MM532: Manual NW search in MM_IDLE_ATTEMPT_TO_UPDATE

Description: The mobile is in MM_IDLE_ATTEMPT_TO_UPDATE state, manual network mode selected. The user starts a manual PLMN search. After the search is finished, the user tries an emergency call.

Preamble: MM410



Parametrization

| | Primitive | Parameter | Value |
|------|-------------------|-------------------|-------|
| (19) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_MAN | |
| (20) | RR_SYNC_REQ | | |
| | op | OP_MODE_SIM_2 | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_PRESENT_16BIT | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |
| (21) | MMR_NET_REQ | | |
| | param | NOT_USED | |

| | | |
|------|--------------------|-------------------------|
| (22) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_NO_ID |
| | op | OP_MODE_SIM_NO_SERV_M |
| | cksn | CKSN_NO_KEY |
| | kcv | KC_DELETED |
| | acc | ACC_CLASS_0000 |
| | imsi | EMPTY_IMSI |
| | tmsi | NOT_USED |
| | thplmn | NOT_USED |
| | bcch_info | NOT_USED |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (23) | RR_ABORT_IND | |
| | op | OP_SIM_MAN_MMI_SRCH_FS |
| | abcs | ABCS_CEL_SEL_FAIL |
| | plmn_avail | TWO_PLMN_FOUND |
| | plmn | PLMN_LIST_2_PLMN |
| | rxlevel | RXLEVEL_20_18 |
| | power | RF_CLASS_2 |
| (24) | MMR_PLMN_IND | |
| | res | RES_OK_USR_MST_SEL_PLMN |
| | plmn | PLMN_LIST_2_PLMN_A |
| | forb_ind | FORB_PLMN_ID |
| | rxlevel | RXLEVEL_20_18_A |
| (25) | MMR_PLMN_MODE_REQ | |
| | mode | MODE_MAN |
| (26) | RR_SYNC_REQ | |
| | op | OP_SIM_MAN_MMI_SRCH_NS |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_PRESENT_16BIT |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (27) | MMCC_ESTABLISH_REQ | |
| | ti | TI_3 |
| | prio | PRIO_EMERG_CALL |
| | estcs | ESTCS_MOB_ORIG_DATA |
| (28) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_EMERG_CAL |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_CM_SERV_REQ |
| | ti | TI_0 |
| | cm_serv_type | ST_EMERGENCY |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | mob_class_2 | MOB_CLASS_2 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |

| | | | | |
|----------|--------------------|----|------------------|---------|
| (29) | RR_ESTABLISH_CNF | | | |
| | param | | NOT_USED | |
| (30) | RR_DATA_IND | | | |
| | d1 | | NOT_USED | |
| | d2 | | NOT_USED | |
| | sdu | | | |
| | { | | | |
| | component | | MM | |
| | direction | | DOWNLINK | |
| | pd | | D_CM_SERV_ACCEPT | |
| | ti | | TI_0 | |
| | } | | | |
| (31) | MMCC_ESTABLISH_CNF | | | |
| | ti | | TI_3 | |
| History: | 28.02.01 | HM | | Initial |

4.26 Behaviour due to SAT activity

4.26.1 MM601: SIM insert indication by SAT .- IMSI change, detach/attach, automatic

Description: MM receives a SIM_MM_INSERT_IND with IMSI change. This shall cause a MM Re-start procedure. Automatic registration mode version.

Preamble: MM403

| | MMI / CM | MM | RR / DL |
|------|-------------------|-------------------------|---------|
| (1) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (2) | | RR_DATA_IND | |
| | | (LOCATION UPDATING ACC) | |
| | | *<=====* | |
| (3) | | RR_DATA_REQ | |
| | | (TMSI REALLOC COMPLETE) | |
| | | *=====>* | |
| (4) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (5) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (6) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (7) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (8) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (9) | SIM_MM_INSERT_IND | | |
| | *=====>* | | |
| (10) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (11) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (12) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (13) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (14) | | RR_ABORT_REQ | |
| | | *=====>* | |
| (15) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (16) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (17) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (18) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (19) | | RR_DATA_IND | |
| | | (LOCATION UPDATING ACC) | |
| | | *<=====* | |
| (20) | | RR_DATA_REQ | |
| | | (TMSI REALLOC COMPLETE) | |
| | | *=====>* | |
| (21) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (22) | | RR_SYNC_REQ | |

```

(23) |                                     *=====>*
      |      MMR_REG_CNF                 |
      | *<=====*                         |
(24) |      SIM_MM_UPDATE_REQ             |
      | *<=====*                         |
(25) |                                     |      RR_RELEASE_IND
      | *<=====*                         |
(26) |                                     |      MDL_RELEASE_REQ
      | *=====>*                         |
      |                                     |
    
```

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------|--|---|--------------|
| (87) | RR_ESTABLISH_CNF param | NOT_USED | |
| (88) | RR_DATA_IND d1 d2 sdu { component direction pd ti loc_area_ident mob_id follow_proceed } | NOT_USED NOT_USED MM DOWNLINK D_LOC_UPD_ACCEPT TI_0 LOC_AREA_ID_123_33_2147 MOB_IDENT_NEW_TMSI NOT_USED | |
| (89) | RR_DATA_REQ d1 d2 sdu { component direction pd ti } | NOT_USED NOT_USED MM UPLINK U_TMSI_REALLOC_COMP TI_0 | |
| (90) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | NOT_USED NOT_USED NOT_USED MOB_ID_NEW_TMSI NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED | |
| (91) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs | NOT_USED NOT_USED NOT_USED NOT_USED PLMN_123_33 LAC_2147 SYNCCS_LAI_ALLOW | |

| | | |
|-------|-------------------|------------------------------|
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (92) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_5 |
| | bcch_inf | BCCH_INF_1 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (93) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (94) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (95) | SIM_MM_INSERT_IND | |
| | op_mode | NORMAL_SIM_INS |
| | imsi_field | SIM_IMSI_001010123456789 |
| | loc_info | LOC_INFO_UPDATED_1 |
| | acc_ctrl | ACC_CTRL_1 |
| | bcch_inf | BCCH_INF_1 |
| | kc_n | KC_EMPTY |
| | pref_plmn | PREF_PLMN_NONE |
| | forb_plmn | FORB_PLMN_NONE |
| | phase | PHASE_2_SIM |
| | hplmn | THPLMN_01 |
| (96) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_MOB_ORIG_CAL_BY_SS_SMS |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_IMSI_DETACH_IND |
| | ti | TI_0 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_TMSI |
| | } | |
| (97) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (98) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (99) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (100) | RR_ABORT_REQ | |
| | abcs | ABCS_SIM_REM |
| (101) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_123_33 |
| | op | OP_MODE_SIM_NO_SERV |

| | |
|------------------------|--------------------------|
| cksn | CKSN_RES |
| kcv | KCV_EMPTY |
| acc | ACC_2143 |
| imsi | PRI_IMSI_001010123456789 |
| tmsi | MOB_ID_NO_ID |
| thplmn | THPLMN_01 |
| bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |
| | |
| (102) RR_ACTIVATE_CNF | |
| op | OP_MODE_SIM |
| mm_info | MM_INFO_ATT |
| cid | CELL_ID_1122 |
| plmn | PLMN_123_33 |
| lac | LAC_2147 |
| power | RF_CLASS_2 |
| gprs_indic | GPRS_NO |
| | |
| (103) RR_ESTABLISH_REQ | |
| estcs | ESTCS_SERV_REQ_BY_MM |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_LOC_UPD_REQ |
| ti | TI_0 |
| loc_upd_type | LOC_UPD_TYPE_ATTACH |
| ciph_key_num | CIPH_KEY_NUM_RES |
| loc_area_ident | LOC_AREA_ID_123_33_2147 |
| mob_class_1 | MOB_CLASS_1 |
| mob_id | MSG_IMSI_001010123456789 |
| } | |
| | |
| (104) RR_ESTABLISH_CNF | |
| param | NOT_USED |
| | |
| (105) RR_DATA_IND | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | DOWNLINK |
| pd | D_LOC_UPD_ACCEPT |
| ti | TI_0 |
| loc_area_ident | LOC_AREA_ID_123_33_2147 |
| mob_id | MOB_IDENT_NEW_TMSI |
| follow_proceed | NOT_USED |
| } | |
| | |
| (106) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_TMSI_REALLOC_COMP |
| ti | TI_0 |
| } | |

| | | | |
|-------------------------|----------|-------------------------|---------|
| (107) RR_SYNC_REQ | | | |
| op | | NOT_USED | |
| cksn | | NOT_USED | |
| kcv | | NOT_USED | |
| tmsi | | MOB_ID_NEW_TMSI | |
| plmn | | NOT_USED | |
| lac | | NOT_USED | |
| synccs | | NOT_USED | |
| acc | | NOT_USED | |
| thplmn | | NOT_USED | |
| (108) RR_SYNC_REQ | | | |
| op | | NOT_USED | |
| cksn | | NOT_USED | |
| kcv | | NOT_USED | |
| tmsi | | NOT_USED | |
| plmn | | PLMN_123_33 | |
| lac | | LAC_2147 | |
| synccs | | SYNCCS_LAI_ALLOW | |
| acc | | NOT_USED | |
| thplmn | | NOT_USED | |
| (109) MMR_REG_CNF | | | |
| plmn | | PLMN_123_33 | |
| (110) SIM_MM_UPDATE_REQ | | | |
| loc_info | | LOC_INFO_UPDATED_5 | |
| bcch_inf | | BCCH_INF_1 | |
| forb_plmn | | NOT_USED | |
| cksn | | CKSN_RES | |
| kc | | KC_DELETED_SIM | |
| cell_identity | | CELL_ID_1122 | |
| (111) RR_RELEASE_IND | | | |
| relcs | | RELCS_NORM | |
| sapi | | SAPI_0 | |
| gprs_resumption | | GPRS_RESUMPTION_NOT_ACK | |
| (112) MDL_RELEASE_REQ | | | |
| ch_type | | NOT_PRESENT_8BIT | |
| sapi | | SAPI_0 | |
| History: | 10.04.00 | HM | Initial |
| | 14.02.01 | HM | Revised |

4.26.2 MM602: SIM insert indication by SAT - IMSI change, detach/attach, manual

Description: MM receives a SIM_MM_INSERT_IND with IMSI change. This shall cause a MM Restart procedure. In this testcase, no detach is required by cell. Manual mode. The mobile is updated by the SIM in another location area that the one the mobile is manual required to register to. A normal location updating on the manually selected PLMN is expected.

Preamble: MM022

| | MMI/CM | MM | RR/DL |
|------|-------------------|-------------------------|-------|
| (1) | SIM_MM_INSERT_IND | | |
| | *=====>* | | |
| (2) | MMR_PLMN_MODE_REQ | | |
| | *=====>* | | |
| (3) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (4) | MMR_PLMN_RES | | |
| | *=====>* | | |
| (5) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (6) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (7) | | RR_ESTABLISH_REQ | |
| | | (LOCATION UPDATING REQ) | |
| | | *=====>* | |
| (8) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |
| (9) | | RR_DATA_IND | |
| | | (LOCATION UPDATING ACC) | |
| | | *<=====* | |
| (10) | | RR_DATA_REQ | |
| | | (TMSI REALLOC COMPLETE) | |
| | | *=====>* | |
| (11) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (12) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (13) | MMR_REG_CNF | | |
| | *<=====* | | |
| (14) | SIM_MM_UPDATE_REQ | | |
| | *<=====* | | |
| (15) | | RR_ESTABLISH_IND | |
| | | *<=====* | |
| (16) | | RR_DATA_IND | |
| | | (Identity request) | |
| | | *<=====* | |
| (17) | | RR_DATA_REQ | |
| | | (Identity response) | |
| | | *=====>* | |
| (18) | | RR_RELEASE_IND | |
| | | *<=====* | |
| (19) | | MDL_RELEASE_REQ | |
| | | *=====>* | |
| (20) | SIM_MM_INSERT_IND | | |
| | *=====>* | | |
| (21) | | RR_ESTABLISH_REQ | |
| | | *=====>* | |
| (22) | | RR_ESTABLISH_CNF | |
| | | *<=====* | |

```

(23) | | RR_RELEASE_IND |
| | *<===== |
(24) | | MDL_RELEASE_REQ |
| | *=====> |
(25) | | RR_ABORT_REQ |
| | *=====> |
(26) | | RR_ACTIVATE_REQ |
| | *=====> |
(27) | | RR_ACTIVATE_CNF |
| | *<===== |
(28) | | RR_ESTABLISH_REQ |
| | (LOCATION UPDATING REQ) |
| | *=====> |
(29) | | RR_ESTABLISH_CNF |
| | *<===== |
(30) | | RR_DATA_IND |
| | (LOCATION UPDATING ACC) |
| | *<===== |
(31) | | RR_DATA_REQ |
| | (TMSI REALLOC COMPLETE) |
| | *=====> |
(32) | | RR_SYNC_REQ |
| | *=====> |
(33) | | RR_SYNC_REQ |
| | *=====> |
(34) | MMR_REG_CNF |
| *<===== |
(35) | SIM_MM_UPDATE_REQ |
| *<===== |
(36) | | RR_RELEASE_IND |
| | *<===== |
(37) | | MDL_RELEASE_REQ |
| | *=====> |
| | |
    
```

Parametrization

| Primitive | Parameter | Value |
|------------------------|------------|------------------------|
| (15) SIM_MM_INSERT_IND | op_mode | NORMAL_SIM_INS |
| | imsi_field | IMSI_FIELD_1 |
| | loc_info | LOC_INFO_UPDATED_1 |
| | acc_ctrl | ACC_CTRL_1 |
| | bcch_inf | BCCH_INF_1 |
| | kc_n | KC_EMPTY |
| | pref_plmn | PREF_PLMN_NONE |
| | forb_plmn | FORB_PLMN_NONE |
| | phase | PHASE_2_SIM |
| | hplmn | THPLMN_01 |
| (16) MMR_PLMN_MODE_REQ | mode | MODE_MAN |
| (17) RR_SYNC_REQ | op | OP_MODE_SIM_NO_SERV_M1 |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | NOT_USED |
| | lac | NOT_USED |

| | | |
|------|------------------|-------------------------|
| | syncchs | NOT_PRESENT_16BIT |
| | accc | NOT_USED |
| | thplmn | NOT_USED |
| (18) | MMR_PLMN_RES | |
| | plmn | PLMN_123_33 |
| (19) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_123_33 |
| | op | OP_MODE_SIM_NO_SERV_M2 |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | accc | ACC_2143 |
| | imsi | MOB_ID_IMSI |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_1 |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (20) | RR_ACTIVATE_CNF | |
| | op | OP_MODE_SIM |
| | mm_info | MM_INFO_ATT |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (21) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_ATTACH |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (22) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (23) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | NOT_USED |
| | } | |

| | | |
|------|-------------------|---------------------|
| (24) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (25) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | MOB_ID_NEW_TMSI |
| | plmn | NOT_USED |
| | lac | NOT_USED |
| | synccs | NOT_USED |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (26) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |
| | kcv | NOT_USED |
| | tmsi | NOT_USED |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | synccs | SYNCCS_LAI_ALLOW |
| | acc | NOT_USED |
| | thplmn | NOT_USED |
| (27) | MMR_REG_CNF | |
| | plmn | PLMN_123_33 |
| (28) | SIM_MM_UPDATE_REQ | |
| | loc_info | LOC_INFO_UPDATED_5 |
| | bcch_inf | BCCH_INF_1 |
| | forb_plmn | NOT_USED |
| | cksn | CKSN_RES |
| | kc | KC_DELETED_SIM |
| | cell_identity | CELL_ID_1122 |
| (29) | RR_ESTABLISH_IND | |
| | param | NOT_USED |
| (30) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_IDENT_REQ |
| | ti | TI_0 |
| | ident | IDENT_TYPE_IMSI |
| | } | |
| (31) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |

| | | |
|------|-------------------|------------------------------|
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_IDENT_RES |
| | ti | TI_0 |
| | mob_id | MOB_IDENT_IMSI |
| | } | |
| (32) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (33) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (34) | SIM_MM_INSERT_IND | |
| | op_mode | NORMAL_SIM_INS |
| | imsi_field | SIM_IMSI_001010123456789 |
| | loc_info | LOC_INFO_UPDATED_123_44_0002 |
| | acc_ctrl | ACC_CTRL_1 |
| | bcch_inf | BCCH_INF_1 |
| | kc_n | KC_EMPTY |
| | pref_plmn | PREF_PLMN_NONE |
| | forb_plmn | FORB_PLMN_NONE |
| | phase | PHASE_2_SIM |
| | hplmn | THPLMN_01 |
| (35) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_MOB_ORIG_CAL_BY_SS_SMS |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_IMSI_DETACH_IND |
| | ti | TI_0 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MOB_IDENT_TMSI |
| | } | |
| (36) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (37) | RR_RELEASE_IND | |
| | relcs | RELCS_NORM |
| | sapi | SAPI_0 |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (38) | MDL_RELEASE_REQ | |
| | ch_type | NOT_PRESENT_8BIT |
| | sapi | SAPI_0 |
| (39) | RR_ABORT_REQ | |
| | abcs | ABCS_SIM_REM |
| (40) | RR_ACTIVATE_REQ | |
| | plmn | PLMN_123_33 |
| | op | OP_MODE_SIM_NO_SERV_M2 |
| | cksn | CKSN_RES |
| | kcv | KCV_EMPTY |
| | acc | ACC_2143 |

| | | |
|------|------------------|--------------------------|
| | imsi | PRI_IMSI_001010123456789 |
| | tmsi | MOB_ID_NO_ID |
| | thplmn | THPLMN_01 |
| | bcch_info | BCCH_INFO_1 |
| | cell_test | CELL_TEST_DISABLE |
| | gprs_indic | GPRS_NO |
| (41) | RR_ACTIVATE_CNF | |
| | op | OP_MODE_SIM_M |
| | mm_info | MM_INFO_ATT |
| | cid | CELL_ID_1122 |
| | plmn | PLMN_123_33 |
| | lac | LAC_2147 |
| | power | RF_CLASS_2 |
| | gprs_indic | GPRS_NO |
| (42) | RR_ESTABLISH_REQ | |
| | estcs | ESTCS_SERV_REQ_BY_MM |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_LOC_UPD_REQ |
| | ti | TI_0 |
| | loc_upd_type | LOC_UPD_TYPE_NORMAL |
| | ciph_key_num | CIPH_KEY_NUM_RES |
| | loc_area_ident | LOC_AREA_ID_123_44_0002 |
| | mob_class_1 | MOB_CLASS_1 |
| | mob_id | MSG_IMSI_001010123456789 |
| | } | |
| (43) | RR_ESTABLISH_CNF | |
| | param | NOT_USED |
| (44) | RR_DATA_IND | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | DOWNLINK |
| | pd | D_LOC_UPD_ACCEPT |
| | ti | TI_0 |
| | loc_area_ident | LOC_AREA_ID_123_33_2147 |
| | mob_id | MOB_IDENT_NEW_TMSI |
| | follow_proceed | NOT_USED |
| | } | |
| (45) | RR_DATA_REQ | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | MM |
| | direction | UPLINK |
| | pd | U_TMSI_REALLOC_COMP |
| | ti | TI_0 |
| | } | |
| (46) | RR_SYNC_REQ | |
| | op | NOT_USED |
| | cksn | NOT_USED |

| | | | |
|----------|-------------------|-------------------------|---------|
| | kcv | NOT_USED | |
| | tmsi | MOB_ID_NEW_TMSI | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_USED | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (47) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | synccs | SYNCCS_LAI_ALLOW | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (48) | MMR_REG_CNF | | |
| | plmn | PLMN_123_33 | |
| (49) | SIM_MM_UPDATE_REQ | | |
| | loc_info | LOC_INFO_UPDATED_5 | |
| | bcch_inf | BCCH_INF_1 | |
| | forb_plmn | NOT_USED | |
| | cksn | CKSN_RES | |
| | kc | KC_DELETED_SIM | |
| | cell_identity | CELL_ID_1122 | |
| (50) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (51) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| History: | 30.03.00 | HM | Initial |
| | 14.02.01 | HM | Revised |

4.26.3 MM603: SIM insert indication by SAT - IMSI change, automatic mode

Description: MM receives a SIM_MM_INSERT_IND with IMSI change. This shall cause a MM Re-start procedure. In this testcase, no detach is required by cell and the mobile is in automatic mode. As the same cell is selected after the IMSI ATTACH, there is no need to indicate the full service condition to the MMI as there was never something else than full service indicated.

Preamble: MM024

| MMI / CM | MM | RR/DL |
|----------|------------------------------------|-------|
| (1) | RR_ESTABLISH_IND | |
| (2) | RR_DATA_IND (Identity request) | |
| (3) | RR_DATA_REQ (Identity response) | |
| (4) | RR_RELEASE_IND | |
| (5) | MDL_RELEASE_REQ | |
| (6) | SIM_MM_INSERT_IND | |
| (7) | MDL_RELEASE_REQ | |
| (8) | RR_ABORT_REQ | |
| (9) | RR_ACTIVATE_REQ | |
| (10) | RR_ACTIVATE_CNF | |
| (11) | RR_ESTABLISH_IND | |
| (12) | RR_DATA_IND (Identity request) | |
| (13) | RR_DATA_REQ (Identity response) | |
| (14) | RR_RELEASE_IND | |
| (15) | MDL_RELEASE_REQ | |

Parametrization

| Primitive | Parameter | Value |
|-------------------------------|-----------|----------|
| (1) RR_ESTABLISH_IND param | | NOT_USED |
| (2) RR_DATA_IND d1 | | NOT_USED |
| d2 | | NOT_USED |
| sdu | | |
| { component | MM | |

| | |
|-----------------------|--------------------------|
| direction | DOWNLINK |
| pd | D_IDENT_REQ |
| ti | TI_0 |
| ident | IDENT_TYPE_IMSI |
| } | |
| (3) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_IDENT_RES |
| ti | TI_0 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (4) RR_RELEASE_IND | |
| relcs | RELCS_NORM |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (5) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (6) SIM_MM_INSERT_IND | |
| op_mode | NORMAL_SIM_INS |
| imsi_field | SIM_IMSI_001010123456789 |
| loc_info | LOC_INFO_UPDATED_1 |
| acc_ctrl | ACC_CTRL_1 |
| bcch_inf | BCCH_INF_1 |
| kc_n | KC_EMPTY |
| pref_plmn | PREF_PLMN_NONE |
| forb_plmn | FORB_PLMN_NONE |
| phase | PHASE_2_SIM |
| hplmn | THPLMN_01 |
| (7) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (8) RR_ABORT_REQ | |
| abcs | ABCS_SIM_REM |
| (9) RR_ACTIVATE_REQ | |
| plmn | PLMN_123_33 |
| op | OP_MODE_SIM_NO_SERV |
| cksn | CKSN_RES |
| kcv | KCV_EMPTY |
| acc | ACC_2143 |
| imsi | PRI_IMSI_001010123456789 |
| tmsi | MOB_ID_NO_ID |
| thplmn | THPLMN_01 |
| bcch_info | BCCH_INFO_ECL |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |
| (10) RR_ACTIVATE_CNF | |
| op | OP_MODE_SIM_M |
| mm_info | MM_INFO |
| cid | CELL_ID_1122 |

| | | | |
|----------|------------------|--------------------------|---------|
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (11) | RR_ESTABLISH_IND | | |
| | param | NOT_USED | |
| (12) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_IDENT_REQ | |
| | ti | TI_0 | |
| | ident | IDENT_TYPE_IMSI | |
| | } | | |
| (13) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IDENT_RES | |
| | ti | TI_0 | |
| | mob_id | MSG_IMSI_001010123456789 | |
| | } | | |
| (14) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (15) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| History: | 14.02.01 | HM | Initial |

4.26.4 MM604: SIM insert indication by SAT - IMSI change, manual mode

Description: MM receives a SIM_MM_INSERT_IND with IMSI change. This shall cause a MM Re-start procedure. In this testcase, no detach/attach is required by cell. As the same cell is selected after the IMSI ATTACH, there is no need to indicate the full service condition to the MMI as there was never something else than full service indicated.

Preamble: MM025

| MMI / CM | MM | RR/DL |
|----------|------------------------------------|-------|
| (1) | RR_ESTABLISH_IND | |
| (2) | RR_DATA_IND (Identity request) | |
| (3) | RR_DATA_REQ (Identity response) | |
| (4) | RR_RELEASE_IND | |
| (5) | MDL_RELEASE_REQ | |
| (6) | SIM_MM_INSERT_IND | |
| (7) | MDL_RELEASE_REQ | |
| (8) | RR_ABORT_REQ | |
| (9) | RR_ACTIVATE_REQ | |
| (10) | RR_ACTIVATE_CNF | |
| (11) | RR_ESTABLISH_IND | |
| (12) | RR_DATA_IND (Identity request) | |
| (13) | RR_DATA_REQ (Identity response) | |
| (14) | RR_RELEASE_IND | |
| (15) | MDL_RELEASE_REQ | |

Parametrization

| Primitive | Parameter | Value |
|-------------------------------|-----------|----------|
| (1) RR_ESTABLISH_IND param | | NOT_USED |
| (2) RR_DATA_IND d1 | | NOT_USED |
| d2 | | NOT_USED |
| sdu | | |
| { | | |
| component | MM | |
| direction | DOWNLINK | |

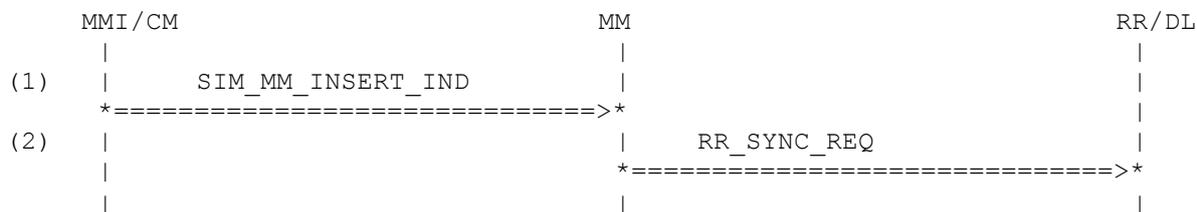
| | |
|-----------------------|--------------------------|
| pd | D_IDENT_REQ |
| ti | TI_0 |
| ident | IDENT_TYPE_IMSI |
| } | |
| (3) RR_DATA_REQ | |
| d1 | NOT_USED |
| d2 | NOT_USED |
| sdu | |
| { | |
| component | MM |
| direction | UPLINK |
| pd | U_IDENT_RES |
| ti | TI_0 |
| mob_id | MOB_IDENT_IMSI |
| } | |
| (4) RR_RELEASE_IND | |
| relcs | RELCS_NORM |
| sapi | SAPI_0 |
| gprs_resumption | GPRS_RESUMPTION_NOT_ACK |
| (5) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (6) SIM_MM_INSERT_IND | |
| op_mode | NORMAL_SIM_INS |
| imsi_field | SIM_IMSI_001010123456789 |
| loc_info | LOC_INFO_UPDATED_1 |
| acc_ctrl | ACC_CTRL_1 |
| bcch_inf | BCCH_INF_1 |
| kc_n | KC_EMPTY |
| pref_plmn | PREF_PLMN_NONE |
| forb_plmn | FORB_PLMN_NONE |
| phase | PHASE_2_SIM |
| hplmn | THPLMN_01 |
| (7) MDL_RELEASE_REQ | |
| ch_type | NOT_PRESENT_8BIT |
| sapi | SAPI_0 |
| (8) RR_ABORT_REQ | |
| abcs | ABCS_SIM_REM |
| (9) RR_ACTIVATE_REQ | |
| plmn | PLMN_123_33 |
| op | OP_MODE_SIM_NO_SERV_M2 |
| cksn | CKSN_RES |
| kcv | KCV_EMPTY |
| acc | ACC_2143 |
| imsi | PRI_IMSI_001010123456789 |
| tmsi | MOB_ID_NO_ID |
| thplmn | THPLMN_01 |
| bcch_info | BCCH_INFO_1 |
| cell_test | CELL_TEST_DISABLE |
| gprs_indic | GPRS_NO |
| (10) RR_ACTIVATE_CNF | |
| op | OP_MODE_SIM_M |
| mm_info | MM_INFO |
| cid | CELL_ID_1122 |
| plmn | PLMN_123_33 |

| | | | |
|----------|------------------|--------------------------|---------|
| | lac | LAC_2147 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (11) | RR_ESTABLISH_IND | | |
| | param | NOT_USED | |
| (12) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_IDENT_REQ | |
| | ti | TI_0 | |
| | ident | IDENT_TYPE_IMSI | |
| | } | | |
| (13) | RR_DATA_REQ | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | UPLINK | |
| | pd | U_IDENT_RES | |
| | ti | TI_0 | |
| | mob_id | MSG_IMSI_001010123456789 | |
| | } | | |
| (14) | RR_RELEASE_IND | | |
| | relcs | RELCS_NORM | |
| | sapi | SAPI_0 | |
| | gprs_resumption | GPRS_RESUMPTION_NOT_ACK | |
| (15) | MDL_RELEASE_REQ | | |
| | ch_type | NOT_PRESENT_8BIT | |
| | sapi | SAPI_0 | |
| History: | 30.03.00 | HM | Initial |
| | 14.02.01 | HM | Revised |

4.26.5 MM605: SIM insert indication by SAT - no IMSI change, RR notification

Description: MM receives a SIM_MM_INSERT_IND without IMSI change. This shall not cause a MM Restart procedure, but there were fields changed which cause RR notification.

Preamble: MM025



Parametrization

| Primitive | Parameter | Value |
|------------------------|--------------------|------------|
| (53) SIM_MM_INSERT_IND | | |
| op_mode | NORMAL_SIM_INS | |
| imsi_field | IMSI_FIELD_1 | |
| loc_info | LOC_INFO_UPDATED_1 | |
| acc_ctrl | ACC_CTRL_1 | |
| bcch_inf | BCCH_INF_1 | |
| kc_n | KC_EMPTY | |
| pref_plmn | PREF_PLMN_NONE | |
| forb_plmn | FORB_PLMN_NONE | |
| phase | PHASE_2_SIM | |
| hplmn | THPLMN_FF | |
| (54) RR_SYNC_REQ | | |
| op | NOT_USED | |
| cksn | NOT_USED | |
| kcv | NOT_USED | |
| tmsi | NOT_USED | |
| plmn | NOT_USED | |
| lac | NOT_USED | |
| synccs | SYNCCS_ACCC_THPLMN | |
| acc | ACC_2143 | |
| thplmn | THPLMN_FF | |
| History: | 04.04.00 | HM Initial |

4.26.6 MM606: SIM inserted - File update by SAT

Description: MM receives a SIM_FILE_UPDATE_IND for some not interesting crap. MM does nothing special and confirms the request.

Preamble: MM025

| | MMI/CM | MM | RR/DL |
|-----|---------------------|----|-------|
| | | | |
| (1) | SIM_FILE_UPDATE_IND | | |
| | *=====>* | | |
| (2) | SIM_FILE_UPDATE_RES | | |
| | *<=====* | | |
| | | | |

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|---------------------|------------------|--------------|
| (1) | SIM_FILE_UPDATE_IND | | |
| | val_nr | FILE_CHG_1 | |
| | file_id | EF_MSISDN | |
| (2) | SIM_FILE_UPDATE_RES | | |
| | source | SRC_MM | |
| | fu_rsc | SIM_FU_SUCCESS | |
| History: | 14.02.01 | HM | Initial |

4.26.7 MM607: SIM inserted - File update by SAT

Description: MM receives a SIM_FILE_UPDATE_IND for the preferred PLMN list
Preamble: MM025

| | MMI/CM | MM | RR/DL |
|-----|---------------------|----|-------|
| (1) | SIM_FILE_UPDATE_IND | | |
| | *=====>* | | |
| (2) | SIM_READ_REQ | | |
| | *<=====* | | |
| (3) | SIM_READ_CNF | | |
| | *=====>* | | |
| (4) | SIM_FILE_UPDATE_RES | | |
| | *<=====* | | |
| | | | |

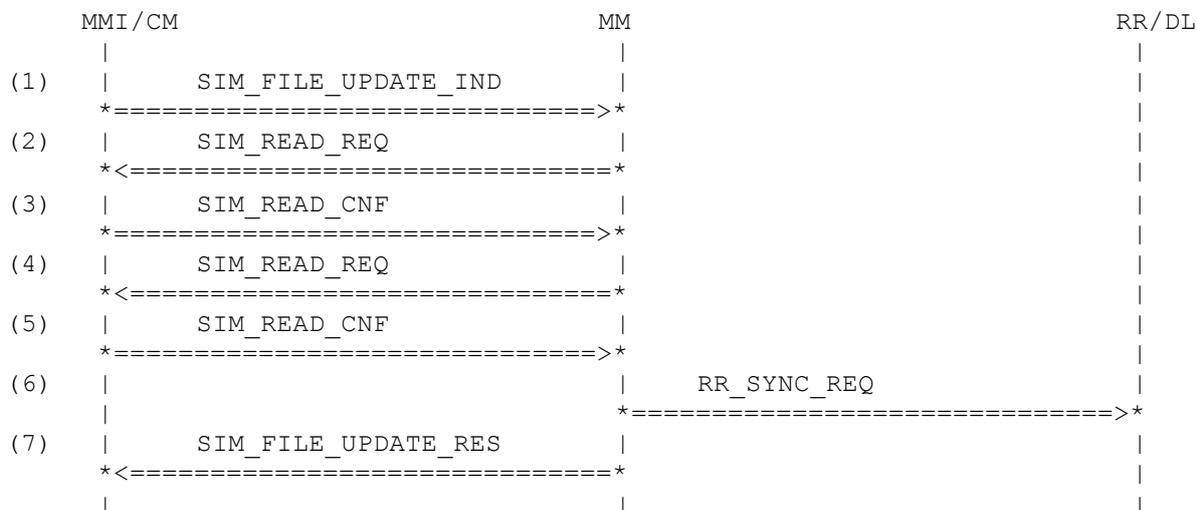
Parametrization

| | Primitive | Parameter | Value |
|----------|---------------------|---------------------|------------------------------|
| (3) | SIM_FILE_UPDATE_IND | | |
| | val_nr | FILE_CHG_1 | |
| | file_id | EF_PLMN_SEL | |
| (4) | SIM_READ_REQ | | |
| | source | SRC_MM | |
| | offset | OFFSET_0 | |
| | datafield | SIM_PLMNSEL | |
| | length | NOT_PRESENT_8BIT | |
| | max_length | MAX_LEN_PREF_PLMN | |
| (5) | SIM_READ_CNF | | |
| | datafield | SIM_PLMNSEL | |
| | error | SIM_NO_ERROR | |
| | length | PLMN_SEL_LENGTH | |
| | trans_data | PLMN_SEL_NLPTT_PROX | |
| (6) | SIM_FILE_UPDATE_RES | | |
| | source | SRC_MM | |
| | fu_rsc | SIM_FU_SUCCESS | |
| History: | 30.03.00 | HM | Initial |
| | 16.10.00 | HM | Modified SIM_FILE_UPDATE_RES |

4.26.8 MM608: File update by SAT, RR notification

Description: MM receives a SIM_FILE_UPDATE_IND for the HPLMN search period. RR has to be notified about the change

Preamble: MM025



Parametrization

| | Primitive | Parameter | Value |
|------|---------------------|---------------------|-------|
| (55) | SIM_FILE_UPDATE_IND | | |
| | val_nr | FILE_CHG_2 | |
| | file_id | EF_PLMN_SEL_THPLMN | |
| (7) | SIM_READ_REQ | | |
| | source | SRC_MM | |
| | offset | OFFSET_0 | |
| | datafield | SIM_HPLMN | |
| | length | NOT_PRESENT_8BIT | |
| | max_length | LENGTH_THPLMN | |
| (8) | SIM_READ_CNF | | |
| | datafield | SIM_HPLMN | |
| | error | SIM_NO_ERROR | |
| | length | LENGTH_THPLMN | |
| | trans_data | SIM_THPLMN_FF | |
| (9) | SIM_READ_REQ | | |
| | source | SRC_MM | |
| | offset | OFFSET_0 | |
| | datafield | SIM_PLMNSEL | |
| | length | NOT_PRESENT_8BIT | |
| | max_length | MAX_LEN_PREF_PLMN | |
| (10) | SIM_READ_CNF | | |
| | datafield | SIM_PLMNSEL | |
| | error | SIM_NO_ERROR | |
| | length | PLMN_SEL_LENGTH | |
| | trans_data | PLMN_SEL_NLPTT_PROX | |
| (56) | RR_SYNC_REQ | | |
| | op | NOT_USED | |
| | cksn | NOT_USED | |

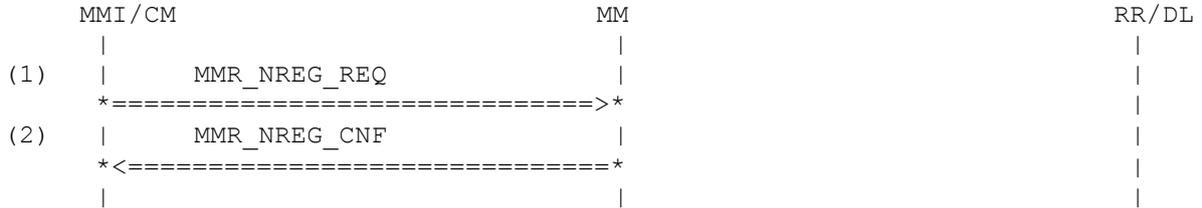
| | | | |
|----------|---------------------|--------------------|------------------------------|
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | syncs | SYNCCS_ACCC_THPLMN | |
| | acc | ACC_2143 | |
| | thplmn | THPLMN_FF | |
| (11) | SIM_FILE_UPDATE_RES | | |
| | source | SRC_MM | |
| | fu_rsc | SIM_FU_SUCCESS | |
| History: | 30.03.00 | HM | Initial |
| | 16.10.00 | HM | Modified SIM_FILE_UPDATE_RES |

4.27 Switching service modes back and forth

4.27.1 MM620: SIM inserted - Deregistered -> Deregistered

Description: MM receives a SIM-INSERT indication primitive. Deregistering is required by the MMI.

Preamble: MM315



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|--------------------|------------------|--------------|
| (47) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (48) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 25.04.00 | HM | Initial |

4.27.2 MM621: SIM inserted - Deregistered -> Limited

Description: A limited service search is required by the MMI. To prove MM is in a state not allowing normal calls, an establish attempt is tried. This will be refused by MM.

Preamble: MM620

| | MMI/CM | MM | RR/DL |
|-----|---------------------------------------|-----------------|-------|
| (1) | MMR_REG_REQ (SERVICE_MODE_LIMITED) | | |
| (2) | | RR_ACTIVATE_REQ | |
| (3) | | RR_ACTIVATE_CNF | |
| (4) | MMR_NREG_IND | | |
| (5) | MMCC_ESTABLISH_REQ | | |
| (6) | MMCC_RELEASE_IND | | |

Parametrization

| | Primitive | Parameter | Value |
|------|---|---|-------|
| (54) | MMR_REG_REQ service_mode | SERVICE_MODE_LIMITED | |
| (55) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NO_SIM_NO_SERV CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID MOB_ID_NO_ID THPLMN_FF NOT_USED CELL_TEST_DISABLE GPRS_NO | |
| (56) | RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_NO_SIM_LIM_SERV MM_INFO CELL_ID_1122 PLMN_123_44 LAC_0002 RF_CLASS_2 GPRS_NO | |
| (57) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_MMIREQ | |
| (58) | MMCC_ESTABLISH_REQ ti prio estcs | TI_2 PRIO_NORM_CALL ESTCS_MOB_ORIG_SPCH | |

(59) MMCC_RELEASE_IND
ti
relcs
TI_2
RELCS_NO_REGISTRATION
History: 25.04.00 HM Initial

4.27.3 MM622: SIM inserted - Deregistered -> Full (automatic mode)

Description: A full service search in automatic mode is required by the MMI.

Preamble: MM620

| | MMI/CM | MM | RR/DL |
|-----|-------------------|-----------------|-------|
| (1) | MMR_PLMN_MODE_REQ | | |
| | *=====>* | | |
| (2) | MMR_REG_REQ | | |
| | *=====>* | | |
| (3) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (4) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (5) | MMR_REG_CNF | | |
| | *<=====* | | |
| | | | |

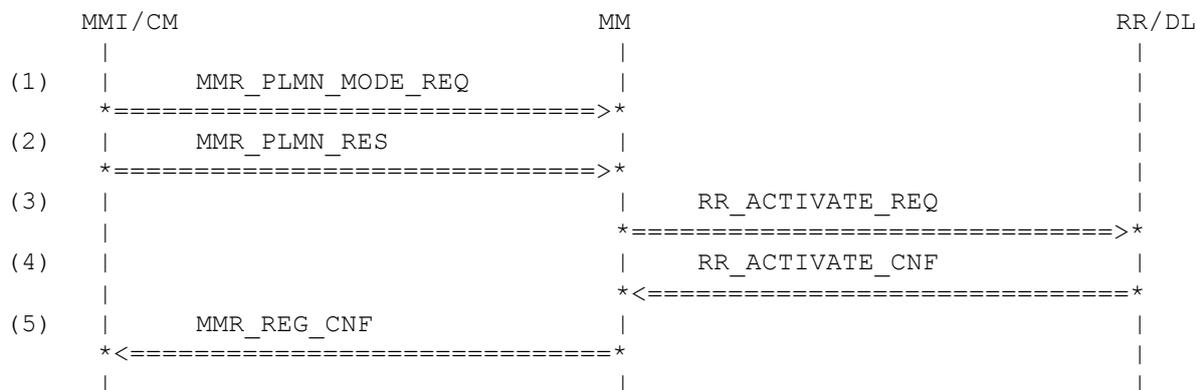
Parametrization

| Primitive | Parameter | Value |
|---|--|------------|
| (113) MMR_PLMN_MODE_REQ mode | MODE_AUTO | |
| (114) MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (115) RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_ECL CELL_TEST_DISABLE GPRS_NO | |
| (116) RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_SIM MM_INFO_2 CELL_ID_1122 PLMN_123_33 LAC_2147 RF_CLASS_2 GPRS_NO | |
| (117) MMR_REG_CNF plmn | PLMN_123_33 | |
| History: | 20.04.00 | HM Initial |

4.27.4 MM623: SIM inserted - Deregistered -> Full (manual mode)

Description: MM receives a request to manual register in deregistered mode.

Preamble: MM620



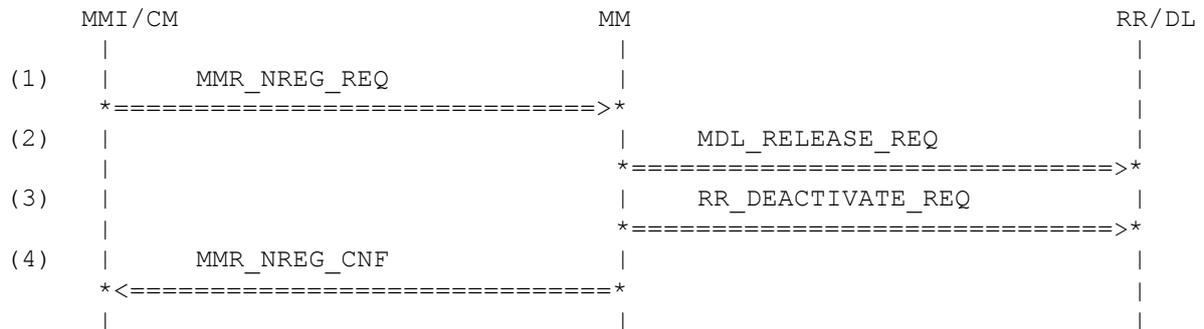
Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|--|---|--------------|
| (49) | MMR_PLMN_MODE_REQ mode | MODE_MAN | |
| (118) | MMR_PLMN_RES plmn | PLMN_123_33 | |
| (119) | RR_ACTIVATE_REQ plmn op cksn kcv accc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV_M2 CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |
| (120) | RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_SIM_M MM_INFO CELL_ID_1122 PLMN_123_33 LAC_2147 RF_CLASS_2 GPRS_NO | |
| (121) | MMR_REG_CNF plmn | PLMN_123_33 | |
| History: | 25.04.00 | HM | Initial |

4.27.5 MM624: SIM inserted - Limited -> Deregistered

Description: MM receives a request to deregister in limited service state.

Preamble: MM621



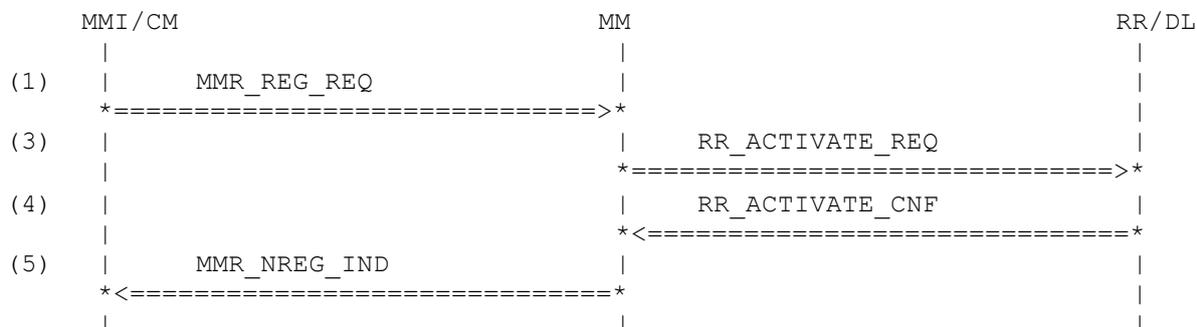
Parametrization

| | Primitive | Parameter | Value |
|----------|------------------------------------|----------------------------|---------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 25.04.00 | HM | Initial |

4.27.6 MM625: SIM inserted - Limited -> Limited

Description: MM receives a request to register to limited service in limited service state. This is done by MMR_REG_REQ with parameter SERVICE_MODE_LIMITED here.

Preamble: MM621



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------|-------------------------|--------------|
| (50) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_LIMITED | |
| (122) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_NO_ID | |
| | op | OP_MODE_NO_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KC_DELETED | |
| | acc | ACC_CLASS_0000 | |
| | imsi | MOB_ID_NO_ID | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_FF | |
| | bcch_info | NOT_USED | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (123) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_NO_SIM_LIM_SERV | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_44 | |
| | lac | LAC_0002 | |
| | power | RF_CLASS_2 | |
| | gprs_indic | GPRS_NO | |
| (51) | MMR_NREG_IND | | |
| | nreg_cs | NREG_LIMITED_SERVICE | |
| | search_running | SEARCH_NOT_RUNNING | |
| | new_forb_plmn | PLMN_NO_ID | |
| | limited_cause | MMR_SIM_INVALID_MMIREQ | |
| History: | 27.04.00 | HM | Initial |

4.27.7 MM626: SIM inserted - Limited -> Full (automatic mode)

Description: MM receives a request to register to full service in automatic mode. Currently MM is in limited service state.

Preamble: MM621

| | MMI / CM | MM | RR / DL |
|-----|-------------------|-----------------|---------|
| (1) | MMR_PLMN_MODE_REQ | | |
| | *=====>* | | |
| (2) | | RR_SYNC_REQ | |
| | | *=====>* | |
| (3) | MMR_REG_REQ | | |
| | *=====>* | | |
| (4) | | RR_ACTIVATE_REQ | |
| | | *=====>* | |
| (5) | | RR_ACTIVATE_CNF | |
| | | *<=====* | |
| (6) | MMR_REG_CNF | | |
| | *<=====* | | |
| | | | |

Parametrization

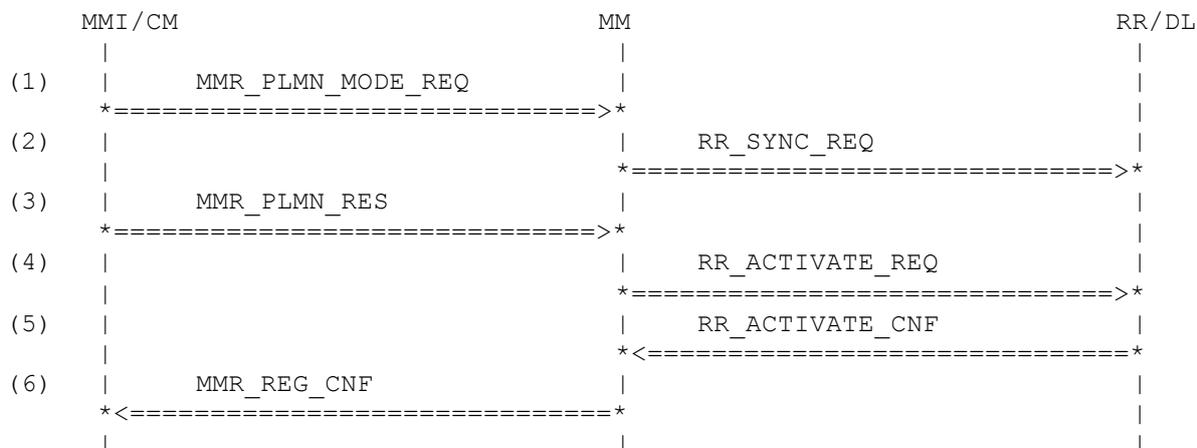
| | Primitive | Parameter | Value |
|-------|--|--|-------|
| (52) | MMR_PLMN_MODE_REQ mode | MODE_AUTO | |
| (124) | RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs accc thplmn | OP_MODE_SIM_NO_SERV1 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_PRESENT_16BIT NOT_USED NOT_USED | |
| (125) | MMR_REG_REQ service_mode | SERVICE_MODE_FULL | |
| (126) | RR_ACTIVATE_REQ plmn op cksn kcv accc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_ECL CELL_TEST_DISABLE GPRS_NO | |
| (127) | RR_ACTIVATE_CNF op mm_info cid plmn lac | OP_MODE_SIM MM_INFO_2 CELL_ID_1122 PLMN_123_33 LAC_2147 | |

| | | | |
|-------------------|----------|-------------|---------|
| power | | RF_CLASS_2 | |
| gprs_indic | | GPRS_NO | |
| (128) MMR_REG_CNF | | | |
| plmn | | PLMN_123_33 | |
| History: | 25.04.00 | HM | Initial |

4.27.8 MM627: SIM inserted - Limited -> Full (manual mode)

Description: MM receives a request to manual register in limited service state.

Preamble: MM621



Parametrization

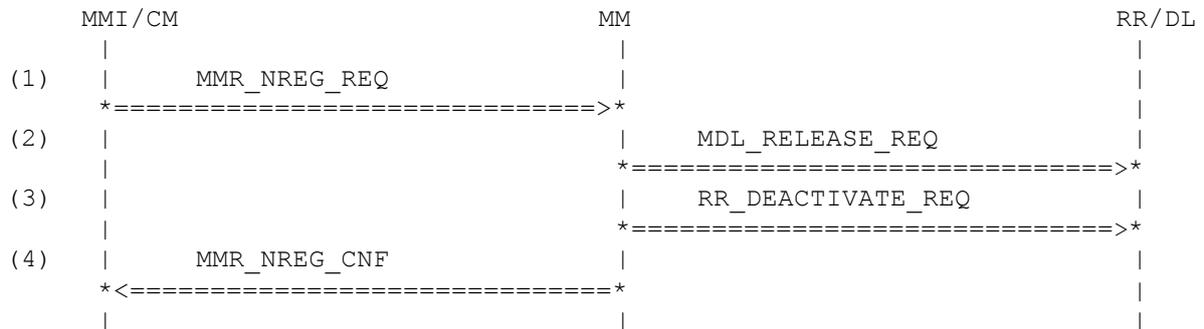
| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-------|-------------------|------------------------|--------------|
| (53) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_MAN | |
| (129) | RR_SYNC_REQ | | |
| | op | OP_MODE_SIM_NO_SERV_M1 | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_PRESENT_16BIT | |
| | accc | NOT_USED | |
| | thplmn | NOT_USED | |
| (130) | MMR_PLMN_RES | | |
| | plmn | PLMN_123_33 | |
| (131) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV_M2 | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | accc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_1 | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (132) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM_M | |
| | mm_info | MM_INFO | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |

| | | | |
|-------------------|----------|-------------|---------|
| power | | RF_CLASS_2 | |
| gprs_indic | | GPRS_NO | |
| (133) MMR_REG_CNF | | | |
| plmn | | PLMN_123_33 | |
| History: | 25.04.00 | HM | Initial |

4.27.9 MM628: SIM inserted - Full (automatic mode) -> Deregistered

Description: MM receives a request to deregister in full service state.

Preamble: MM622



Parametrization

| Primitive | Parameter | Value |
|--|----------------------------|------------|
| (1) MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 25.04.00 | HM Initial |

4.27.10 MM629: SIM inserted - Full (automatic mode) -> Limited

Description: MM receives a request to register to limited service in full service state. This is done by MMR_REG_REQ with parameter SERVICE_MODE_LIMITED here.

Preamble: MM622

| | MMI/CM | MM | RR/DL |
|-----|---------------------------------------|-----------------|-------|
| (1) | MMR_REG_REQ (SERVICE_MODE_LIMITED) | | |
| (2) | | RR_ACTIVATE_REQ | |
| (3) | | RR_ACTIVATE_CNF | |
| (4) | MMR_NREG_IND | | |
| (5) | MMCC_ESTABLISH_REQ | | |
| (6) | MMCC_RELEASE_IND | | |

Parametrization

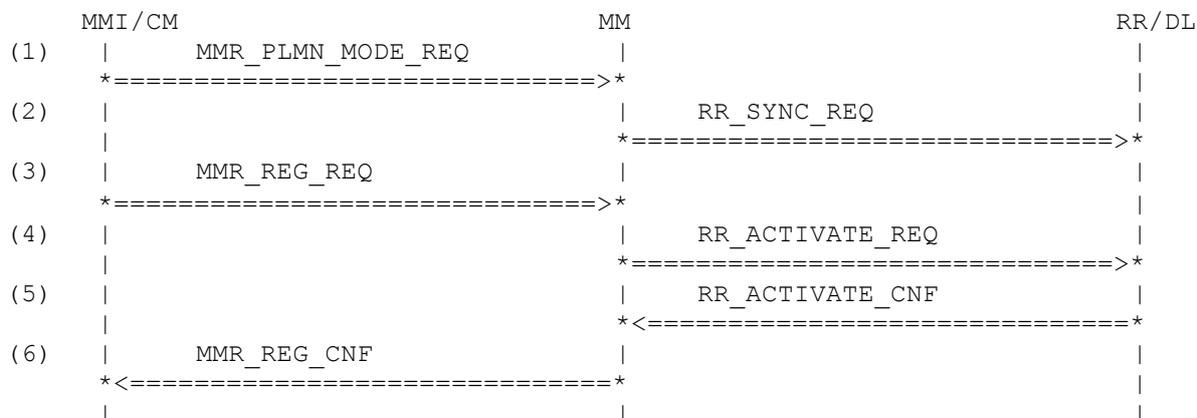
| | Primitive | Parameter | Value |
|------|---|---|-------|
| (54) | MMR_REG_REQ service_mode | SERVICE_MODE_LIMITED | |
| (55) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NO_SIM_NO_SERV CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID MOB_ID_NO_ID THPLMN_FF NOT_USED CELL_TEST_DISABLE GPRS_NO | |
| (56) | RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_NO_SIM_LIM_SERV MM_INFO CELL_ID_1122 PLMN_123_44 LAC_0002 RF_CLASS_2 GPRS_NO | |
| (57) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_MMIREQ | |
| (58) | MMCC_ESTABLISH_REQ ti prio estcs | TI_2 PRIO_NORM_CALL ESTCS_MOB_ORIG_SPCH | |

(59) MMCC_RELEASE_IND
ti
relcs
TI_2
RELCS_NO_REGISTRATION
History: 27.04.00 HM Initial

4.27.11 MM630: SIM inserted - Full (automatic mode) -> Full (automatic mode)

Description: MM receives a request to register to full service in automatic mode. Currently MM already is in full service state (automatic mode).

Preamble: MM622



Parametrization

| | Primitive | Parameter | Value |
|------|-------------------|---------------------|-------|
| (60) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_AUTO | |
| (61) | RR_SYNC_REQ | | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_PRESENT_16BIT | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (62) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (63) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_ECL | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (64) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO_2 | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |

| | | | | |
|----------|-------------|----|-------------|---------|
| | power | | RF_CLASS_2 | |
| | gprs_indic | | GPRS_NO | |
| (65) | MMR_REG_CNF | | | |
| | plmn | | PLMN_123_33 | |
| History: | 27.04.00 | HM | | Initial |
| | 02.05.01 | HM | | Revised |

4.27.12 MM631: SIM inserted - Full (automatic mode) -> Full (manual mode)

Description: MM receives a request to register to full service in manual mode. Currently MM is in full service state (automatic mode).

Preamble: MM622



Parametrization

| Primitive | Parameter | Value |
|---|---|-------|
| (60) MMR_PLMN_MODE_REQ mode | MODE_MAN | |
| (134) RR_SYNC_REQ op cksn kcv tmsi plmn lac synccs acc thplmn | OP_MODE_SIM_NO_SERV_M2 NOT_USED NOT_USED NOT_USED NOT_USED NOT_USED NOT_PRESENT_16BIT NOT_USED NOT_USED | |
| (135) MMR_PLMN_RES plmn | PLMN_123_33 | |
| (136) RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_123_33 OP_MODE_SIM_NO_SERV_M2 CKSN_RES KCV_EMPTY ACC_2143 MOB_ID_IMSI MOB_ID_NO_ID THPLMN_01 BCCH_INFO_1 CELL_TEST_DISABLE GPRS_NO | |
| (137) RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_SIM_M MM_INFO CELL_ID_1122 PLMN_123_33 LAC_2147 RF_CLASS_2 GPRS_NO | |

(138) MMR_REG_CNF
plmn

PLMN_123_33

History: 27.04.00

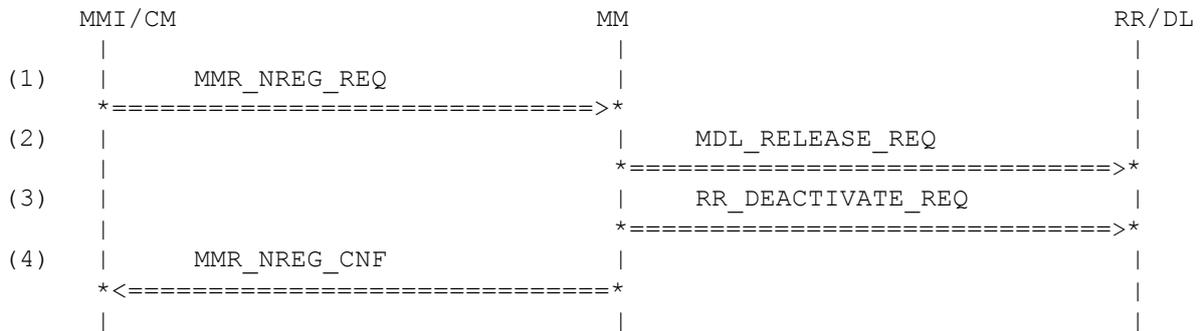
HM

Initial

4.27.13 MM632: SIM inserted - Full (manual mode) -> Deregistered

Description: MM receives a request to deregister in full service state.

Preamble: MM623



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|----------|------------------------------------|----------------------------|--------------|
| (1) | MMR_NREG_REQ cs | CS_POW_OFF | |
| (2) | MDL_RELEASE_REQ ch_type sapi | NOT_PRESENT_8BIT SAPI_0 | |
| (3) | RR_DEACTIVATE_REQ param | NOT_USED | |
| (4) | MMR_NREG_CNF cs | CS_POW_OFF | |
| History: | 27.04.00 | HM | Initial |

4.27.14 MM633: SIM inserted - Full (manual mode) -> Limited

Description: MM receives a request to register to limited service in full service state. This is done by MMR_REG_REQ with parameter SERVICE_MODE_LIMITED here.

Preamble: MM623

| | MMI/CM | MM | RR/DL |
|-----|---------------------------------------|-----------------|-------|
| (1) | MMR_REG_REQ (SERVICE_MODE_LIMITED) | | |
| (2) | | RR_ACTIVATE_REQ | |
| (3) | | RR_ACTIVATE_CNF | |
| (4) | MMR_NREG_IND | | |
| (5) | MMCC_ESTABLISH_REQ | | |
| (6) | MMCC_RELEASE_IND | | |

Parametrization

| | Primitive | Parameter | Value |
|------|---|---|-------|
| (66) | MMR_REG_REQ service_mode | SERVICE_MODE_LIMITED | |
| (67) | RR_ACTIVATE_REQ plmn op cksn kcv acc imsi tmsi thplmn bcch_info cell_test gprs_indic | PLMN_NO_ID OP_MODE_NO_SIM_NO_SERV CKSN_RES KC_DELETED ACC_CLASS_0000 MOB_ID_NO_ID MOB_ID_NO_ID THPLMN_FF NOT_USED CELL_TEST_DISABLE GPRS_NO | |
| (68) | RR_ACTIVATE_CNF op mm_info cid plmn lac power gprs_indic | OP_MODE_NO_SIM_LIM_SERV MM_INFO CELL_ID_1122 PLMN_123_44 LAC_0002 RF_CLASS_2 GPRS_NO | |
| (69) | MMR_NREG_IND nreg_cs search_running new_forb_plmn limited_cause | NREG_LIMITED_SERVICE SEARCH_NOT_RUNNING PLMN_NO_ID MMR_SIM_INVALID_MMIREQ | |
| (70) | MMCC_ESTABLISH_REQ ti prio estcs | TI_2 PRIO_NORM_CALL ESTCS_MOB_ORIG_SPCH | |

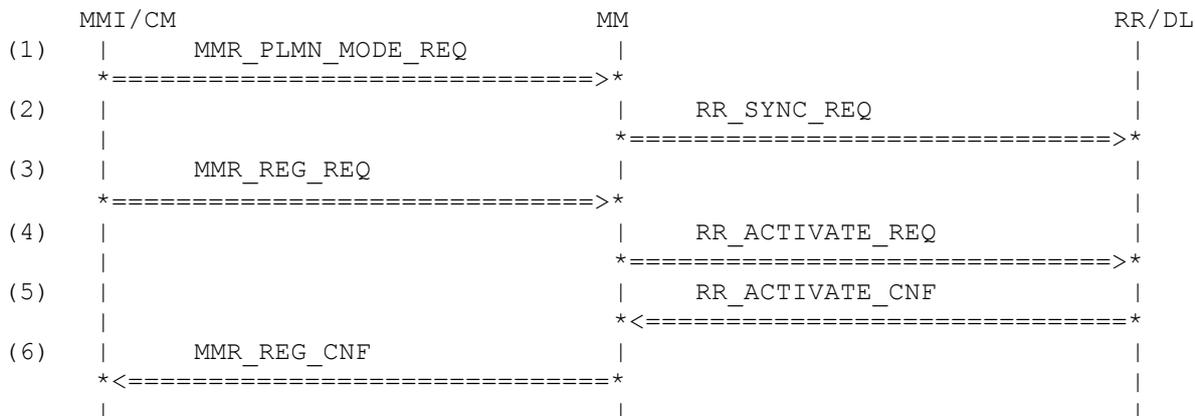
(71) MMCC_RELEASE_IND
ti
relcs
History: 27.04.00

TI_2
RELCS_NO_REGISTRATION
HM Initial

4.27.15 MM634: SIM inserted - Full (manual mode) -> Full (automatic mode)

Description: MM receives a request to register to full service in automatic mode. Currently MM already is in full service state (manual mode).

Preamble: MM623



Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|------|-------------------|---------------------|--------------|
| (61) | MMR_PLMN_MODE_REQ | | |
| | mode | MODE_AUTO | |
| (62) | RR_SYNC_REQ | | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | NOT_USED | |
| | kcv | NOT_USED | |
| | tmsi | NOT_USED | |
| | plmn | NOT_USED | |
| | lac | NOT_USED | |
| | synccs | NOT_PRESENT_16BIT | |
| | acc | NOT_USED | |
| | thplmn | NOT_USED | |
| (63) | MMR_REG_REQ | | |
| | service_mode | SERVICE_MODE_FULL | |
| (64) | RR_ACTIVATE_REQ | | |
| | plmn | PLMN_123_33 | |
| | op | OP_MODE_SIM_NO_SERV | |
| | cksn | CKSN_RES | |
| | kcv | KCV_EMPTY | |
| | acc | ACC_2143 | |
| | imsi | MOB_ID_IMSI | |
| | tmsi | MOB_ID_NO_ID | |
| | thplmn | THPLMN_01 | |
| | bcch_info | BCCH_INFO_ECL | |
| | cell_test | CELL_TEST_DISABLE | |
| | gprs_indic | GPRS_NO | |
| (65) | RR_ACTIVATE_CNF | | |
| | op | OP_MODE_SIM | |
| | mm_info | MM_INFO_2 | |
| | cid | CELL_ID_1122 | |
| | plmn | PLMN_123_33 | |
| | lac | LAC_2147 | |

| | | | | |
|----------|-------------|----|-------------|---------|
| | power | | RF_CLASS_2 | |
| | gprs_indic | | GPRS_NO | |
| (66) | MMR_REG_CNF | | | |
| | plmn | | PLMN_123_33 | |
| History: | 27.04.00 | HM | | Initial |
| | 02.05.01 | HM | | Revised |

4.27.16 MM635: SIM inserted - Full (manual mode) -> Full (manual mode)

Description: MM receives a request to register to full service in manual mode. Currently MM is in full service state (manual mode).

Preamble: MM623



Parametrization

| Primitive | Parameter | Value |
|------------|------------------------|-------|
| (159) | MMR_PLMN_MODE_REQ | |
| mode | MODE_MAN | |
| (160) | RR_SYNC_REQ | |
| op | OP_MODE_SIM_NO_SERV_M2 | |
| cksn | NOT_USED | |
| kcv | NOT_USED | |
| tmsi | NOT_USED | |
| plmn | NOT_USED | |
| lac | NOT_USED | |
| synccs | NOT_PRESENT_16BIT | |
| acc | NOT_USED | |
| thplmn | NOT_USED | |
| (161) | MMR_PLMN_RES | |
| plmn | PLMN_123_33 | |
| (162) | RR_ACTIVATE_REQ | |
| plmn | PLMN_123_33 | |
| op | OP_MODE_SIM_NO_SERV_M2 | |
| cksn | CKSN_RES | |
| kcv | KCV_EMPTY | |
| acc | ACC_2143 | |
| imsi | MOB_ID_IMSI | |
| tmsi | MOB_ID_NO_ID | |
| thplmn | THPLMN_01 | |
| bcch_info | BCCH_INFO_1 | |
| cell_test | CELL_TEST_DISABLE | |
| gprs_indic | GPRS_NO | |
| (163) | RR_ACTIVATE_CNF | |
| op | OP_MODE_SIM_M | |
| mm_info | MM_INFO | |
| cid | CELL_ID_1122 | |
| plmn | PLMN_123_33 | |
| lac | LAC_2147 | |
| power | RF_CLASS_2 | |
| gprs_indic | GPRS_NO | |

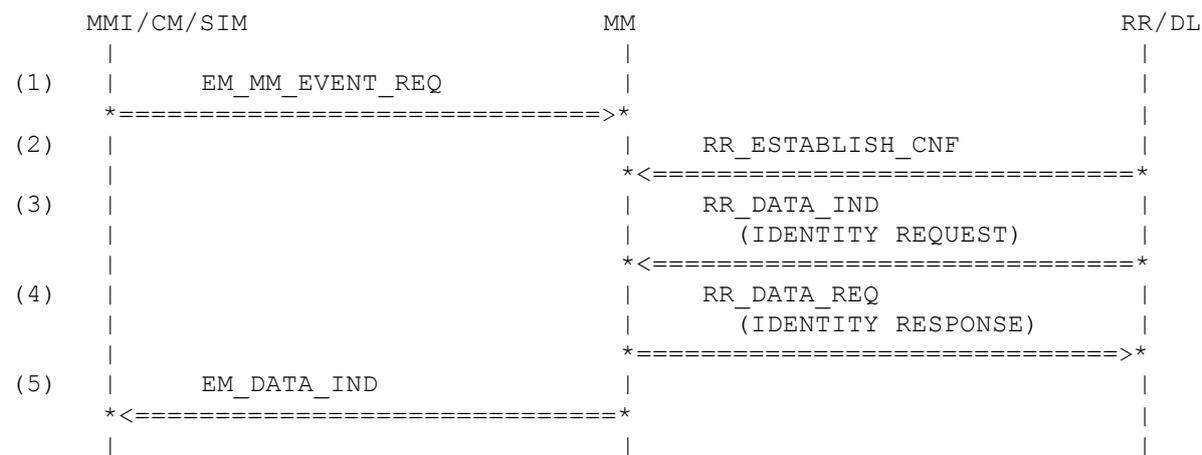
(164) MMR_REG_CNF
 plmn PLMN_123_33
 History: 27.04.00 HM Initial

4.28 Engineering mode

4.28.1 MM650: Identity Request during Location Updating

Description: Connection is confirmed in the form of a RR-ESTABLISH confirmation primitive, whereupon MM changes to State 3 (Location Updating Initiated). In the course of Location Updating the network requests the identity of the MS. MM responds by issuing an Identity Response message as part of a RR-DATA indication primitive.

Preamble: MM101



Parametrization

| Primitive | Parameter | Value |
|---|--|-------|
| (1) EM_MM_EVENT_REQ bitmask_mm | Bitm_1 | |
| (2) RR_ESTABLISH_CNF param | NOT_USED | |
| (3) RR_DATA_IND d1 d2 sdu { component direction pd ti ident } | MM DOWNLINK D_IDENT_REQ TI_0 IDENT_TYPE_IMSI | |
| (4) RR_DATA_REQ d1 d2 sdu { component direction | MM UPLINK | |

```

        pd          U_IDENT_RES
        ti          TI_0
        mob_id      MOB_IDENT_IMSI
    }

(5) EM_DATA_IND
    entity          EM_ENTITY
    
```

History: **09.07.97** **HK** **Initial**
 23-Oct-01 OT EM adaptations

4.28.2 MM651: Authentication Request

Description: The network confirms the request from the mobile station for a RR Connection in the form of a RR-ESTABLISH confirmation primitive. MM changes to State 3 ((Location Updating initiated) and issues an AUTHENTICATION REQ message and a SIM-AUTHENTICATION request primitive, initiating the authentication procedure with SIM.

Preamble: MM101

| | MMI/CM | MM | RR/DL |
|-----|------------------------|----------------------|-------|
| (1) | | | |
| | EM_MM_EVENT_REQ | | |
| | | | |
| | | | |
| | | | |
| (2) | | RR_ESTABLISH_CNF | |
| | | | |
| | | | |
| (3) | | RR_DATA_IND | |
| | | (AUTHENTICATION REQ) | |
| | | | |
| | | | |
| (4) | | | |
| | SIM_AUTHENTICATION_REQ | | |
| | | | |
| (5) | | | |
| | EM_DATA_IND | | |
| | | | |
| | | | |

Parametrization

| | <u>Primitive</u> | <u>Parameter</u> | <u>Value</u> |
|-----|------------------------|------------------|--------------|
| (1) | EM_MM_EVENT_REQ | | |
| | bitmask_mm | Bitm_2 | |
| (2) | RR_ESTABLISH_CNF | | |
| | param | NOT_USED | |
| (3) | RR_DATA_IND | | |
| | d1 | NOT_USED | |
| | d2 | NOT_USED | |
| | sdu | | |
| | { | | |
| | component | MM | |
| | direction | DOWNLINK | |
| | pd | D_AUTH_REQ | |
| | ti | TI_0 | |
| | ciph_key_num | CIPH_KEY_NUM_01 | |
| | auth_rand | AUTH_RAND_1 | |
| | } | | |
| (4) | SIM_AUTHENTICATION_REQ | | |
| | source | SRC_MM | |

| | | | | |
|----------|-------------|----|-----------|----------------|
| | rand | | RAND_1_P | |
| | cksn | | CKSN_01 | |
| (5) | EM_DATA_IND | | | |
| | entity | | EM_ENTITY | |
| History: | 07.07.97 | HK | | Initial |
| | 31.07.97 | DL | | Revised |
| | 23-Oct-01 | OT | | EM adaptations |

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/>>