
G23-GSM Protocol Stack

# SS

Entity Test Specification

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# 0 Document Control



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## 0.1 Document History

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[39] Service Access Point MNCC
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[70] SDL Specification RR
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[71] SDL Specification DL
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[72] Message Specification CC
6147.600.97.100; Condat GmbH
[73] Message Specification SS
6147.601.97.100; Condat GmbH
[74] Message Specification SMS
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[75] Message Specification MM
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[76] Message Specification RR
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[78] Technical Documentation CC
6147.700.97.100; Condat GmbH
[79] Technical Documentation SS
6147.701.97.100; Condat GmbH
[80] Technical Documentation SMS
6147.702.97.100; Condat GmbH
[81] Technical Documentation MM
6147.703.97.100; Condat GmbH
[82] Technical Documentation RR
6147.704.97.100; Condat GmbH
[83] Technical Documentation DL
6147.705.97.100; Condat GmbH
[84] Technical Documentation CCD
6147.706.97.100; Condat GmbH

## 0.3 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 |

## 0.4 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). |

# 1 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.

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.

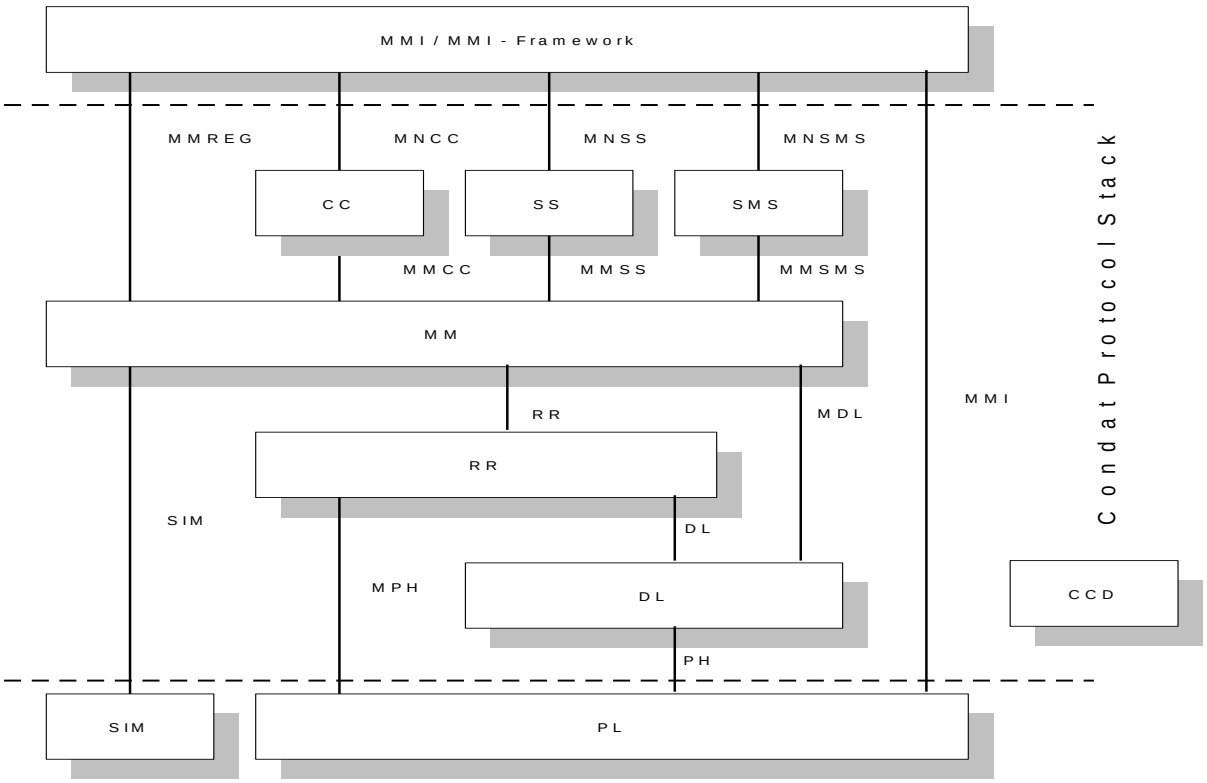



Figure 1: Mobile-station protocol architecture

This document describes the tests for Supplementary Services.

# 2 Parameters

```
/* DECLARATIONS:  */
DECLARATION (SS_FACILITY_A)
DECLARATION (SS_FACILITY_A_CONTENT)
DECLARATION (SS_FACILITY_A_INF)

DECLARATION (SS_FACILITY_B)
DECLARATION (SS_FACILITY_B_CONTENT)
DECLARATION (SS_FACILITY_B_INF)

DECLARATION (EMPTY_FACILITY)

DECLARATION (SS_VERSION)
DECLARATION (SS_CAUSE_50)
DECLARATION (SS_CAUSE_51)
DECLARATION (SS_CAUSE_16)
DECLARATION (SS_CAUSE_61)
DECLARATION (SS_CAUSE_60)


DECLARATION (SS_VERSION_INDICATOR)
DECLARATION (SS_VERSION_PRIM)
DECLARATION (SS_VERSION_MSG)
DECLARATION (REGISTER_CMD_MID_ERROR)
DECLARATION (REGISTER_CMD_NO_FACILITY)
DECLARATION (FACILITY_CMD_MAND_ERROR)
DECLARATION (FACILITY_CMD_OK_BAD_TI)
DECLARATION (RELEASE_COMP_CMD_OK_BAD_TI)
DECLARATION (REGISTER_CMD_OK_BAD_TI)


/* Constants */
SHORT       L_FAC_0                     0
SHORT       L_FAC_32                    32
SHORT       O_FAC_0                     0

/* ti */
BYTE        TI_3                        3
BYTE        TI_7                        7
BYTE        TI_8                        8
BYTE        TI_10                       10
BYTE        TI_11                       11
BYTE        TI_15                       15

/* ss cause */
/* 0x60– Missing Mandatory IEI */
SHORT       CAUSE_60                    0x60
/* 0x61 – Message Type Not Implemented */
SHORT       CAUSE_61                    0x61

/* 0xC301 corresponds to normal abort, see RR SAP */
SHORT       CAUSE_C301                  0xC301

/* used for ss_cause */
/* CAUSE_50 is according to 04.80 / 04.08 the cause value 50 "Requested facility not subscribed" */
BYTE        CAUSE_50                    50

/* CAUSE_51 is according to 04.80 / 04.08 the cause value 81 - Invalid TI */
```

```
BYTE        CAUSE_51                    0x51

/* CAUSE_16, i.e. cause value 16 according to 04.80 / 04.08, "Normal call clearing", is not very meaningful as it
   is used for CC usually but the purpose here is simply to test if causes are passed transparently to higher layers */
BYTE        CAUSE_16                    16

/* CAUSE_0632 is used for MNSS_END_IND, case when cause value decimal 50 was received over the air */
SHORT       CAUSE_0632                  0x0632

/* CAUSE_0610 is used for MNSS_END_IND, sample for the case when cause dec. 16 was received over the air */
SHORT       CAUSE_0610                  0x0610

/* According to cause concept 0x86FF is used for MNSS_END_IND, case when no cause was received over the air */
SHORT       CAUSE_NOT_PRESENT           0x86FF


/* chosen arbitrary value, for the scenario when lower layers indicate an error (MMSS_ERROR_IND) */
/* SS shall transparently pass the cause up to higher layers */
/* note that this value would not occur at the interface in a real target case */
SHORT       SS_ERROR_CAUSE_C397         0xC397


/*
 * Definitions for EM
 */
SHORT   Bitm            0x04
BYTE    EM_ENTITY       0x06



/* facility */
BEGINARRAY_PART (SS_FACILITY_A_CONTENT, 4)
            0xA0, /* These are not valid bytes */
            0x03,
            0x82,
            0x56
ENDARRAY
BEGIN_PSTRUCT ("fac_inf", SS_FACILITY_A_INF)
            SET_COMP ("l_fac",          L_FAC_32)
            SET_COMP ("o_fac",          O_FAC_0)
            SET_COMP ("fac",            SS_FACILITY_A_CONTENT)
ENDSTRUCT
BEGIN_MSTRUCT ("ss_facility", SS_FACILITY_A)
            SET_COMP ("fac_info",       SS_FACILITY_A_CONTENT)
ENDSTRUCT

BEGINARRAY_PART (SS_FACILITY_B_CONTENT, 4)
            0xA0, /* These are not valid bytes */
            0x03,
            0x43,
            0x78
ENDARRAY
BEGIN_PSTRUCT ("fac_inf", SS_FACILITY_B_INF)
            SET_COMP ("l_fac",          L_FAC_32)
            SET_COMP ("o_fac",          O_FAC_0)
            SET_COMP ("fac",            SS_FACILITY_B_CONTENT)
ENDSTRUCT
BEGIN_MSTRUCT ("ss_facility", SS_FACILITY_B)
            SET_COMP ("fac_info",       SS_FACILITY_B_CONTENT)
ENDSTRUCT
```

```
BEGIN_PSTRUCT ("fac_inf", EMPTY_FACILITY)
                SET_COMP ("l_fac",              L_FAC_0)
                SKIP_COMP ("o_fac")
                SKIP_COMP ("fac")
ENDSTRUCT

/* version */
/* version for primitives (MNSS SAP) */
BEGINARRAY (SS_VERSION_INDICATOR, 1)
                0xAA
ENDARRAY
BEGIN_PSTRUCT ("ss_ver", SS_VERSION_PRIM)
                SET_COMP ("len",                1)
                SET_COMP ("ver",                SS_VERSION_INDICATOR)
ENDSTRUCT
BEGIN_MSTRUCT ("ss_version", SS_VERSION_MSG)
                SET_COMP ("ver",                SS_VERSION_INDICATOR)
ENDSTRUCT

/* mstructs */
BEGIN_MSTRUCT ("ss_cause", SS_CAUSE_50)
                SET_COMP ("cs2",                CS_GSM_PLMN)
                SET_COMP ("loc",                LOC_USER)
                SKIP_COMP ("rec")
                SET_COMP ("cs",                 CAUSE_50)
                SKIP_COMP ("diag")
ENDSTRUCT
BEGIN_MSTRUCT ("ss_cause", SS_CAUSE_16)
                SET_COMP ("cs2",                CS_GSM_PLMN)
                SET_COMP ("loc",                LOC_USER)
                SKIP_COMP ("rec")
                SET_COMP ("cs",                 CAUSE_16)
                SKIP_COMP ("diag")
ENDSTRUCT

BEGIN_MSTRUCT ("ss_cause", SS_CAUSE_51)
                SET_COMP ("cs2",                CS_GSM_PLMN)
                SET_COMP ("loc",                LOC_PUB_NET_REMOTE_USER)
                SKIP_COMP ("rec")
                SET_COMP ("cs",                 CAUSE_51)
                SKIP_COMP ("diag")
ENDSTRUCT

BEGIN_MSTRUCT ("ss_cause", SS_CAUSE_60)
                SET_COMP ("cs2",                CS_GSM_PLMN)
                SET_COMP ("loc",                LOC_PUB_NET_REMOTE_USER)
                SKIP_COMP ("rec")
                SET_COMP ("cs",                 CAUSE_60)
                SKIP_COMP ("diag")
ENDSTRUCT

BEGIN_MSTRUCT ("ss_cause", SS_CAUSE_61)
                SET_COMP ("cs2",                CS_GSM_PLMN)
                SET_COMP ("loc",                LOC_PUB_NET_REMOTE_USER)
                SKIP_COMP ("rec")
                SET_COMP ("cs",                 CAUSE_61)
                SKIP_COMP ("diag")
ENDSTRUCT
```

```
#if 0
SET_SDU(REGISTER_CMD_NO_FACILITY, 16, 0)
                0x3B,  /* ti+pd */
                0x3B  /* Message Type */
ENDSDU
#endif
BEGINARRAY (REGISTER_CMD_NO_FACILITY, 6)
                0x10, 0x00,                     /* length in bits */
                0x00, 0x00,                     /* offset in bits */
                0x3B,                           /* ti=3, pd=0xb (SS) */
                0x3B                            /* Message Type=0x3b (REGISTER) */
ENDARRAY

SET_SDU(REGISTER_CMD_MID_ERROR, 16, 0)
                0x0B,  /* ti+pd */
                0x30  /* Message Type */
ENDSDU

SET_SDU(FACILITY_CMD_MAND_ERROR, 16, 0)
                0x0B,  /* ti+pd */
                0x3A  /* Message Type */
ENDSDU


SET_SDU(FACILITY_CMD_OK_BAD_TI, 80, 0)
                0x2B,  /* ti=2,pd=B */
                0x3A,  /* Message Type */
                0xA2, /* Invoke */
                0x06, /* Length */
                0x02, /* Invoke ID Tag */
                0x01, /* Invoke ID Tag - Length */
                0x02, /* Invoke ID */
                0x02, /* Operation Code Tag */
                0x01, /* Operation Code - Length */
                0x02 /* Operation Code */
ENDSDU


SET_SDU(REGISTER_CMD_OK_BAD_TI, 88, 0)
                0xBB,  /* ti=0,pd=B */
                0x3B,  /* Message Type */
                0x1C,  /* FACILITY */
                0xA2, /* Invoke */
                0x06, /* Length */
                0x02, /* Invoke ID Tag */
                0x01, /* Invoke ID Tag - Length */
                0x02, /* Invoke ID */
                0x02, /* Operation Code Tag */
                0x01, /* Operation Code - Length */
                0x02 /* Operation Code */
ENDSDU


SET_SDU(RELEASE_COMP_CMD_OK_BAD_TI, 16, 0)
```

```
                0x2B,  /* ti=2,pd=B */
                0x2A  /* Message Type */
ENDSDU
```

# 3 TEST CASES

## 3.1 Routing (internal)

### 3.1.1 SS000: Setup the routing and PCO view for the SS test

**Description:** Routings for the SS tests are set. Only those routings are set which are really required.
**Preamble:** None

```
        MMI                                SS                                MM
         |                                  |                                 |
COMMAND (TAP RESET)
COMMAND (MMI RESET)
COMMAND (SS RESET)
COMMAND (MM RESET)
         |                                  |                                 |
COMMAND (TAP REDIRECT CLEAR)
COMMAND (SS REDIRECT CLEAR)
         |                                  |                                 |
COMMAND (SS REDIRECT MMI TAP)
COMMAND (SS REDIRECT MM TAP)
         |                                  |                                 |
COMMAND (TAP REDIRECT TAP SS)
         |                                  |                                 |
```

**Parametrization**

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

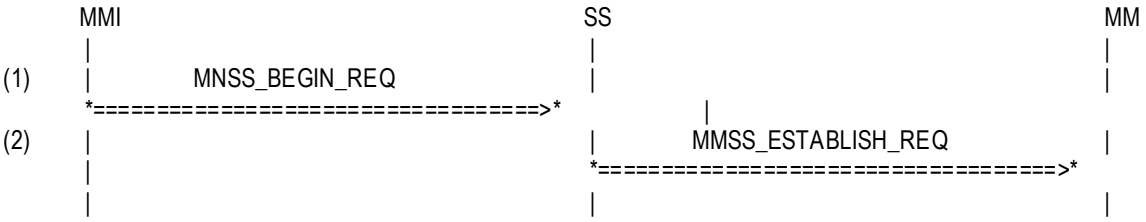
| History: | | | |
|---|---|---|---|
| | 04-Jul-97 | PZ | Initial |
| | 17-Mar-01 | SBK | Removed unnecessary COMMANDs to speed up |

## 3.2 SS establishment

### 3.2.1 SS001: IDLE_1- MO establishment with a facility, requesting MM connection

**Description:** Higher layers request a SS transaction establishment. The request includes facility data. SS requests the establishment of an MM connection for the SS transaction.

**Preamble:** SS000




**Parametrization**

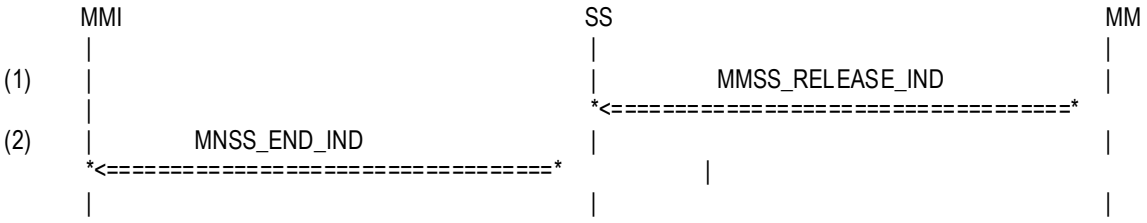
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_BEGIN_REQ | | |
| | ti | TI_3 |
| | fac_inf | SS_FACILITY_A_INF |
| | ss_ver | SS_VERSION_PRIM |
| (2) MMSS_ESTABLISH_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.2.2 SS002: PENDING_1 - MM connection establishment failure

**Description:** Mobile originated SS transaction establishment is pending. SS receives the indication that MM connection establishment is not possible, e.g. because due to an RR connection establishment failure.

**Preamble:** SS001




**Parametrization**

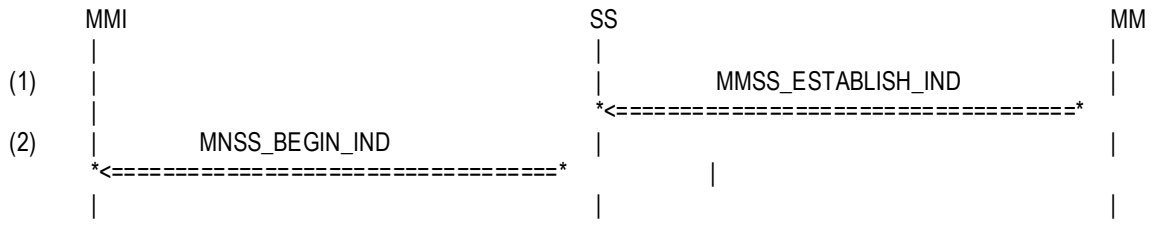
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_RELEASE_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_C301 |
| (2) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_C301 |
| | fac_inf | EMPTY_FACILITY |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.2.3 SS004: IDLE_3 - MT establishment, without facility

**Description:** Mobile terminated SS transaction establishment is triggered by the network sending a REGISTER message containing no Facility IE to the MS. The scenario is for the successful case.

**Preamble:** SS000




**Parametrization**

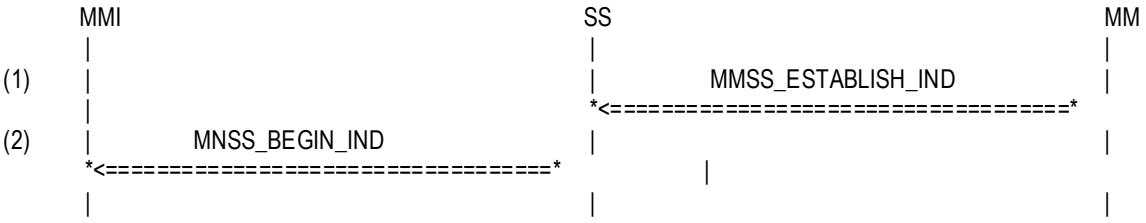
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | REGISTER_CMD_NO_FACILITY |
| (2) MNSS_BEGIN_IND | | |
| | ti | TI_11 |
| | fac_inf | EMPTY_FACILITY |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 13-Mar-03 | ZM | tidy up |

### 3.2.4 SS005: IDLE_4 - MT establishment, with facility

**Description:** Mobile terminated SS transaction establishment is triggered by the network sending a REGISTER message containing a Facility IE to the MS. The scenario is for the successful case.

**Preamble:** SS000




**Parametrization**

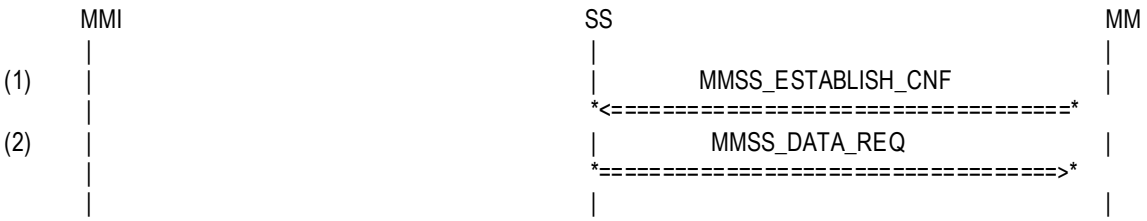
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | D_SS_REGISTER |
| | ti | TI_3 |
| | ss_facility | SS_FACILITY_A |
| | } | |
| (2) MNSS_BEGIN_IND | | |
| | ti | TI_11 |
| | fac_inf | SS_FACILITY_A_INF |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.2.5 SS011: PENDING_2 - Successful MO establishment, completion

**Description:** Normal, successful mobile originated SS transaction establishment is completed: MM confirms the establishment of the MM connection and SS sends a REGISTER message to the network containing the facility data previously received from the higher layer.

**Preamble:** SS001




**Parametrization**

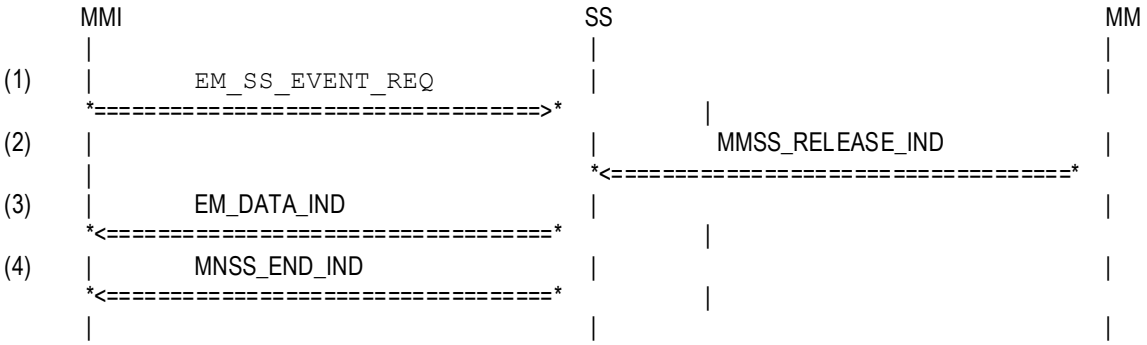
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_CNF | | |
| | ti | TI_3 |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | U_SS_REGISTER |
| | ti | TI_3 |
| | ss_facility | SS_FACILITY_A |
| | ss_version | SS_VERSION_MSG |
| | } | |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.2.6 SS050: SS002 with Engineering Mode interaction

**Description:** Mobile originated SS transaction establishment is pending. SS receives the indication that MM connection establishment is not possible, e.g. because due to an RR connection establishment failure.

**Preamble:** SS001




**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) EM_SS_EVENT_REQ | | |
| | bitmask_ss | Bitm |
| (2) MMSS_RELEASE_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_C301 |
| (3) EM_DATA_IND | | |
| | entity | EM_ENTITY |
| (4) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_C301 |
| | fac_inf | EMPTY_FACILITY |

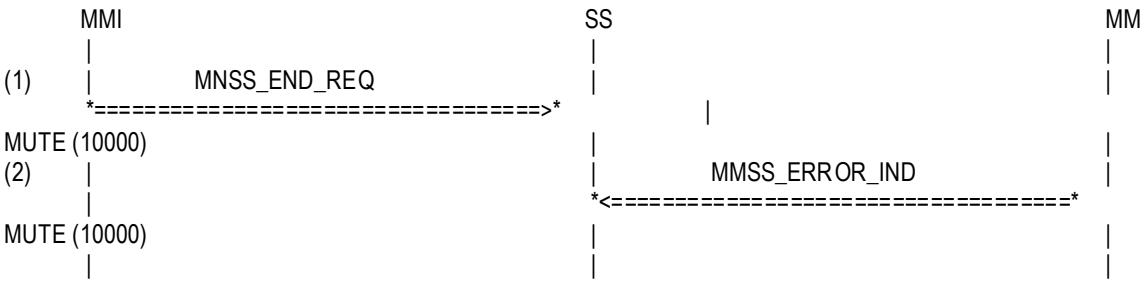
| History: | | | |
|---|---|---|---|
| | 23-Oct-01 | OT | Initial |
| | 04-Jan-02 | HM | Changed order of primitives |

## 3.3 Error handling

### 3.3.1 SS003: IDLE_2 - Primitives to ignore in idle state

**Description:** SS receives primitives to be ignored while in idle state.

**Preamble:** SS000




**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_END_REQ | | |
| | ti | TI_3 |
| | fac_inf | EMPTY_FACILITY |
| (2) MMSS_ERROR_IND | | |
| | ti | TI_3 |
| | cause | SS_ERROR_CAUSE_C397 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.3.2 SS006: IDLE_5 – MT establishment attempted by false message, FACILITY

**Description:** The network attempts establishment of an SS transaction by sending a message inconsistent with the protocol state, i.e. no REGISTER message. Here the example of the FACILITY message is taken.
Unrecognised TI : "If a FACILITY message is received specifying a transaction identifier that is not recognised as relating to a call independent SS transaction that is in progress then a RELEASE COMPLETE message shall be sent with cause value #81 "invalid call reference value".
[TS 24.010 Section 3.7.3 b)]

**Preamble:** SS000


**Parametrization**

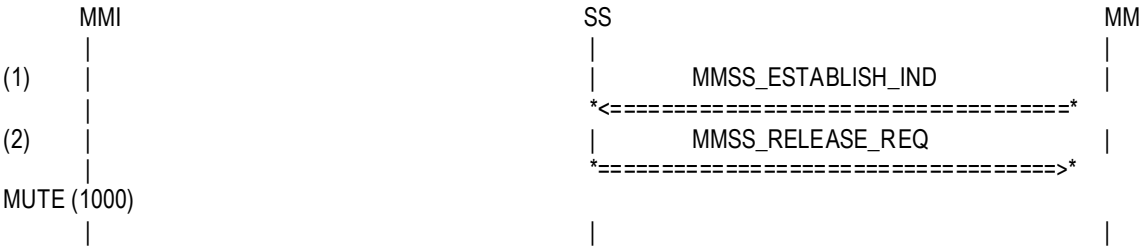
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | D_SS_FACILITY |
| | ti | TI_3 |
| | ss_facility | SS_FACILITY_A |
| | } | |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_11 |
| | ss_cause | SS_CAUSE_51 |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_11 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 19-May-03 | HM | corrected test case expectations |

### 3.3.3 SS030: IDLE_10 – MT message, RELEASE COMPLETE on unused transaction

**Description:** The network sends a RELEASE COMPLETE on an transition (identifier) not used. SS shall ignore the message. The corresponding MM connection is released.
GSM 04.10 clause 3.7.3:
”If a RELEASE COMPLETE message is received specifying a transaction identifier that is not recognized as relating to a call independent SS transaction that is in progress then the message shall be ignored.”

**Preamble:** SS000




**Parametrization**

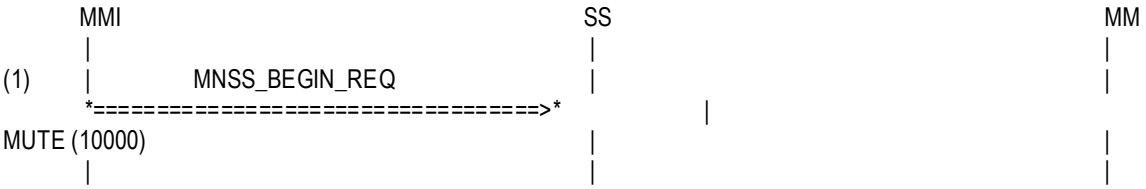
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_3 |
| | ss_cause | NOT_USED |
| | ss_facility | SS_FACILITY_B |
| | } | |
| (2) MMSS_RELEASE_REQ | | |
| | ti | TI_11 |

| History: | 31-Jan-02 | SBK | Initial |
|---|---|---|---|

### 3.3.4 SS007: IDLE_6 - Establishment with a reserved TI value

**Description:** A transaction with a reserved TI value is requested by the higher layer (TI =7). This is assessed as wrong higher layer behaviour.

**Preamble:** SS000




**Parametrization**

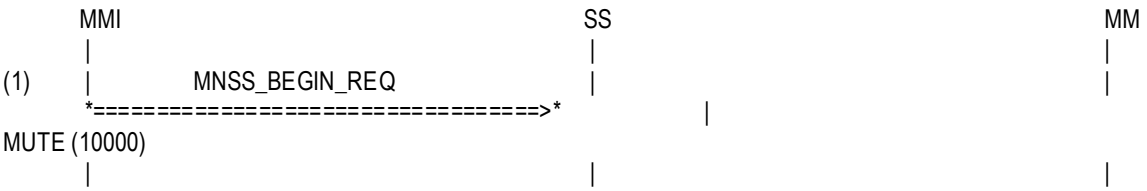
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_BEGIN_REQ | | |
| | ti | TI_7 |
| | fac_inf | SS_FACILITY_A_INF |
| | ss_ver | SS_VERSION_PRIM |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.3.5 SS008: IDLE_7 - Establishment with set TI flag

**Description:** A transaction with a TI flag which is set is requested by the higher layer (TI > 7). This is assessed as wrong higher layer behaviour.

**Preamble:** SS000




**Parametrization**

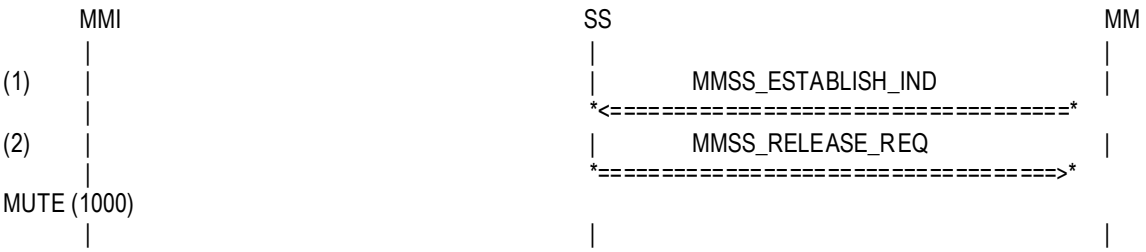
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_BEGIN_REQ | | |
| | ti | TI_11 |
| | fac_inf | EMPTY_FACILITY |
| | ss_ver | SS_VERSION_PRIM |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.3.6 SS009: IDLE_8 - Network establishment with a reserved TI

**Description:** A transaction is attempted to be established by the network with a REGISTER message with TI == 7.This is interpreted as wrong network behaviour and the message is ignored. The corresponding MM connection is released.
GSM 04.10 clause 3.7.3:
”The MS shall ignore messages with the transaction identifier value set to "111".

**Preamble:** SS000




**Parametrization**

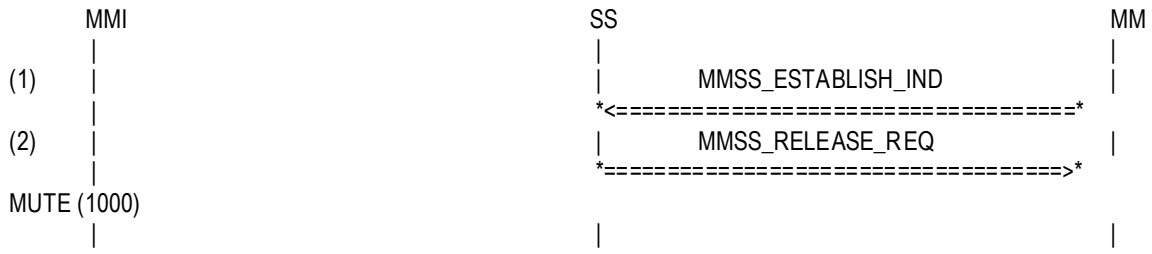
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | D_SS_REGISTER |
| | ti | TI_7 |
| | ss_facility | NOT_USED |
| | } | |
| (2) MMSS_RELEASE_REQ | | |
| | ti | TI_15 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.3.7 SS010: IDLE_9 - Network establishment with set TI flag

**Description:** A transaction is attempted to be established by the network with a REGISTER message with set TI Flag (T>7). This is interpreted as wrong network behaviour. . The corresponding MM connection is released.
GSM 04.10 clause 3.7.3:
"If a REGISTER message is received specifying a transaction identifier that is not recognized as relating to a call independent SS transaction that is in progress and with a transaction identifier flag incorrectly set to "1", this message shall be ignored."

**Preamble:** SS000




**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | D_SS_REGISTER |
| | ti | TI_11 |
| | ss_facility | NOT_USED |
| | } | |
| (2) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.3.8 SS040: IDLE_3 - MT establishment, with erroneous message type

**Description:** Mobile terminated SS transaction establishment is triggered by the network sending a REGISTER message containing an incorrect message ID. (24.010, section 3.7.4)

**Preamble:** SS000


**Parametrization**

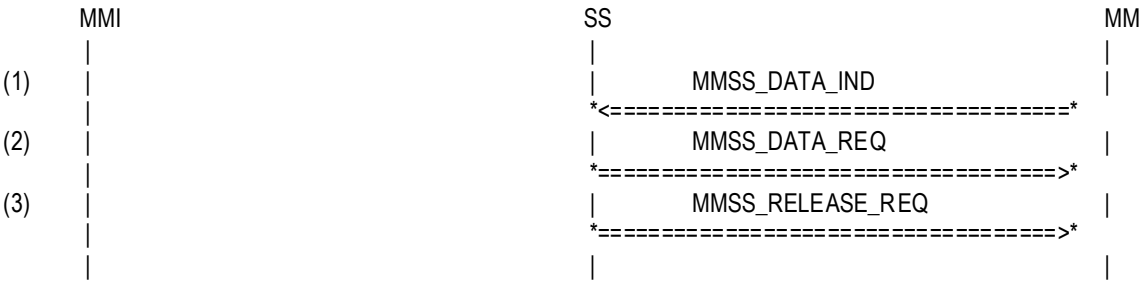
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | REGISTER_CMD_MID_ERROR |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_8 |
| | ss_cause | SS_CAUSE_61 |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_8 |

History: 13-Mar-03 ZM Initial

### 3.3.9 SS041: IDLE_3 - MT establishment, with missing mandatory IEI

**Description:** Mobile terminated SS transaction establishment is triggered by the network sending a FACILITY message containing a missing mandatory IEI. (24.010, section 3.7.5)

**Preamble:** SS011




**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | FACILITY_CMD_MAND_ERROR |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_8 |
| | ss_cause | SS_CAUSE_60 |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_8 |

History: 13-Mar-03 ZM Initial

### 3.3.10 SS042: Error Handling - MT establishment, with FACILITY message containing a incorrect TI value

**Description:** A FACILITY message is sent with an invalid TI (24.010, section 3.7.3). A REL COMP is returned

**Preamble:** SS011

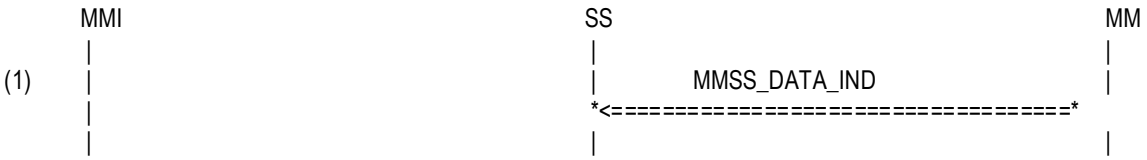

**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | FACILITY_CMD_OK_BAD_TI |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_10 |
| | ss_cause | SS_CAUSE_51 |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_10 |

History: 13-Mar-03 ZM Initial

### 3.3.11 SS043: Error Handling - MT establishment, with message containing a incorrect TI value

**Description:** A REGISTER/REL COMP message is sent with an invalid TI (24.010, section 3.7.3). There is no response.
**Preamble:** SS011
**Variants:**<A> .. <B>




**Parametrization**

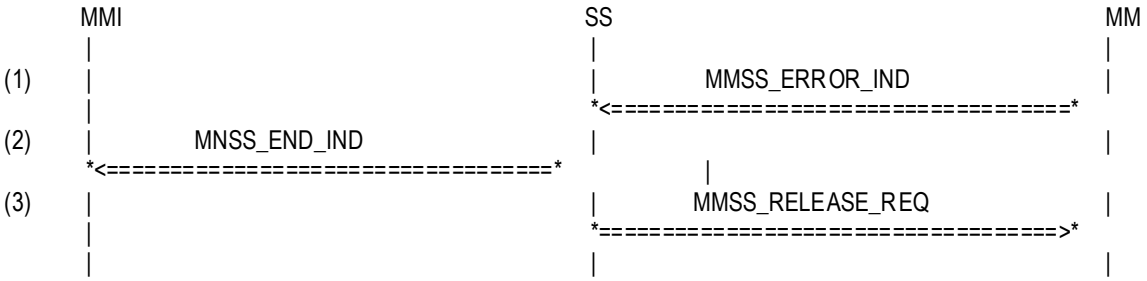
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| <A> | sdu | RELEASE_COMP_CMD_OK_BAD_TI |
| <B> | sdu | REGISTER_CMD_OK_BAD_TI |

History: 13-Mar-03 ZM Initial

### 3.3.12 SS012: PENDING_3 - Error reports during establishment

**Description:** While waiting for an MM connection confirmation, an error is reported. SS releases the transaction, indicates to higher layers that the transaction is cleared and releases the MM connection.

**Preamble:** SS001




**Parametrization**

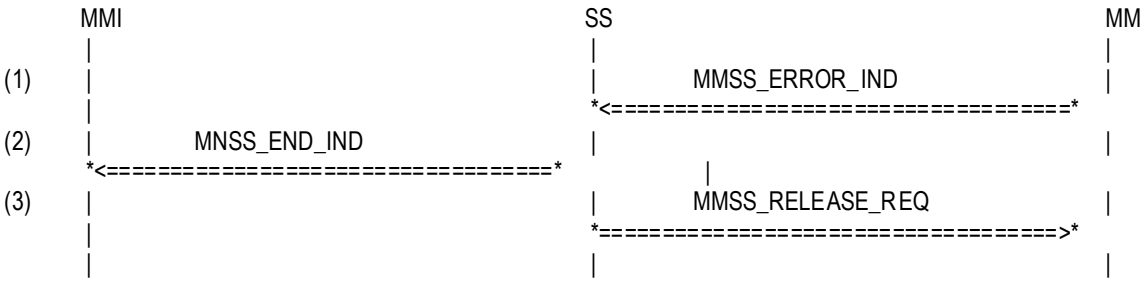
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ERROR_IND | | |
| | ti | TI_3 |
| | cause | SS_ERROR_CAUSE_C397 |
| (2) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | SS_ERROR_CAUSE_C397 |
| | fac_inf | EMPTY_FACILITY |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Under revision |
| | 15-Feb-01 | LE | Test case modified |

### 3.3.13 SS025: CONNECTED_13 – Call re-establishment during the transaction

**Description:** The SS connection is in CONNECTED state after the mobile originated transaction establishment. MM reports an error in the RR connection with the primitive MMSS_ERR_IND. Call Reestablishment is not applicable to SS transactions. SS informs MM about the end of connection with an MNSS_END_IND and requests release of the MM connection with an MMSS_REL_REQ.

**Preamble:** SS011




**Parametrization**

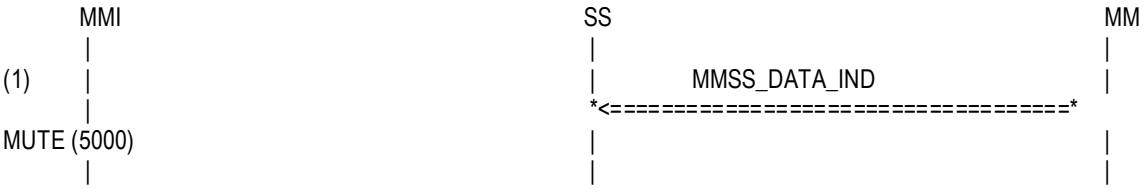
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ERROR_IND | | |
| | ti | TI_3 |
| | cause | SS_ERROR_CAUSE_C397 |
| (2) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | SS_ERROR_CAUSE_C397 |
| | fac_inf | EMPTY_FACILITY |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.3.14 SS026: CONNECTED_14 - Network sends a false message

**Description:** The SS connection is in CONNECTED state after the mobile originated transaction establishment. MM passes a message on to SS that is neither a FACILITY nor a RELEASE COMPLETE message. SS ignores this message.

**Preamble:** SS011




**Parametrization**

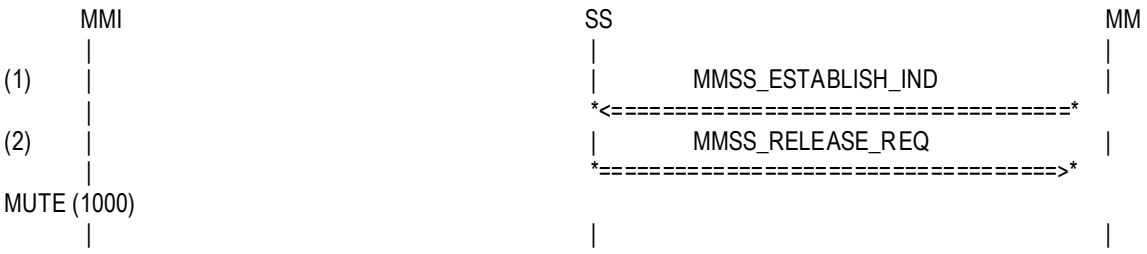
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | D_SS_REGISTER |
| | ti | TI_11 |
| | ss_facility | SS_FACILITY_A |
| | } | |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.3.15 SS031: CONNECTED_18 – MT message, RELEASE COMPLETE on unused transaction

**Description:** The network sends a RELEASE COMPLETE on an transition (identifier) not used while SS is in the connected state (on another transaction). SS shall ignore the transaction. The corresponding MM connection is released.
GSM 04.10 clause 3.7.3:
”If a RELEASE COMPLETE message is received specifying a transaction identifier that is not recognized as relating to a call independent SS transaction that is in progress then the message shall be ignored.”

**Preamble:** SS011




**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_ESTABLISH_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_3 |
| | ss_cause | NOT_USED |
| | ss_facility | SS_FACILITY_B |
| | } | |
| (2) MMSS_RELEASE_REQ | | |
| | ti | TI_11 |

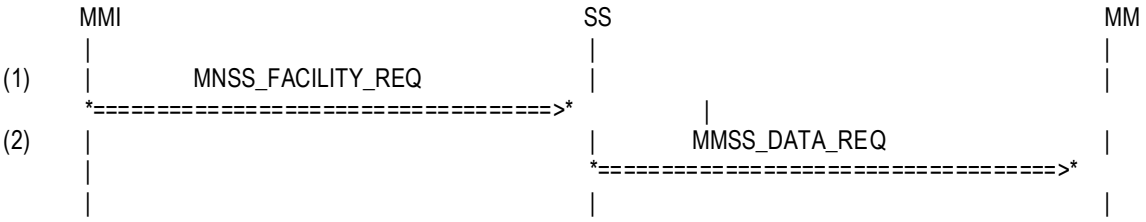
History: 31-Jan-02 SBK Initial

## 3.4 Data transfer

### 3.4.1 SS013: CONNECTED_1 – MO transaction, higher layer sends a facility IE

**Description:** After the mobile originated transaction establishment, a facility information element is passed from the higher layer on to SS. SS has to convert this into a FACILITY message.

**Preamble:** SS011




**Parametrization**

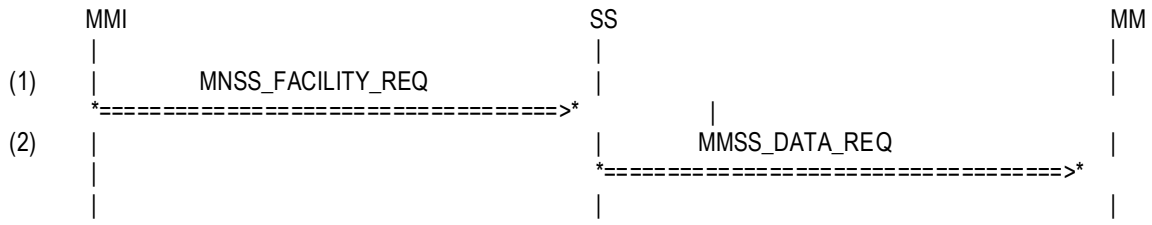
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_FACILITY_REQ | | |
| | ti | TI_3 |
| | fac_inf | SS_FACILITY_B_INF |
| | ss_ver | NOT_USED |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | U_SS_FACILITY |
| | ti | TI_3 |
| | ss_facility | SS_FACILITY_B |
| | } | |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.4.2 SS014: CONNECTED_2 – MT transaction, higher layer sends a facility IE

**Description:** After the network initiated transaction establishment, a facility information element is passed from the higher layer on to SS. SS has to convert this into a FACILITY message.

**Preamble:** SS005




**Parametrization**

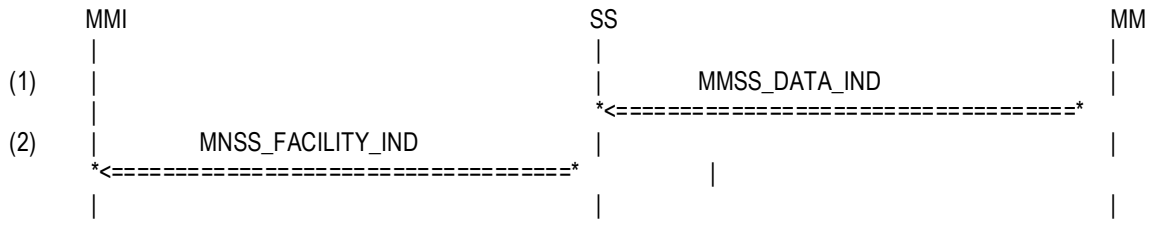
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_FACILITY_REQ | | |
| | ti | TI_11 |
| | fac_inf | SS_FACILITY_B_INF |
| | ss_ver | NOT_USED |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | U_SS_FACILITY |
| | ti | TI_11 |
| | ss_facility | SS_FACILITY_B |
| | } | |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.4.3 SS019: CONNECTED_7 – MO transaction, network sends a FACILITY message

**Description:** After the mobile originated transaction establishment, a FACILITY is passed from MM on to SS. SS has to convert this into facility data of the MNSS_FACILITY_IND.

**Preamble:** SS011




**Parametrization**

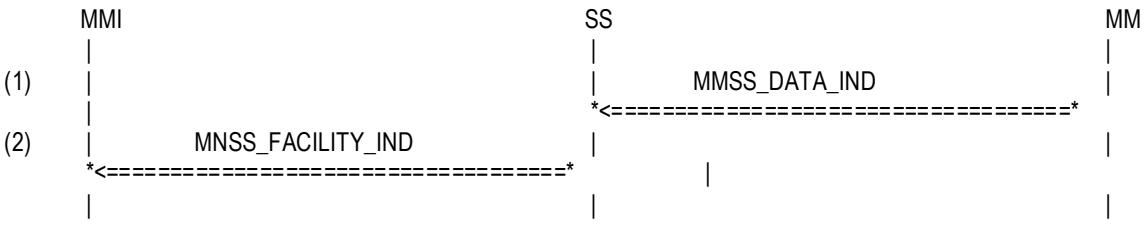
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | D_SS_FACILITY |
| | ti | TI_11 |
| | ss_facility | SS_FACILITY_A |
| | } | |
| (2) MNSS_FACILITY_IND | | |
| | ti | TI_3 |
| | fac_inf | SS_FACILITY_A_INF |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.4.4 SS020: CONNECTED_8 – MT transaction, network sends a FACILITY message

**Description:** After the network initiated transaction establishment, a FACILITY message is passed from MM on to SS. SS has to convert this into facility data of the MNSS_FACILITY_IND.

**Preamble:** SS005




**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | D_SS_FACILITY |
| | ti | TI_3 |
| | ss_facility | SS_FACILITY_A |
| | } | |
| (2) MNSS_FACILITY_IND | | |
| | ti | TI_11 |
| | fac_inf | SS_FACILITY_A_INF |

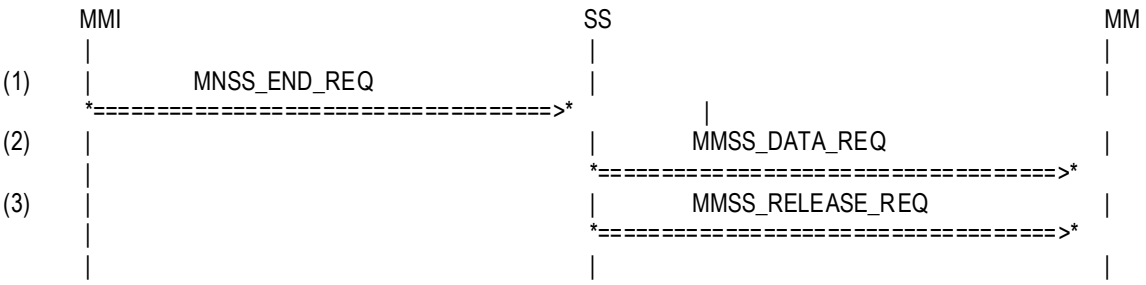
| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

## 3.5 Connection release

### 3.5.1 SS015: CONNECTED_3 – MO transaction, higher layer releases without facility IE

**Description:** After the mobile originated transaction establishment, the connection release is initiated by higher layer with the primitive MNSS_END_REQ. The primitive contains no facility information element. SS must inform the network with the RELEASE COMPLETE message and terminate the MM connection locally with MMSS_REL_REQ.

**Preamble:** SS011




**Parametrization**

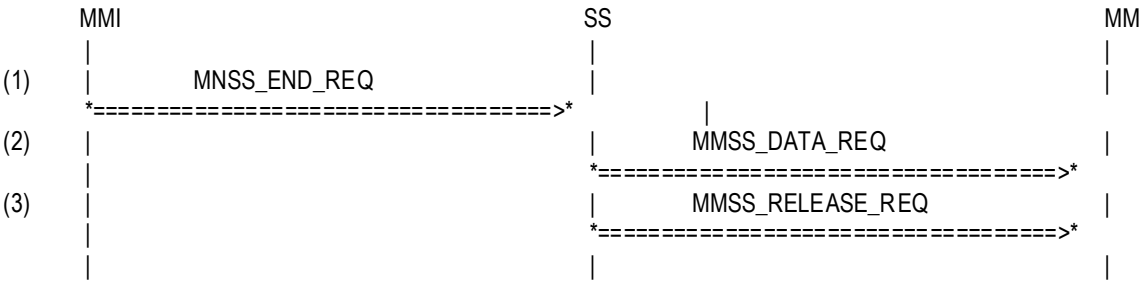
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_END_REQ | | |
| | ti | TI_3 |
| | fac_inf | EMPTY_FACILITY |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_3 |
| | ss_cause | NOT_USED |
| | ss_facility | NOT_USED |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.5.2 SS016: CONNECTED_4 – MO transaction, higher layer releases with facility IE

**Description:** After the mobile originated connection establishment, the connection release is initiated through the higher layer with the primitive MNSS_END_REQ. The primitive contains a facility information element. SS must inform the network with RELEASE COMPLETE and terminate the connection locally with MMSS_REL_REQ.

**Preamble:** SS011




**Parametrization**

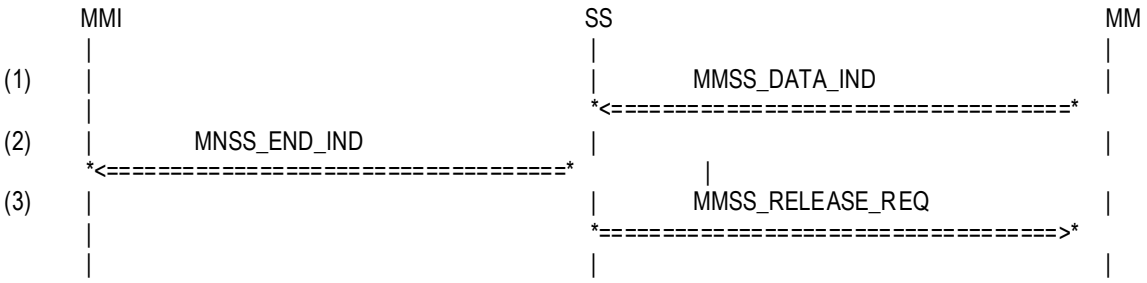
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_END_REQ | | |
| | ti | TI_3 |
| | fac_inf | SS_FACILITY_A_INF |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_3 |
| | ss_cause | NOT_USED |
| | ss_facility | SS_FACILITY_A |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.5.3 SS021: CONNECTED_9 - MO transaction, network releases without facility IE

**Description:** After the mobile originated transaction establishment, the SS transaction release is initiated with the RELEASE COMPLETE message by the network. The RELEASE COMPLETE message contains no facility information element. SS informs the higher layer about the release with MNSS_END_IND. The primitive contains no facility information element. SS requests MM connection release with MMSS_REL_REQ.

**Preamble:** SS011




**Parametrization**

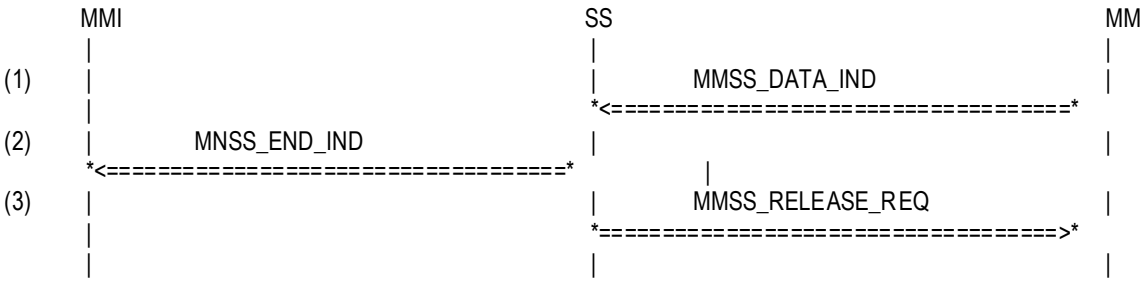
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_11 |
| | ss_cause | SS_CAUSE_50 |
| | } | |
| (2) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_0632 |
| | fac_inf | EMPTY_FACILITY |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.5.4 SS022: CONNECTED_10 – MT transaction, network releases without facility IE

**Description:** After the network initiated transaction establishment, the SS connection release is initiated with the RELEASE COMPLETE message. The RELEASE COMPLETE message contains no facility information element. SS informs the higher layer about the release with MNSS_END_IND. The primitive contains no facility information element. SS requests MM connection release with MMSS_REL_REQ.

**Preamble:** SS005




**Parametrization**

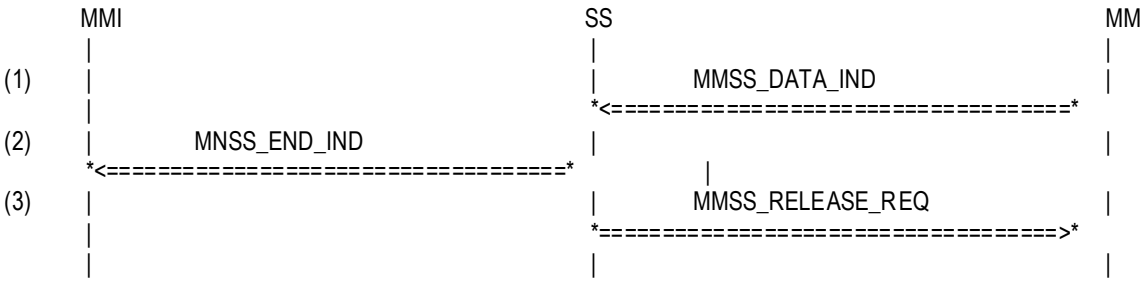
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_3 |
| | ss_cause | SS_CAUSE_50 |
| | } | |
| (2) MNSS_END_IND | | |
| | ti | TI_11 |
| | cause | CAUSE_0632 |
| | fac_inf | EMPTY_FACILITY |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_11 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.5.5 SS023: CONNECTED_11 – MO transaction, network releases with facility IE

**Description:** After the mobile originated transaction establishment, the SS transaction release is initiated with the RELEASE COMPLETE message by the network. The RELEASE COMPLETE message contains a facility information element. SS informs the higher layer about the release with MNSS_END_IND. The primitive contains no facility information element. SS requests MM connection release with MMSS_REL_REQ.

**Preamble:** SS011




**Parametrization**

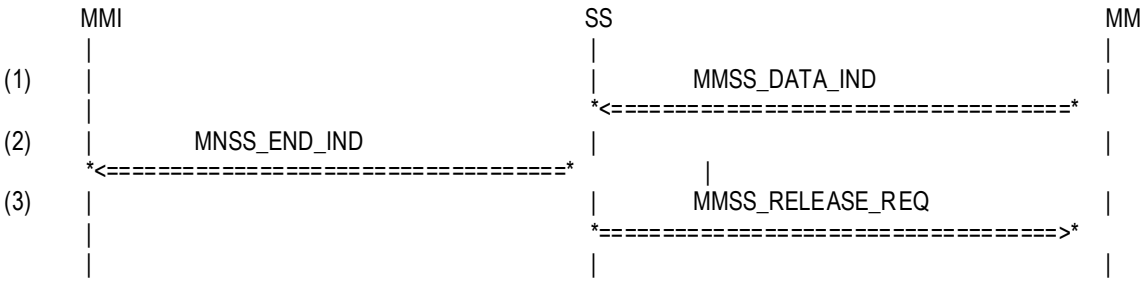
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_11 |
| | ss_cause | SS_CAUSE_50 |
| | ss_facility | SS_FACILITY_B |
| | } | |
| (2) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_0632 |
| | fac_inf | SS_FACILITY_B_INF |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.5.6 SS029: CONNECTED_17 – MO transaction, net releases with facility IE, no cause

**Description:** After the mobile originated transaction establishment, the SS transaction release is initiated with the RELEASE COMPLETE message by the network, carrying no cause IE. The RELEASE COMPLETE message contains a facility information element. SS informs the higher layer about the release with MNSS_END_IND. The primitive contains no facility information element. SS requests MM connection release with MMSS_REL_REQ.

**Preamble:** SS011




**Parametrization**

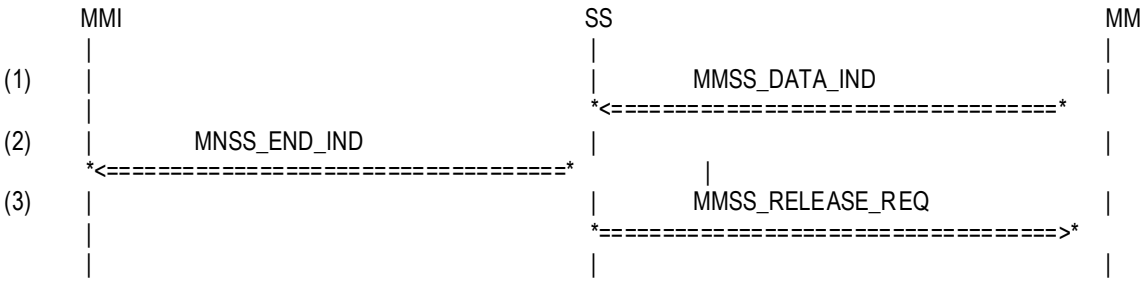
| Primitive | Parameter | Value |
|---|---|---|
| (3) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_11 |
| | ss_cause | NOT_USED |
| | ss_facility | SS_FACILITY_B |
| | } | |
| (4) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_NOT_PRESENT |
| | fac_inf | SS_FACILITY_B_INF |
| (5) MMSS_RELEASE_REQ | | |
| | ti | TI_3 |

History: 27-Jul-01 SBK Initial

### 3.5.7 SS024: CONNECTED_12 – MT transaction, network releases with facility IE

**Description:** After the network initiated transaction establishment, the SS connection release is initiated with the RELEASE COMPLETE message. The RELEASE COMPLETE message contains a facility information element. SS informs the higher layer about the release with MNSS_END_IND. The primitive contains no facility information element. SS requests MM connection release with MMSS_REL_REQ.

**Preamble:** SS005




**Parametrization**

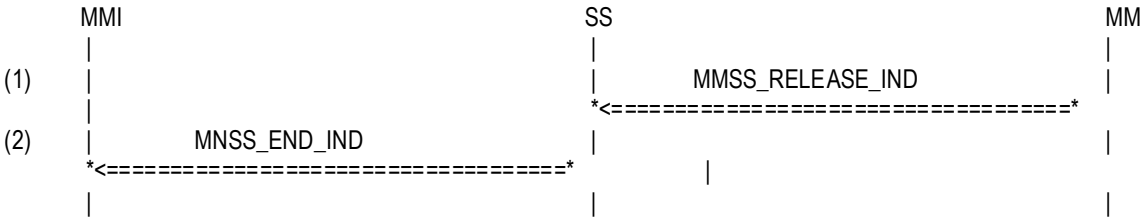
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_DATA_IND | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | DOWNLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_3 |
| | ss_cause | SS_CAUSE_16 |
| | ss_facility | SS_FACILITY_A |
| | } | |
| (2) MNSS_END_IND | | |
| | ti | TI_11 |
| | cause | CAUSE_0610 |
| | fac_inf | SS_FACILITY_A_INF |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_11 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |

### 3.5.8 SS027: CONNECTED_15 – MO transaction, MM releases the connection

**Description:** After mobile originated transaction establishment, SS is informed about the MM connection release by MM. SS has to indicate that therefore the SS transaction is terminated to the higher layer.

**Preamble:** SS011




**Parametrization**

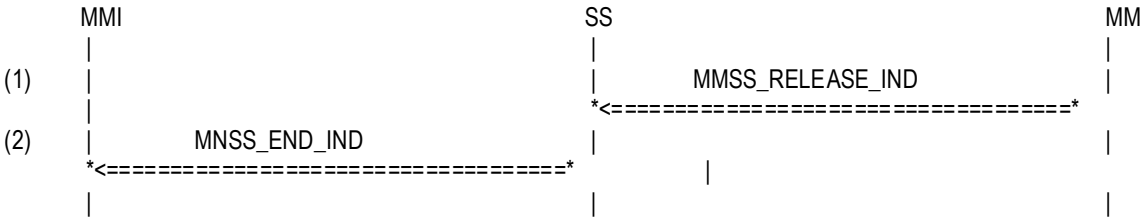
| Primitive | Parameter | Value |
|---|---|---|
| (1) MMSS_RELEASE_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_C301 |
| (2) MNSS_END_IND | | |
| | ti | TI_3 |
| | cause | CAUSE_C301 |
| | fac_inf | EMPTY_FACILITY |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.5.9 SS028: CONNECTED_16 – MT transaction, MM releases the connection

**Description:** After mobile terminated transaction establishment, SS is informed about the MM connection release by MM. SS has to indicate that therefore the SS transaction is terminated to the higher layer.

**Preamble:** SS005




**Parametrization**

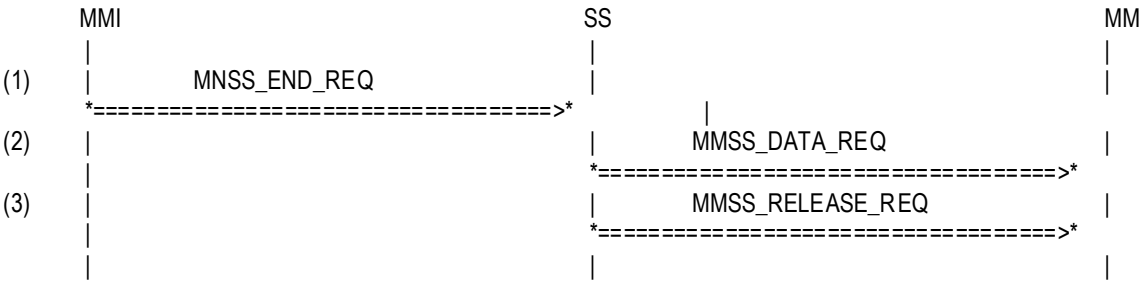
| | Primitive | Parameter | Value |
|---|---|---|---|
| (1) | MMSS_RELEASE_IND | | |
| | | ti | TI_11 |
| | | cause | CAUSE_C301 |
| (2) | MNSS_END_IND | | |
| | | ti | TI_11 |
| | | cause | CAUSE_C301 |
| | | fac_inf | EMPTY_FACILITY |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.5.10 SS017: CONNECTED_5 – MT transaction, higher layer releases without facility

**Description:** After the network initiated transaction establishment, the transaction release is initiated by the higher layer with the primitive MNSS_END_REQ. The primitive contains no facility information element. SS must inform the network with RELEASE COMPLETE and terminate the MM connection locally with MMSS_REL_REQ.

**Preamble:** SS005




**Parametrization**

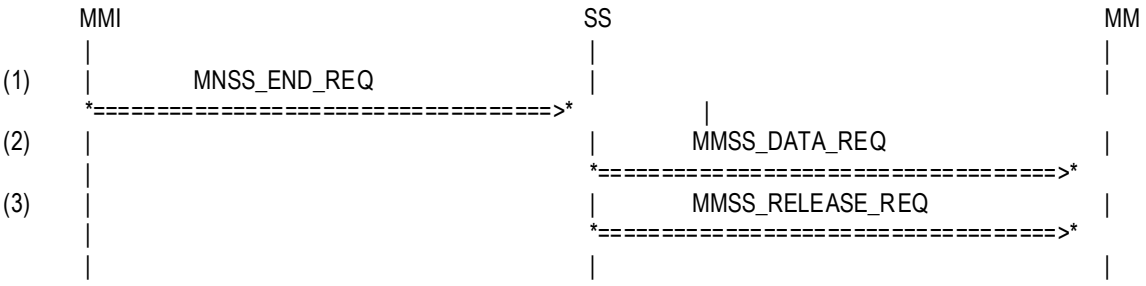
| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_END_REQ | | |
| | ti | TI_11 |
| | fac_inf | EMPTY_FACILITY |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_11 |
| | ss_cause | NOT_USED |
| | ss_facility | NOT_USED |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_11 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |

### 3.5.11 SS018: CONNECTED_6 - MT transaction, higher layer releases with facility

**Description:** After the network initiated transaction establishment, the transaction release is initiated by the higher layer with the primitive MNSS_END_REQ. The primitive contains a facility information element. SS must inform the network with RELEASE COMPLETE and terminate the MM connection locally with MMSS_REL_REQ.

**Preamble:** SS005




**Parametrization**

| Primitive | Parameter | Value |
|---|---|---|
| (1) MNSS_END_REQ | | |
| | ti | TI_11 |
| | fac_inf | SS_FACILITY_B_INF |
| (2) MMSS_DATA_REQ | | |
| | d1 | NOT_USED |
| | d2 | NOT_USED |
| | sdu | |
| | { | |
| | component | SS |
| | direction | UPLINK |
| | pd | B_SS_REL_COMP |
| | ti | TI_11 |
| | ss_cause | NOT_USED |
| | ss_facility | SS_FACILITY_B |
| | } | |
| (3) MMSS_RELEASE_REQ | | |
| | ti | TI_11 |

| History: | | | |
|---|---|---|---|
| | 21-July-97 | MS | Initial |
| | 20-Aug-97 | SZ | error correction |
| | 18-Oct-00 | HM | Revised |