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GSM PROTOCOL STACK
MULTILAYER TEST SPECIFICATION
AT COMMAND INTERPRETER

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- [83] Technical Documentation DL
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- [84] Technical Documentation CCD
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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.

Error! Objects cannot be created from editing field codes.

Figure 1: Mobile-station protocol architecture

This document describes the tests for the whole protocol stack according to GSM 11.10 chapter 26.8.

3 Parameters

```
#define REST_OCTET 0x2b
/*-----*\
| GSM 11.10
| 10 Generic call set up procedure
| 10.1 Generic call setup-up procedure for mobile terminating speech calls
| 10.1.2 Definition of system information messages
\*-----*/
/*-----*\
| Information Elements
\*-----*/
/*-----*\
| BCCH Frequency list:
| Indicates seven surrounding cells on any ARFCN of the supported
| band, excluding ARFCNs in or immediately adjacent to those
| specified in section 6.2 (GSM 11.10).
| From GSM 11.10, section 6.2 the following ARFCN are given :
|     10, 14, 17, 18, 22, 24, 26, 30, 31, 34, 38, 42, 45, 46, 50,
|     52, 54, 58, 59, 62, 66, 70, 73, 74, 78, 80, 82, 86, 87, 90,
|     94, 98, 101, 102, 106, 108, 110, 114
| The following 7 cells are chosen :
|     121,117,     76,     48,     12,7,1
| Thus BA is : 01100000 00000800 00008000 00000841
\*-----*/
IE_BEGIN(bcch_frequency_list)
    BF(32,0x01100000,ACT_CHECK,ANONYMOUS,"bit 128 thru 97")
    BF(32,0x00000800,ACT_CHECK,ANONYMOUS,"bit 96 thru 65")
    BF(32,0x00008000,ACT_CHECK,ANONYMOUS,"bit 64 thru 33")
    BF(32,0x00000841,ACT_CHECK,ANONYMOUS,"bit 32 thru 1")
IE_END(bcch_frequency_list)
IE_BEGIN(cell_channel_description)
    BF(32,0x00000000,ACT_CHECK,ANONYMOUS,"Includes the ")
    BF(32,0x00000000,ACT_CHECK,ANONYMOUS,"hopping sequence ")
    BF(32,0x00000000,ACT_CHECK,ANONYMOUS,"ARFCNs, if hopping ")
    BF(32,0x00000000,ACT_CHECK,ANONYMOUS,"is used. ")
IE_END(cell_channel_description)
IE_BEGIN(cell_identity)
    BF(16,0x0001,ACT_CHECK,ANONYMOUS,"CI VALUE 0001 hex (not relevant)")
IE_END(cell_identity)
IE_BEGIN(cell_identity_B)
    BF(16,0x0002,ACT_CHECK,ANONYMOUS,"CI VALUE 0002 hex (not relevant)")
IE_END(cell_identity_B)
IE_BEGIN(cell_options)
    BF(1,0,ACT_CHECK,ANONYMOUS, "spare ")
    BF(1,0,ACT_CHECK,pwrc, "power control not set")
    BF(2,2,ACT_CHECK,dtx, "MS must not use DTX ")
    BF(4,1,ACT_CHECK,radio_link_time_out, "8 ")
IE_END(cell_options)
IE_BEGIN(cell_selection_parameter)
    BF(3, 0,ACT_CHECK,cell_reselect_hysteresis,"0 dB")
    BF(5, 0,ACT_CHECK,ms_txpwr_max_cch, "Max. output power of MS")
    BF(1, 0,ACT_CHECK,acs, "no additional cell params")
    BF(1, 0,ACT_CHECK,neci, "New est. cause not supp.")
    BF(6,-90+111,ACT_CHECK,rxlev_access_min, "-90 dBm")
IE_END(cell_selection_parameter)
IE_BEGIN(control_channel_description)
```

```

    BF(1,0,ACT_CHECK,ANONYMOUS      ,"spare                ")
    BF(1,0,ACT_CHECK,att              ,"MS shall not apply (not relevant) ")
    BF(3,0,ACT_CHECK,bs_ag_blks_res  ,"0 blocks reserved (not relevant) ")
    BF(3,1,ACT_CHECK,ccch_conf       ,"Combined CCCH/SDCCH (not relevant) ")
    BF(5,0,ACT_CHECK,ANONYMOUS      ,"spare                ")
    BF(3,3,ACT_CHECK,bs_pa_mfrms     ,"5 multiframe (not relevant) ")
    BF(8,0,ACT_CHECK,t3212           ,"Infinite             ")
IE_END(control_channel_description)
IE_BEGIN(l2_pseudo_length_12)
    BF(6,12,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_12)
IE_BEGIN(l2_pseudo_length_18)
    BF(6,18,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_18)
IE_BEGIN(l2_pseudo_length_21)
    BF(6,21,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_21)
IE_BEGIN(l2_pseudo_length_22)
    BF(6,22,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_22)
#define MCC 0x262 /* 262 decimal (not relevant) */
#define MNC 1 /* 01 decimal (not relevant) */
#define LAC 0x0001 /* 0001 hex (not relevant) */
#define LAC_B 0x0002 /* 0002 hex (not relevant) */
IE_BEGIN(location_area_identification)
    BF( 4,6 ,ACT_CHECK,mcc_dig_2,"digit 2 of mobile country code")
    BF( 4,2 ,ACT_CHECK,mcc_dig_1,"digit 1 of mobile country code")
    BF( 4, 0xF,ACT_CHECK,ANONYMOUS ,"end of MCC ")
    BF( 4,2 ,ACT_CHECK,mcc_dig_3,"digit 3 of mobile country code")
    BF( 4,1 ,ACT_CHECK,mnc_dig_2,"digit 2 of mobile network code")
    BF( 4,0 ,ACT_CHECK,mnc_dig_1,"digit 1 of mobile network code")
    BF(16, LAC,ACT_CHECK,lac ,"Location area code ")
IE_END(location_area_identification)
IE_BEGIN(location_area_identification_B)
    BF( 4,6 ,ACT_CHECK,mcc_dig_2,"digit 2 of mobile country code")
    BF( 4,2 ,ACT_CHECK,mcc_dig_1,"digit 1 of mobile country code")
    BF( 4, 0xF,ACT_CHECK,ANONYMOUS ,"end of MCC ")
    BF( 4,2 ,ACT_CHECK,mcc_dig_3,"digit 3 of mobile country code")
    BF( 4,1 ,ACT_CHECK,mnc_dig_2,"digit 2 of mobile network code")
    BF( 4,0 ,ACT_CHECK,mnc_dig_1,"digit 1 of mobile network code")
    BF(16, LAC_B,ACT_CHECK,lac ,"Location area code ")
IE_END(location_area_identification_B)
IE_BEGIN(mobile_identity_tmsi)
    BF(8, 5, ACT_CHECK,length, "five octets to come")
    BF(4, M4(1,1,1,1), ACT_CHECK,ANONYMOUS,"bits 5-8 of octet 3 ='1111'")
    BF( 1, 0, ACT_CHECK,odd_even, "as applicable for TMSI")
    BF( 3, M3(1,0,0), ACT_CHECK,type, "TMSI")
    BF( 8, 0x12, ACT_CHECK, ANONYMOUS, SILENT)
    BF( 8, 0x34, ACT_CHECK, ANONYMOUS, SILENT)
    BF( 8, 0x56, ACT_CHECK, ANONYMOUS, SILENT)
    BF( 8, 0x78, ACT_CHECK, ANONYMOUS, SILENT)
IE_END(mobile_identity_tmsi)

```

```

IE_BEGIN(tmsi)
    BF( 8, 0x12,      ACT_CHECK,      ANONYMOUS,      SILENT)
    BF( 8, 0x34,      ACT_CHECK,      ANONYMOUS,      SILENT)
    BF( 8, 0x56,      ACT_CHECK,      ANONYMOUS,      SILENT)
    BF( 8, 0x78,      ACT_CHECK,      ANONYMOUS,      SILENT)
IE_END(tmsi)

IE_BEGIN(tmsi_2)
    BF( 8, 0x12,      ACT_CHECK,      ANONYMOUS,      SILENT)
    BF( 8, 0x79,      ACT_CHECK,      ANONYMOUS,      SILENT)
    BF( 8, 0x13,      ACT_CHECK,      ANONYMOUS,      SILENT)
    BF( 8, 0x78,      ACT_CHECK,      ANONYMOUS,      SILENT)
IE_END(tmsi_2)

IE_BEGIN(ncc_permitted)
    BF(8,0xFF,ACT_CHECK,ncc_permit,"e.g. all NCCs permitted")
IE_END(ncc_permitted)

IE_BEGIN(rach_control_parameter)
    BF( 2,0,ACT_CHECK,max_retrans      ,"Any Value ")
    BF( 4,0,ACT_CHECK,tx_integer       ,"Any Value ")
    BF( 1,0,ACT_CHECK,cell_bar_access  ,"Not barred ")
    BF( 1,1,ACT_CHECK,call_re_establishment ,"Not Allowed")
    BF( 5,0,ACT_CHECK,access_control_class_15_11 ,"None Barred")
    BF( 1,0,ACT_CHECK,emergency_call    ,"Allowed ")
    BF(10,0,ACT_CHECK,access_control_class_09_00 ,"None Barred")
IE_END(rach_control_parameter)

IE_BEGIN(rach_control_parameter_reest)
    BF( 2,0,ACT_CHECK,max_retrans      ,"Any Value ")
    BF( 4,0,ACT_CHECK,tx_integer       ,"Any Value ")
    BF( 1,0,ACT_CHECK,cell_bar_access  ,"Not barred ")
    BF( 1,0,ACT_CHECK,call_re_establishment ,"Allowed")
    BF( 5,0,ACT_CHECK,access_control_class_15_11 ,"None Barred")
    BF( 1,0,ACT_CHECK,emergency_call    ,"Allowed ")
    BF(10,0,ACT_CHECK,access_control_class_09_00 ,"None Barred")
IE_END(rach_control_parameter_reest)

IE_BEGIN(rr_management_protocol_discriminator)
    BF(4, 6,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(rr_management_protocol_discriminator)

IE_BEGIN(skip_indicator)
    BF(4, 0,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(skip_indicator)

IE_BEGIN(si_1_rest_octets)
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,"Spare Octets")
IE_END(si_1_rest_octets)

IE_BEGIN(si_3_rest_octets) /* optionally contains cell (re)select params */
    BF(1,          0,ACT_CHECK,p1      ,"C2 parameters not present")
    BF(7,REST_OCTET & 0x7F,ACT_CHECK,ANONYMOUS,SILENT )
    BF(8,REST_OCTET      ,ACT_CHECK,ANONYMOUS,SILENT )
    BF(8,REST_OCTET      ,ACT_CHECK,ANONYMOUS,SILENT )
    BF(8,REST_OCTET      ,ACT_CHECK,ANONYMOUS,SILENT )
IE_END(si_3_rest_octets)

IE_BEGIN(si_4_rest_octets) /* optionally contains cell (re)select params */
    BF(1,          0,ACT_CHECK,p1      ,"C2 parameters not present")
    BF(7,REST_OCTET & 0x7F,ACT_CHECK,ANONYMOUS,SILENT )
    BF(8,REST_OCTET      ,ACT_CHECK,ANONYMOUS,SILENT )
    BF(8,REST_OCTET      ,ACT_CHECK,ANONYMOUS,SILENT )

```

```
BF(8,REST_OCTET      ,ACT_CHECK,ANONYMOUS,SILENT      )
IE_END(si_4_rest_octets)
IE_BEGIN(system_information_type_1_message_type)
  BF(8, 0x19,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_1_message_type)
IE_BEGIN(system_information_type_2_message_type)
  BF(8, 0x1A,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_2_message_type)
IE_BEGIN(system_information_type_3_message_type)
  BF(8, 0x1B,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_3_message_type)
IE_BEGIN(system_information_type_4_message_type)
  BF(8, 0x1C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_4_message_type)
IE_BEGIN(system_information_type_5_message_type)
  BF(8, 0x1D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_5_message_type)
IE_BEGIN(system_information_type_6_message_type)
  BF(8, 0x1E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_6_message_type)

IE_BEGIN(paging_request_type_1_message_type)
  BF(8, 0x21,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(paging_request_type_1_message_type)

IE_BEGIN(paging_request_type_2_message_type)
  BF(8, 0x22,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(paging_request_type_2_message_type)

IE_BEGIN(paging_request_type_3_message_type)
  BF(8, 0x24,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(paging_request_type_3_message_type)

IE_BEGIN(immediate_assignment_message_type)
  BF(8, 0x3F,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(immediate_assignment_message_type)
IE_BEGIN(paging_response_message_type)
  BF(8, 0x27,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(paging_response_message_type)
IE_BEGIN(ciphering_mode_command_message_type)
  BF(8, 0x35,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(ciphering_mode_command_message_type)
IE_BEGIN(ciphering_mode_complete_message_type)
  BF(8, 0x32,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(ciphering_mode_complete_message_type)

IE_BEGIN(handover_command_message_type)
  BF(8, 0x2B,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(handover_command_message_type)

IE_BEGIN(handover_complete_message_type)
  BF(8, 0x2C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(handover_complete_message_type)
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IE_BEGIN(handover_failure_message_type)
    BF(8, 0x28,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(handover_failure_message_type)

IE_BEGIN(assignment_failure_message_type)
    BF(8, 0x2F,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(assignment_failure_message_type)

IE_BEGIN(channel_mode_modify_message_type)
    BF(8, 0x10,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(channel_mode_modify_message_type)

IE_BEGIN(channel_mode_modify_acknowledge_message_type)
    BF(8, 0x17,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(channel_mode_modify_acknowledge_message_type)

IE_BEGIN(assignment_command_message_type)
    BF(8, 0x2E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(assignment_command_message_type)

IE_BEGIN(assignment_complete_message_type)
    BF(8, 0x29,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(assignment_complete_message_type)

IE_BEGIN(cm_service_request_message_type)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
    BF(6, 0x24,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(cm_service_request_message_type)

IE_BEGIN(cm_service_abort_message_type)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
    BF(6, 0x23,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(cm_service_abort_message_type)

IE_BEGIN(cm_service_reject_message_type)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
    BF(6, 0x22,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(cm_service_reject_message_type)

IE_BEGIN(cm_service_accept_message_type)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
    BF(6, 0x21,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(cm_service_accept_message_type)

IE_BEGIN(call_proceeding_message_type)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
    BF(6, 0x02,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(call_proceeding_message_type)

IE_BEGIN(modify_message_type)
    BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
    BF(6, 0x17,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(modify_message_type)
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IE_BEGIN(modify_reject_message_type)
  BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
  BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
  BF(6, 0x13,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(modify_reject_message_type)
/*-----*\
| Messages
\*-----*/
MSG3_BEGIN(system_information_type_1)
  IE(12_pseudo_length_21)
  IE(skip_indicator)
  IE(rr_management_protocol_discriminator)
  IE(system_information_type_1_message_type)
  IE(cell_channel_description)
  IE(rach_control_parameter)
  IE(si_1_rest_octets)
MSG3_END(system_information_type_1)
MSG3_BEGIN(system_information_type_2)
  IE(12_pseudo_length_22)
  IE(skip_indicator)
  IE(rr_management_protocol_discriminator)
  IE(system_information_type_2_message_type)
  IE(bcch_frequency_list)
  IE(ncc_permitted)
  IE(rach_control_parameter)
MSG3_END(system_information_type_2)
MSG3_BEGIN(system_information_type_3)
  IE(12_pseudo_length_18)
  IE(skip_indicator)
  IE(rr_management_protocol_discriminator)
  IE(system_information_type_3_message_type)
  IE(cell_identity)
  IE(location_area_identification)
  IE(control_channel_description)
  IE(cell_options)
  IE(cell_selection_parameter)
  IE(rach_control_parameter)
  IE(si_3_rest_octets)
MSG3_END(system_information_type_3)
MSG3_BEGIN(system_information_type_4)
  IE(12_pseudo_length_12)
  IE(skip_indicator)
  IE(rr_management_protocol_discriminator)
  IE(system_information_type_4_message_type)
  IE(location_area_identification)
  IE(cell_selection_parameter)
  IE(rach_control_parameter)
  IE(si_4_rest_octets)
MSG3_END(system_information_type_4)
MSG3_BEGIN(system_information_type_5)
  IE(skip_indicator)
  IE(rr_management_protocol_discriminator)
  IE(system_information_type_5_message_type)
  IE(bcch_frequency_list)
MSG3_END(system_information_type_5)
MSG3_BEGIN(system_information_type_6)
  IE(skip_indicator)
  IE(rr_management_protocol_discriminator)
  IE(system_information_type_6_message_type)
  IE(cell_identity)
```

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        IE(location_area_identification)
        IE(cell_options)
        IE(ncc_permitted)
MSG3_END(system_information_type_6)
/*-----*\
| GSM 11.10
| 10 Generic call set up procedure
| 10.1 Generic call setup-up procedure for mobile terminating speech calls
| 10.1.4 Specific message contents
\*-----*/
/*-----*\
| Information Elements
\*-----*/
#define ARFCN_BCCH      122
#define ARFCN_BCCH_B   48
#define NCC             0x5
#define BCC             0x6
#define BSIC           ((NCC<<3) | (BCC))
#define RFN            0
IE_BEGIN(handover_reference)
    BF(8,0,ACT_CHECK,reference_value,"used for handover")
IE_END(handover_reference)
IE_BEGIN(authentication_parameter_rand)
    BF(32,0x80000000,ACT_CHECK,rand_127_096,SILENT)
    BF(32,0x00000012,ACT_CHECK,rand_095_064,SILENT)
    BF(32,0x34000000,ACT_CHECK,rand_063_032,SILENT)
    BF(32,0x0000000F,ACT_CHECK,rand_031_000,SILENT)
IE_END(authentication_parameter_rand)
IE_BEGIN(authentication_parameter_sres)
    BF(32,0x0000000F,ACT_NOP,sres_031_000,SILENT)
IE_END(authentication_parameter_sres)
IE_BEGIN(bearer_capability)
    BF(8,1,ACT_CHECK, length, SILENT)
    BF(1,1,ACT_CHECK, ext3, SILENT)
    BF(2,1,ACT_CHECK, radio_channel_requirement,SILENT)
    BF(1,0,ACT_CHECK, coding_standard, SILENT)
    BF(1,0,ACT_CHECK, transfer_mode, SILENT)
    BF(3,0,ACT_CHECK, info_transfer_capability, SILENT)
IE_END(bearer_capability)

IE_BEGIN(bearer_capabilityEFR)
    BF(8, 3,ACT_CHECK, length, SILENT)
    BF(1, 0,ACT_CHECK, ext3, SILENT)
    BF(2, 1,ACT_CHECK, radio_channel_requirement,SILENT)
    BF(1, 0,ACT_CHECK, coding_standard, SILENT)
    BF(1, 0,ACT_CHECK, transfer_mode, SILENT)
    BF(3, 0,ACT_CHECK, info_transfer_capability, SILENT)
    BF(8,0x00,ACT_CHECK, octet_3a_1, SILENT)
    BF(8,0x82,ACT_CHECK, octet_3a_2, SILENT)
IE_END(bearer_capabilityEFR)

IE_BEGIN(bearer_capability_data)
    BF(8,7,ACT_CHECK, length, SILENT)
    BF(1,1,ACT_CHECK, ext3, SILENT)
    BF(2,1,ACT_CHECK, radio_channel_requirement,SILENT)
    BF(1,0,ACT_CHECK, coding_standard, SILENT)
    BF(1,0,ACT_CHECK, transfer_mode, SILENT)
    BF(3,2,ACT_CHECK, info_transfer_capability, SILENT)
    BF(1,1,ACT_CHECK, ext4, SILENT)
    BF(1,1,ACT_CHECK, compression, SILENT)

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BF(2,0,ACT_CHECK, structure, SILENT)
BF(1,1,ACT_CHECK, duplex_mode, SILENT)
BF(1,0,ACT_CHECK, configuration, SILENT)
BF(1,0,ACT_CHECK, NIRR, SILENT)
BF(1,0,ACT_CHECK, establishment, SILENT)
BF(1,1,ACT_CHECK, ext5, SILENT)
BF(2,1,ACT_CHECK, access_identifier, SILENT)
BF(2,0,ACT_CHECK, rate_adaption, SILENT)
BF(3,1,ACT_CHECK, access_protocol, SILENT)
BF(1,0,ACT_CHECK, ext6, SILENT)
BF(2,1,ACT_CHECK, layer_1, SILENT)
BF(4,0,ACT_CHECK, default_layer_1, SILENT)
BF(1,1,ACT_CHECK, sync_async, SILENT)
BF(1,0,ACT_CHECK, ext6a, SILENT)
BF(1,0,ACT_CHECK, stop_bits, SILENT)
BF(1,0,ACT_CHECK, negotiation, SILENT)
BF(1,1,ACT_CHECK, data_bits, SILENT)
BF(4,3,ACT_CHECK, user_rate, SILENT)
BF(1,0,ACT_CHECK, ext6b, SILENT)
BF(2,3,ACT_CHECK, intermediate_rate, SILENT)
BF(1,0,ACT_CHECK, NIC_TX, SILENT)
BF(1,0,ACT_CHECK, NIC_RX, SILENT)
BF(3,3,ACT_CHECK, parity, SILENT)
BF(1,1,ACT_CHECK, ext6c, SILENT)
BF(2,1,ACT_CHECK, connection_element, SILENT)
BF(5,3,ACT_CHECK, modem_type, SILENT)
IE_END(bearer_capability_data)

IE_BEGIN(call_control_protocol_discriminator)
BF(4, 3,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(call_control_protocol_discriminator)

IE_BEGIN(supplementary_services_protocol_discriminator)
BF(4, M4(1,0,1,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(supplementary_services_protocol_discriminator)

IE_BEGIN(called_party_bcd_number)
BF( 8,7,ACT_CHECK,length , "length of IE")
BF( 1,1,ACT_CHECK,ext , "Extension Bit")
BF( 3,0,ACT_CHECK,type_of_number , "Unknown")
BF( 4,1,ACT_CHECK,numbering_plan , "ISDN/telephony")
BF( 4,3,ACT_CHECK,digit_2 , "Digit 2")
BF( 4,0,ACT_CHECK,digit_1 , "Digit 1")
BF( 4,3,ACT_CHECK,digit_4 , "Digit 4")
BF( 4,0,ACT_CHECK,digit_3 , "Digit 3")
BF( 4,0,ACT_CHECK,digit_6 , "Digit 6")
BF( 4,9,ACT_CHECK,digit_5 , "Digit 5")
BF( 4,4,ACT_CHECK,digit_8 , "Digit 8")
BF( 4,9,ACT_CHECK,digit_7 , "Digit 7")
BF( 4,1,ACT_CHECK,digit_10 , "Digit 10")
BF( 4,1,ACT_CHECK,digit_9 , "Digit 9")
BF( 4,0xF,ACT_CHECK,digit_12 , "Digit 12")
BF( 4,7,ACT_CHECK,digit_11 , "Digit 11")
IE_END(called_party_bcd_number)

IE_BEGIN(calling_party_bcd_number)
BF( 8,8,ACT_CHECK,length , "length of IE")
BF( 1,0,ACT_CHECK,ext , "Extension Bit")
BF( 3,0,ACT_CHECK,type_of_number , "Unknown")
BF( 4,1,ACT_CHECK,numbering_plan , "ISDN/telephony")

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BF( 1,1,ACT_CHECK,ext                ,"Extension Bit")
BF( 3,0,ACT_CHECK,presentation_indicator ,"Presentation allowed")
BF( 3,0,ACT_CHECK,spare                ,"Spare")
BF( 1,0,ACT_CHECK,screening_indicator  ,"Screening indicator")
BF( 4,3,ACT_CHECK,digit_2              ,"Digit 2")
BF( 4,0,ACT_CHECK,digit_1              ,"Digit 1")
BF( 4,3,ACT_CHECK,digit_4              ,"Digit 4")
BF( 4,0,ACT_CHECK,digit_3              ,"Digit 3")
BF( 4,0,ACT_CHECK,digit_6              ,"Digit 6")
BF( 4,9,ACT_CHECK,digit_5              ,"Digit 5")
BF( 4,4,ACT_CHECK,digit_8              ,"Digit 8")
BF( 4,9,ACT_CHECK,digit_7              ,"Digit 7")
BF( 4,1,ACT_CHECK,digit_10             ,"Digit 10")
BF( 4,1,ACT_CHECK,digit_9             ,"Digit 9")
BF( 4,0xF,ACT_CHECK,digit_12           ,"Digit 12")
BF( 4,7,ACT_CHECK,digit_11            ,"Digit 11")
IE_END(calling_party_bcd_number)

IE_BEGIN(channels_needed_for_mobiles_1_and_2)
  BF(2,0,ACT_CHECK,second_channel,"spare, any channel")
  BF(2,0,ACT_CHECK, first_channel,"spare, any channel")
IE_END(channels_needed_for_mobiles_1_and_2)
IE_BEGIN(cc_capabilities)
  BF(8,1,ACT_CHECK, length, SILENT)
  BF(8,1,ACT_CHECK, dtmf_support, SILENT)
IE_END(cc_capabilities)
IE_BEGIN(channel_description)
  BF( 5,M5(0,0,1,0,1),ACT_CHECK, channel_type,"SDCCH/SACCH 4(1) ")
  BF( 3, 0,ACT_CHECK, time_slot_number,"zero")
  BF( 3, BCC,ACT_CHECK, training_sequence_code,"same as BCCH")
  BF( 1, 0,ACT_CHECK, hopping,"No")
  BF( 2, 0,ACT_CHECK, spare,SILENT)
  BF(10, ARFCN_BCCH,ACT_CHECK, arfcn,"ARFCN of the BCCH")
IE_END(channel_description)

IE_BEGIN(channel_description_tch)
  BF( 5,M5(0,0,0,0,1),ACT_CHECK, channel_type,"TCH Full Rate")
  BF( 3, 0,ACT_CHECK, time_slot_number,"zero ")
  BF( 3, BCC,ACT_CHECK, tsc ,"same as BCCH ")
  BF( 1, 0,ACT_CHECK, hopping,"No ")
  BF( 2, 0,ACT_CHECK, spare,SILENT )
  BF(10, ARFCN_BCCH,ACT_CHECK, arfcn,"ARFCN of the BCCH ")
IE_END(channel_description_tch)

IE_BEGIN(channel_mode_speech)
  BF( 8, 1,ACT_CHECK, mode,"Speech full rate")
IE_END(channel_mode_speech)

IE_BEGIN(cm_service_type_ss)
  BF(4,M4(1,0,0,0),ACT_CHECK,service_type,"supplementary services")
IE_END(cm_service_type_ss)

IE_BEGIN(cm_service_type_moc)
  BF(4,M4(0,0,0,1),ACT_CHECK,service_type,"mobile originated call")
IE_END(cm_service_type_moc)

IE_BEGIN(ciphering_key_sequence_number)
  BF(1, 0,ACT_CHECK, spare,SILENT)
  BF(3,M3(0,1,1),ACT_CHECK,key_sequence,"from SIM card (3)")
IE_END(ciphering_key_sequence_number)

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IE_BEGIN(ciphering_key_sequence_number_2)
  BF(1,          0,ACT_CHECK,          spare,SILENT)
  BF(3,M3(0,1,0),ACT_CHECK,key_sequence,"sent BS->MS")
IE_END(ciphering_key_sequence_number_2)
IE_BEGIN(ciphering_mode_setting)
  BF(3,M3(0,0,0),ACT_CHECK,algorithm_identifier,"A5/1          ")
  BF(1,          1,ACT_CHECK,          start_ciphering,"Start ciphering")
IE_END(ciphering_mode_setting)
IE_BEGIN(cipher_response)
  BF(3,0,ACT_CHECK,          spare,SILENT          )
  BF(1,0,ACT_CHECK,cipher_response,"IMEISV shall not be included")
IE_END(cipher_response)
IE_BEGIN(description_of_the_first_channel_after_time)
  BF( 5,M5(0,0,0,0,1),ACT_CHECK,          channel_type,"TCH ")
  BF( 3,          3,ACT_CHECK,          time_slot_number,"three")
  BF( 3,          BCC,ACT_CHECK,training_sequence_code,"same as BCCH")
  BF( 1,          0,ACT_CHECK,          hopping,"No")
  BF( 2,          0,ACT_CHECK,          spare,SILENT)
  BF(10,  ARFCN_BCCH,ACT_CHECK,          arfcn,"ARFCN of the BCCH")
IE_END(description_of_the_first_channel_after_time)

IE_BEGIN(channel_description_ho)
  BF( 5,M5(0,0,0,0,1),ACT_CHECK,          channel_type,"TCH ")
  BF( 3,          2,ACT_CHECK,          time_slot_number,"two")
  BF( 3,          BCC,ACT_CHECK,training_sequence_code,"same as BCCH")
  BF( 1,          0,ACT_CHECK,          hopping,"No")
  BF( 2,          0,ACT_CHECK,          spare,SILENT)
  BF(10,  ARFCN_BCCH,ACT_CHECK,          arfcn,"ARFCN of the BCCH")
IE_END(channel_description_ho)

IE_BEGIN(cell_description)
  BF( 2,ARFCN_BCCH>>8          ,ACT_CHECK,arfcn_hi,"BCCH ARFCN (high part)")
  BF( 3,          1,ACT_CHECK,ncc,          "network colour code")
  BF( 3,          5,ACT_CHECK,bcc,          "base station colour code")
  BF( 8,ARFCN_BCCH          ,ACT_CHECK,arfcn_lo,"BCCH ARFCN (low part)")
IE_END(cell_description)

IE_BEGIN(sync_ind_synch)
  BF( 1,  0,ACT_CHECK,nci,"ignore out of range timing advance")
  BF( 1,  0,ACT_CHECK,rot,"shall not be included")
  BF( 2,  1,ACT_CHECK,si ,"synchronized handover")
IE_END(sync_ind_synch)

IE_BEGIN(ia_rest_octets) /* maximum length (11), no hop, no start time */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 0 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 1 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 2 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 3 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 4 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 5 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 6 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 7 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 8 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 9 */
  BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 10 */
IE_END(ia_rest_octets)

IE_BEGIN(iei_D)
  BF(4,0x0D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_D)

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IE_BEGIN(iei_08)
    BF(8,0x08,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_08)

IE_BEGIN(iei_1C)
    BF(8,0x1C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_1C)

IE_BEGIN(iei_7E)
    BF(8,0x7E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_7E)

IE_BEGIN(iei_7F)
    BF(8,0x7F,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_7F)

IE_BEGIN(iei_1E)
    BF(8,0x1E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_1E)
IE_BEGIN(iei_63)
    BF(8,0x63,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_63)
IE_BEGIN(iei_5E)
    BF(8,0x5E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_5E)
IE_BEGIN(iei_15)
    BF(8,0x15,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_15)
IE_BEGIN(iei_04)
    BF(8,0x04,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_04)
IE_BEGIN(iei_34)
    BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_34)
IE_BEGIN(iei_2C)
    BF(8,0x2C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_2C)
IE_BEGIN(iei_13)
    BF(8,0x13,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_13)

IE_BEGIN(iei_5C)
    BF(8,0x5C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_5C)

IE_BEGIN(keypad_facility_0)
    BF(8, 0x30,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_0)

IE_BEGIN(keypad_facility_1)
    BF(8, 0x31,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_1)

IE_BEGIN(keypad_facility_2)
    BF(8, 0x32,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_2)

IE_BEGIN(keypad_facility_3)
    BF(8, 0x33,ACT_CHECK,ANONYMOUS,SILENT)
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IE_END(keypad_facility_3)

IE_BEGIN(keypad_facility_4)
  BF(8, 0x34,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_4)

IE_BEGIN(keypad_facility_5)
  BF(8, 0x35,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_5)

IE_BEGIN(keypad_facility_6)
  BF(8, 0x36,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_6)

IE_BEGIN(keypad_facility_7)
  BF(8, 0x37,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_7)

IE_BEGIN(keypad_facility_8)
  BF(8, 0x38,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_8)

IE_BEGIN(keypad_facility_9)
  BF(8, 0x39,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_9)

IE_BEGIN(keypad_facility_A)
  BF(8, 0x41,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_A)

IE_BEGIN(keypad_facility_B)
  BF(8, 0x42,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_B)

IE_BEGIN(keypad_facility_C)
  BF(8, 0x43,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_C)

IE_BEGIN(keypad_facility_D)
  BF(8, 0x44,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_D)

IE_BEGIN(keypad_facility_star)
  BF(8, 0x2A,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_star)

IE_BEGIN(keypad_facility_hash)
  BF(8, 0x23,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(keypad_facility_hash)

IE_BEGIN(l2_pseudo_length_11) /* pag req type 1 with TMSI (one mobile)*/
  BF(8, 0,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_11)
IE_BEGIN(mobile_allocation)
  BF(8,0,ACT_CHECK,length,"length 0 due to hopping disabled")
IE_END(mobile_allocation)
IE_BEGIN(mobile_identity) /* has 8 octets */
  BF(8, 7,ACT_CHECK, length,"seven octets to come")
  BF(4, 2,ACT_CHECK, digit_1,SILENT)
  BF(1, 1,ACT_CHECK,odd_even,SILENT)
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BF(3, M3(0,0,1),ACT_CHECK, type,"IMSI")
BF(4, 2,ACT_CHECK, digit_3,SILENT)
BF(4, 6,ACT_CHECK, digit_2,SILENT)
BF(4, 1,ACT_CHECK, digit_4,SILENT)
BF(4, 0,ACT_CHECK, digit_3,SILENT)
BF(4, 7,ACT_CHECK, digit_6,SILENT)
BF(4, 4,ACT_CHECK, digit_5,SILENT)
BF(4, 1,ACT_CHECK, digit_8,SILENT)
BF(4, 1,ACT_CHECK, digit_7,SILENT)
BF(4, 9,ACT_CHECK, digit_10,SILENT)
BF(4, 4,ACT_CHECK, digit_9,SILENT)
BF(4, 2,ACT_CHECK, digit_12,SILENT)
BF(4, 1,ACT_CHECK, digit_11,SILENT)
IE_END(mobile_identity)
IE_BEGIN(mobility_management_protocol_discriminator)
BF(4, 5,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(mobility_management_protocol_discriminator)

IE_BEGIN(identity_type)
BF(4,1,ACT_CHECK, type_of_identity,"IMSI")
IE_END(identity_type)

IE_BEGIN(mode_of_the_first_channel)
BF(8,1,ACT_CHECK,mode,"Speech full rate")
IE_END(mode_of_the_first_channel)

IE_BEGIN(mode_of_the_first_channelEFR)
BF(8,0x21,ACT_CHECK,mode,"Enhanced full rate")
IE_END(mode_of_the_first_channelEFR)

IE_BEGIN(ms_classmark)
BF(8, 3,ACT_CHECK, length,SILENT)
BF(1, 0,ACT_CHECK, spare,SILENT)
BF(2, M2(0,1),ACT_CHECK, revision_level,"phase 2 MS")
BF(1, 1,ACT_CHECK, es_ind,"with 'Contr. Early Classmark Send.'")
BF(1, 0,ACT_CHECK, a5_1,"encryption algorithm A5/1 available")
BF(3,M3(0,0,1),ACT_CHECK, rf_power_capability,"class 2")
BF(1, 0,ACT_CHECK, spare2,SILENT)
BF(1, 1,ACT_CHECK, ps_capability,SILENT)
BF(2, M2(1,1),ACT_CHECK, ss_screening_indicator,SILENT)
BF(1, 1,ACT_CHECK, sm_capability,"point to point SMS")
BF(1, 0,ACT_CHECK, vbs,"no VBS cap. or no notific. wanted")
BF(1, 0,ACT_CHECK, vgcs,"no VGCS cap. or no notific. wanted")
BF(1, 0,ACT_CHECK, frequency_capability,"no extension band G1")
BF(1, 0,ACT_CHECK, classmark_3,"add. MS cap. information")
BF(5, 0,ACT_CHECK, spare3,SILENT)
BF(1, 0,ACT_CHECK, a5_3,"A5/3 not available")
BF(1, 0,ACT_CHECK, a5_2,"A5/2 not available")
IE_END(ms_classmark)

IE_BEGIN(p1_rest_octets)
/* pag. req. type1 : 22 - 11 (L2 pseud. len) = 11 bytes */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 0 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 1 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 2 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 3 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 4 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 5 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 6 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 7 */

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    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 8 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 9 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 10 */
IE_END(p1_rest_octets)

IE_BEGIN(p2_rest_octets)
/* pag. req. type1 : 22 - 11 (L2 pseud. len) = 11 bytes */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 0 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 1 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 2 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 3 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 4 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 5 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 6 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 7 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 8 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 9 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 10 */
IE_END(p2_rest_octets)

IE_BEGIN(p3_rest_octets)
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 0 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 1 */
    BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 2 */
IE_END(p3_rest_octets)

IE_BEGIN(page_mode)
    BF(2,0,ACT_CHECK,spare,"two spare bits ")
    BF(2,0,ACT_CHECK,pm,"Normal Paging")
IE_END(page_mode)

IE_BEGIN(power_command)
    BF(8,10,ACT_CHECK,power,SILENT)
IE_END(power_command)

IE_BEGIN(rach_111)
    BF(3,M3(1,1,1),ACT_CHECK,establishment_cause,"SS")
    BF(5,M5(1,1,1,1,1),ACT_NOP,random_reference,"ignore Random Ref.")
IE_END(rach_111)

IE_BEGIN(rach)
    BF(3,M3(1,0,0),ACT_CHECK,establishment_cause,"paging ind. any chan'")
    BF(5,M5(1,1,1,1,1),ACT_NOP,random_reference,"ignore Random Ref.")
IE_END(rach)

IE_BEGIN(rach_moc)
    BF(3,M3(1,1,1),ACT_CHECK,establishment_cause,"MOC & TCH/F")
    BF(5,M5(1,1,1,1,1),ACT_NOP,random_reference,"ignore Random Ref.")
IE_END(rach_moc)

IE_BEGIN(rach_reest_neci_0)
    BF(3,M3(1,1,0),ACT_CHECK,establishment_cause,"Reest, NECI=0, TCH/F")
    BF(5,M5(1,1,1,1,1),ACT_NOP,random_reference,"ignore Random Ref.")
IE_END(rach_reest_neci_0)

IE_BEGIN(request_reference)
    BF(3,M3(1,0,0),ACT_NOP,random_access_info,"As in CHAN REQ")
    BF(5,M5(1,1,1,1,1),ACT_NOP,random_reference,SILENT)
    BF(5,0,ACT_NOP,t1,SILENT)
    BF(6,0,ACT_NOP,t3,SILENT)
    BF(5,0,ACT_NOP,t2,SILENT)
IE_END(request_reference)

IE_BEGIN(rr_cause)
    BF(8,0,ACT_CHECK,rr_cause,"normal event")

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IE_END(rr_cause)

IE_BEGIN(rr_cause_1)
    BF(8,1,ACT_CHECK,rr_cause,"abnormal event, unspecified")
IE_END(rr_cause_1)

IE_BEGIN(rr_cause_6F)
    BF(8,0x6F,ACT_CHECK,rr_cause,"protocol error unspecified")
IE_END(rr_cause_6F)

IE_BEGIN(reject_cause)
    BF(8,0x20,ACT_CHECK,reject_cause,"service not available")
IE_END(reject_cause)

IE_BEGIN(progress_indicator_32)
    BF(8, 2,ACT_CHECK, length,"two octets")
    BF(1, 1,ACT_CHECK, ext_1,SILENT)
    BF(2, 3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1, 0,ACT_SHOW, spare,SILENT)
    BF(4, 0,ACT_CHECK, location,"User")
    BF(1, 1,ACT_CHECK, ext_2,SILENT)
    BF(7, 32,ACT_CHECK, progress_description,"call is end-to-end PLMN/ISDN")
IE_END(progress_indicator_32)

IE_BEGIN(progress_indicator_8)
    BF(8, 2,ACT_CHECK, length,"two octets")
    BF(1, 1,ACT_CHECK, ext_1,SILENT)
    BF(2, 3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1, 0,ACT_SHOW, spare,SILENT)
    BF(4, 0,ACT_CHECK, location,"User")
    BF(1, 1,ACT_CHECK, ext_2,SILENT)
    BF(7, 8,ACT_CHECK, progress_description,"in band tones available")
IE_END(progress_indicator_8)

IE_BEGIN(ss_version)
    BF(8, 1,ACT_CHECK,length,SILENT)
    BF(8, 0,ACT_SHOW, version,SILENT)
IE_END(ss_version)

IE_BEGIN(cause_03)
    BF(8, 2,ACT_CHECK, length,"two octets")
    BF(1, 1,ACT_CHECK, ext_1,SILENT)
    BF(2, 3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1, 0,ACT_SHOW, spare,SILENT)
    BF(4, 0,ACT_CHECK, location,"User")
    BF(1, 1,ACT_CHECK, ext_2,SILENT)
    BF(7, 3,ACT_CHECK, cause,"no route to destination")
IE_END(cause_03)

IE_BEGIN(cause_17)
    BF(8, 2,ACT_CHECK, length,"two octets")
    BF(1, 1,ACT_CHECK, ext_1,SILENT)
    BF(2, 3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1, 0,ACT_SHOW, spare,SILENT)
    BF(4, 0,ACT_CHECK, location,"User")
    BF(1, 1,ACT_CHECK, ext_2,SILENT)
    BF(7, 17,ACT_CHECK, cause,"user busy")
IE_END(cause_17)

IE_BEGIN(cause_31)
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    BF(8,          2,ACT_CHECK, length,"two octets")
    BF(1,          1,ACT_CHECK, ext_1,SILENT)
    BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1,          0,ACT_SHOW, spare,SILENT)
    BF(4,          0,ACT_CHECK, location,"User")
    BF(1,          1,ACT_CHECK, ext_2,SILENT)
    BF(7,          31,ACT_CHECK, cause,"normal, unspecified")
IE_END(cause_31)

IE_BEGIN(cause_57)
    BF(8,          2,ACT_CHECK, length,"two octets")
    BF(1,          1,ACT_CHECK, ext_1,SILENT)
    BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1,          0,ACT_SHOW, spare,SILENT)
    BF(4,          0,ACT_CHECK, location,"User")
    BF(1,          1,ACT_CHECK, ext_2,SILENT)
    BF(7,          57,ACT_CHECK, cause,"bearer cap not authorized")
IE_END(cause_57)

IE_BEGIN(cause_81)
    BF(8,          2,ACT_CHECK, length,"two octets")
    BF(1,          1,ACT_CHECK, ext_1,SILENT)
    BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1,          0,ACT_SHOW, spare,SILENT)
    BF(4,          0,ACT_CHECK, location,"User")
    BF(1,          1,ACT_CHECK, ext_2,SILENT)
    BF(7,          81,ACT_CHECK, cause,"invalid transaction identifier")
IE_END(cause_81)

IE_BEGIN(cause_88)
    BF(8,          2,ACT_CHECK, length,"two octets")
    BF(1,          1,ACT_CHECK, ext_1,SILENT)
    BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1,          0,ACT_SHOW, spare,SILENT)
    BF(4,          0,ACT_CHECK, location,"User")
    BF(1,          1,ACT_CHECK, ext_2,SILENT)
    BF(7,          88,ACT_CHECK, cause,"incompatible destination")
IE_END(cause_88)

IE_BEGIN(cause_102_303)
    BF(8,          5,ACT_CHECK, length,"five octets")
    BF(1,          1,ACT_CHECK, ext_1,SILENT)
    BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1,          0,ACT_SHOW, spare,SILENT)
    BF(4,          0,ACT_CHECK, location,"User")
    BF(1,          1,ACT_CHECK, ext_2,SILENT)
    BF(7,          102,ACT_CHECK, cause,"recovery on timer expiry")
    BF(8,          0x33,ACT_CHECK, diag_0,"3")
    BF(8,          0x30,ACT_CHECK, diag_1,"0")
    BF(8,          0x33,ACT_CHECK, diag_2,"3")
IE_END(cause_102_303)

IE_BEGIN(cause_102_310)
    BF(8,          5,ACT_CHECK, length,"five octets")
    BF(1,          1,ACT_CHECK, ext_1,SILENT)
    BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
    BF(1,          0,ACT_SHOW, spare,SILENT)
    BF(4,          0,ACT_CHECK, location,"User")
    BF(1,          1,ACT_CHECK, ext_2,SILENT)

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BF(7,          102,ACT_CHECK, cause,"recovery on timer expiry")
BF(8,          0x33,ACT_CHECK, diag_0,"3")
BF(8,          0x31,ACT_CHECK, diag_1,"1")
BF(8,          0x30,ACT_CHECK, diag_2,"0")
IE_END(cause_102_310)

IE_BEGIN(cause_102_313)
BF(8,          5,ACT_CHECK, length,"five octets")
BF(1,          1,ACT_CHECK, ext_1,SILENT)
BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
BF(1,          0,ACT_SHOW, spare,SILENT)
BF(4,          0,ACT_CHECK, location,"User")
BF(1,          1,ACT_CHECK, ext_2,SILENT)
BF(7,          102,ACT_CHECK, cause,"recovery on timer expiry")
BF(8,          0x33,ACT_CHECK, diag_0,"3")
BF(8,          0x31,ACT_CHECK, diag_1,"1")
BF(8,          0x33,ACT_CHECK, diag_2,"3")
IE_END(cause_102_313)

IE_BEGIN(cause_97_20)
BF(8,          3,ACT_CHECK, length,"three octets")
BF(1,          1,ACT_CHECK, ext_1,SILENT)
BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
BF(1,          0,ACT_SHOW, spare,SILENT)
BF(4,          0,ACT_CHECK, location,"User")
BF(1,          1,ACT_CHECK, ext_2,SILENT)
BF(7,          97,ACT_CHECK, cause,"message not implemented")
BF(8,          0x20,ACT_CHECK, diag_0,"message type 0x20")
IE_END(cause_97_20)

IE_BEGIN(cause_16)
BF(8,          2,ACT_CHECK, length,"two octets")
BF(1,          1,ACT_CHECK, ext_1,SILENT)
BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
BF(1,          0,ACT_SHOW, spare,SILENT)
BF(4,          0,ACT_CHECK, location,"User")
BF(1,          1,ACT_CHECK, ext_2,SILENT)
BF(7,          16,ACT_CHECK, cause,"normal clearing")
IE_END(cause_16)

IE_BEGIN(cause_30)
BF(8,          2,ACT_CHECK, length,"two octets")
BF(1,          1,ACT_CHECK, ext_1,SILENT)
BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
BF(1,          0,ACT_SHOW, spare,SILENT)
BF(4,          0,ACT_CHECK, location,"User")
BF(1,          1,ACT_CHECK, ext_2,SILENT)
BF(7,          30,ACT_CHECK, cause,"response to enquiry")
IE_END(cause_30)

IE_BEGIN(call_state_1)
BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
BF(6,          1,ACT_CHECK, call_state_value,"U1 Call Initiated")
IE_END(call_state_1)

IE_BEGIN(call_state_3)
BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
BF(6,          3,ACT_CHECK, call_state_value,"U3 Call Proceeding")
IE_END(call_state_3)
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IE_BEGIN(call_state_4)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,      4,ACT_CHECK, call_state_value,"U4 Call Delivered")
IE_END(call_state_4)

IE_BEGIN(call_state_7)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,      7,ACT_CHECK, call_state_value,"U7 Call Receiving")
IE_END(call_state_7)

IE_BEGIN(call_state_8)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,      8,ACT_CHECK, call_state_value,"U8 Connect Request")
IE_END(call_state_8)

IE_BEGIN(call_state_9)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,      9,ACT_CHECK, call_state_value,"U9 Call Confirmed")
IE_END(call_state_9)

IE_BEGIN(call_state_10)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,     10,ACT_CHECK, call_state_value,"U10 Call Active")
IE_END(call_state_10)

IE_BEGIN(call_state_11)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,     11,ACT_CHECK, call_state_value,"U11 Disconnect Request")
IE_END(call_state_11)

IE_BEGIN(call_state_12)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,     12,ACT_CHECK, call_state_value,"U12 Disconnect Ind")
IE_END(call_state_12)

IE_BEGIN(call_state_19)
  BF(2,      3,ACT_CHECK, coding_standard, "GSM Standard")
  BF(6,     19,ACT_CHECK, call_state_value,"U19 Release Request")
IE_END(call_state_19)

IE_BEGIN(signal_call_waiting)
  BF(8,M8(0,0,0,0,0,1,1,1),ACT_CHECK,signal_value,"(Any non-res. value)")
IE_END(signal_call_waiting)

IE_BEGIN(spare_half_octet)
  BF(4, 0,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(spare_half_octet)

IE_BEGIN(facility_unstructured_data)
  BF(8, 35 ,ACT_CHECK,length_of_fac_ie_content,SILENT)
  BF(8, 0xA1,ACT_CHECK,component_type_tag,"INVOKE")
  BF(8, 0x21,ACT_CHECK,component_length, SILENT)
  BF(8, 0x02,ACT_CHECK,invoke_id_tag, SILENT)
  BF(8, 0x01,ACT_CHECK,invoke_id_length, SILENT)
  BF(8, 0x00,ACT_CHECK,invoke_id, SILENT)
  BF(8, 0x02,ACT_CHECK,operation_code_tag, SILENT)
  BF(8, 0x01,ACT_CHECK,operation_code_length, SILENT)
  BF(8, 19 ,ACT_CHECK,operation_code, "Process unstructured SS data")
  BF(8, 0x30,ACT_CHECK,Process_SS_Arg, SILENT)
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BF(8, 25 ,ACT_CHECK,Process_SS_Arg_length, SILENT)
BF(8, 0xF0,ACT_CHECK,dcs, SILENT)
BF(8, 0x2A,ACT_CHECK,dig_1, "*")
BF(8, 0x30,ACT_CHECK,dig_2, "0")
BF(8, 0x30,ACT_CHECK,dig_3, "0")
BF(8, 0x2A,ACT_CHECK,dig_4, "*")
BF(8, 0x30,ACT_CHECK,dig_5, "0")
BF(8, 0x31,ACT_CHECK,dig_6, "1")
BF(8, 0x32,ACT_CHECK,dig_7, "2")
BF(8, 0x33,ACT_CHECK,dig_8, "3")
BF(8, 0x34,ACT_CHECK,dig_9, "4")
BF(8, 0x35,ACT_CHECK,dig_10,"5")
BF(8, 0x36,ACT_CHECK,dig_11,"6")
BF(8, 0x37,ACT_CHECK,dig_12,"7")
BF(8, 0x38,ACT_CHECK,dig_13,"8")
BF(8, 0x39,ACT_CHECK,dig_14,"9")
BF(8, 0x30,ACT_CHECK,dig_15,"0")
BF(8, 0x31,ACT_CHECK,dig_16,"1")
BF(8, 0x32,ACT_CHECK,dig_17,"2")
BF(8, 0x33,ACT_CHECK,dig_18,"3")
BF(8, 0x34,ACT_CHECK,dig_19,"4")
BF(8, 0x35,ACT_CHECK,dig_20,"5")
BF(8, 0x36,ACT_CHECK,dig_21,"6")
BF(8, 0x37,ACT_CHECK,dig_22,"7")
BF(8, 0x38,ACT_CHECK,dig_23,"8")
BF(8, 0x23,ACT_CHECK,dig_24,"#")
IE_END(facility_unstructured_data)

IE_BEGIN(timing_advance)
  BF(2,0,ACT_CHECK, spare,SILENT)
  BF(6,0,ACT_CHECK,timing_advance,"0" )
IE_END(timing_advance)
IE_BEGIN(transaction_identifier_source)
  BF(4,M4(0,0,0,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source)

IE_BEGIN(transaction_identifier_source_1)
  BF(4,M4(0,0,0,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_1)

IE_BEGIN(transaction_identifier_source_2)
  BF(4,M4(0,0,1,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_2)

IE_BEGIN(transaction_identifier_source_3)
  BF(4,M4(0,0,1,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_3)

IE_BEGIN(transaction_identifier_source_4)
  BF(4,M4(0,1,0,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_4)

IE_BEGIN(transaction_identifier_source_5)
  BF(4,M4(0,1,0,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_5)

IE_BEGIN(transaction_identifier_source_6)
  BF(4,M4(0,1,1,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_6)
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IE_BEGIN(transaction_identifier_dest)
  BF(4,M4(1,0,0,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_dest)

IE_BEGIN(transaction_identifier_dest_1)
  BF(4,M4(1,0,0,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_dest_1)

IE_BEGIN(transaction_identifier_dest_2)
  BF(4,M4(1,0,1,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_dest_2)

IE_BEGIN(transaction_identifier_dest_3)
  BF(4,M4(1,0,1,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_dest_3)

IE_BEGIN(transaction_identifier_dest_4)
  BF(4,M4(1,1,0,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_dest_4)

IE_BEGIN(transaction_identifier_dest_5)
  BF(4,M4(1,1,0,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_dest_5)

IE_BEGIN(transaction_identifier_dest_6)
  BF(4,M4(1,1,1,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_dest_6)

IE_BEGIN(authentication_request_message_type)
  BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
  BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
  BF(6, 0x12,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(authentication_request_message_type)

IE_BEGIN(identity_request_message_type)
  BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
  BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
  BF(6, 0x18,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(identity_request_message_type)

IE_BEGIN(identity_response_message_type)
  BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
  BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
  BF(6, 0x19,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(identity_response_message_type)

IE_BEGIN(tmsi_reallocation_command_message_type)
  BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
  BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
  BF(6, 0x1A,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(tmsi_reallocation_command_message_type)

IE_BEGIN(tmsi_reallocation_complete_message_type)
  BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
  BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
  BF(6, 0x1B,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(tmsi_reallocation_complete_message_type)

IE_BEGIN(cm_reestablish_request_message_type)
  BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
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BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x28,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(cm_reestablish_request_message_type)

IE_BEGIN(authentication_response_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x14,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(authentication_response_message_type)

IE_BEGIN(ss_register_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x3B,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(ss_register_message_type)

IE_BEGIN(setup_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x05,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(setup_message_type)

IE_BEGIN(call_confirmed_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x08,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(call_confirmed_message_type)

IE_BEGIN(connect_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x07,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(connect_message_type)

IE_BEGIN(connect_acknowledge_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x0F,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(connect_acknowledge_message_type)

IE_BEGIN(alerting_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x01,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(alerting_message_type)

IE_BEGIN(progress_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x03,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(progress_message_type)

IE_BEGIN(status_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x3D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(status_message_type)

IE_BEGIN(status_enquiry_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
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BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x34,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(status_enquiry_message_type)

IE_BEGIN(notify_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x3E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(notify_message_type)

IE_BEGIN(unknown_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x20,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(unknown_message_type)

IE_BEGIN(disconnect_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x25,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(disconnect_message_type)

IE_BEGIN(release_complete_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x2A,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(release_complete_message_type)

IE_BEGIN(release_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x2D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(release_message_type)

IE_BEGIN(channel_release_message_type)
BF(8, 0x0D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(channel_release_message_type)

IE_BEGIN(start_dtmf_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x35,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(start_dtmf_message_type)

IE_BEGIN(start_dtmf_acknowledge_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x36,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(start_dtmf_acknowledge_message_type)

IE_BEGIN(stop_dtmf_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x31,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(stop_dtmf_message_type)

IE_BEGIN(stop_dtmf_acknowledge_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x32,ACT_CHECK,ANONYMOUS,SILENT)
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IE_END(stop_dtmf_acknowledge_message_type)

IE_BEGIN(start_dtmf_reject_message_type)
BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
BF(6, 0x37,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(start_dtmf_reject_message_type)

IE_BEGIN(user_user_disconnect)
BF(8, 5,ACT_CHECK,length,SILENT)
BF(8, 1,ACT_CHECK,pd, SILENT)
BF(8, 0x30,ACT_CHECK,octet1,SILENT)
BF(8, 0x34,ACT_CHECK,octet2,SILENT)
BF(8, 0x35,ACT_CHECK,octet3,SILENT)
BF(8, 0x36,ACT_CHECK,octet4,SILENT)
IE_END(user_user_disconnect)

IE_BEGIN(user_user_setup)
BF(8, 5,ACT_CHECK,length,SILENT)
BF(8, 1,ACT_CHECK,pd, SILENT)
BF(8, 0x30,ACT_CHECK,octet1,SILENT)
BF(8, 0x31,ACT_CHECK,octet2,SILENT)
BF(8, 0x32,ACT_CHECK,octet3,SILENT)
BF(8, 0x33,ACT_CHECK,octet4,SILENT)
IE_END(user_user_setup)

IE_BEGIN(notify_user_resumed)
BF(8, 1,ACT_CHECK,notific,SILENT)
IE_END(notify_user_resumed)

MSG3_BEGIN(paging_request_type_1)
IE(l2_pseudo_length_11)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(paging_request_type_1_message_type)
IE(channels_needed_for_mobiles_1_and_2)
IE(page_mode)
IE(mobile_identity)
IE(p1_rest_octets)
MSG3_END(paging_request_type_1)

MSG3_BEGIN(paging_request_type_1_tmsi)
IE(l2_pseudo_length_11)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(paging_request_type_1_message_type)
IE(channels_needed_for_mobiles_1_and_2)
IE(page_mode)
IE(mobile_identity_tmsi)
IE(p1_rest_octets)
MSG3_END(paging_request_type_1_tmsi)

MSG3_BEGIN(paging_request_type_2_tmsi)
IE(l2_pseudo_length_11)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(paging_request_type_2_message_type)
IE(channels_needed_for_mobiles_1_and_2)
IE(page_mode)
IE(tmsi)

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    IE(tmsi_2)
    IE(p2_rest_octets)
MSG3_END(paging_request_type_2_tmsi)

MSG3_BEGIN(paging_request_type_3_tmsi)
    IE(l2_pseudo_length_11)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(paging_request_type_3_message_type)
    IE(channels_needed_for_mobiles_1_and_2)
    IE(page_mode)
    IE(tmsi)
    IE(tmsi_2)
    IE(tmsi_2)
    IE(tmsi_2)
    IE(p3_rest_octets)
MSG3_END(paging_request_type_3_tmsi)

MSG3_BEGIN(channel_request)
    IE(rach)
MSG3_END(channel_request)
MSG3_BEGIN(channel_request_ss)
    IE(rach_111)
MSG3_END(channel_request_ss)
MSG3_BEGIN(channel_request_moc)
    IE(rach_moc)
MSG3_END(channel_request_moc)
MSG3_BEGIN(channel_request_reest_neci_0)
    IE(rach_reest_neci_0)
MSG3_END(channel_request_reest_neci_0)
MSG3_BEGIN(immediate_assignment)
    IE(l2_pseudo_length_21)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(immediate_assignment_message_type)
    IE(spare_half_octet)
    IE(page_mode)
    IE(channel_description)
    IE(request_reference)
    IE(timing_advance)
    IE(mobile_allocation)
    IE(ia_rest_octets)
MSG3_END(immediate_assignment)
MSG3_BEGIN(immediate_assignment_tch)
    IE(l2_pseudo_length_21)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(immediate_assignment_message_type)
    IE(spare_half_octet)
    IE(page_mode)
    IE(channel_description_tch)
    IE(request_reference)
    IE(timing_advance)
    IE(mobile_allocation)
    IE(ia_rest_octets)
MSG3_END(immediate_assignment_tch)
MSG3_BEGIN(paging_response)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(paging_response_message_type)
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    IE(spare_half_octet)
    IE(ciphering_key_sequence_number)
    IE(ms_classmark)
    IE(mobile_identity)
MSG3_END(paging_response)

MSG3_BEGIN(paging_response_tmsi)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(paging_response_message_type)
    IE(spare_half_octet)
    IE(ciphering_key_sequence_number)
    IE(ms_classmark)
    IE(mobile_identity_tmsi)
MSG3_END(paging_response_tmsi)

MSG3_BEGIN(paging_response_cksn_2)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(paging_response_message_type)
    IE(spare_half_octet)
    IE(ciphering_key_sequence_number_2)
    IE(ms_classmark)
    IE(mobile_identity)
MSG3_END(paging_response_cksn_2)

MSG3_BEGIN(authentication_request)
    IE(skip_indicator)
    IE(mobility_management_protocol_discriminator)
    IE(authentication_request_message_type)
    IE(spare_half_octet)
    IE(ciphering_key_sequence_number_2)
    IE(authentication_parameter_rand)
MSG3_END(authentication_request)
MSG3_BEGIN(authentication_response)
    IE(skip_indicator)
    IE(mobility_management_protocol_discriminator)
    IE(authentication_response_message_type)
    IE(authentication_parameter_sres)
MSG3_END(authentication_response)

MSG3_BEGIN(identity_request)
    IE(skip_indicator)
    IE(mobility_management_protocol_discriminator)
    IE(identity_request_message_type)
    IE(spare_half_octet)
    IE(identity_type)
MSG3_END(identity_request)
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MSG3_BEGIN(identity_response)
  IE(skip_indicator)
  IE(mobility_management_protocol_discriminator)
  IE(identity_response_message_type)
  IE(mobile_identity)
MSG3_END(identity_response)

MSG3_BEGIN(cm_service_request)
  IE(skip_indicator)
  IE(mobility_management_protocol_discriminator)
  IE(cm_service_request_message_type)
  IE(ciphering_key_sequence_number)
  IE(cm_service_type_moc)
  IE(ms_classmark)
  IE(mobile_identity)
MSG3_END(cm_service_request)

MSG3_BEGIN(cm_service_request_ss)
  IE(skip_indicator)
  IE(mobility_management_protocol_discriminator)
  IE(cm_service_request_message_type)
  IE(ciphering_key_sequence_number)
  IE(cm_service_type_ss)
  IE(ms_classmark)
  IE(mobile_identity)
MSG3_END(cm_service_request_ss)

MSG3_BEGIN(cm_reestablish_request)
  IE(skip_indicator)
  IE(mobility_management_protocol_discriminator)
  IE(cm_reestablish_request_message_type)
  IE(spare_half_octet)
  IE(ciphering_key_sequence_number_2)
  IE(ms_classmark)
  IE(mobile_identity_tmsi)
  IE(iei_13)
  IE(location_area_identification)
MSG3_END(cm_reestablish_request)

MSG3_BEGIN(cm_service_abort)
  IE(skip_indicator)
  IE(mobility_management_protocol_discriminator)
  IE(cm_service_abort_message_type)
MSG3_END(cm_service_abort)

MSG3_BEGIN(cm_service_reject)
  IE(skip_indicator)
  IE(mobility_management_protocol_discriminator)
  IE(cm_service_reject_message_type)
  IE(reject_cause)
MSG3_END(cm_service_reject)

MSG3_BEGIN(cm_service_accept)
  IE(skip_indicator)
  IE(mobility_management_protocol_discriminator)
  IE(cm_service_accept_message_type)
MSG3_END(cm_service_accept)

MSG3_BEGIN(ciphering_mode_command)
  IE(skip_indicator)
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    IE(rr_management_protocol_discriminator)
    IE(ciphering_mode_command_message_type)
    IE(cipher_response)
    IE(ciphering_mode_setting)
MSG3_END(ciphering_mode_command)

MSG3_BEGIN(ciphering_mode_complete)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(ciphering_mode_complete_message_type)
MSG3_END(ciphering_mode_complete)

MSG3_BEGIN(channel_mode_modify)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(channel_mode_modify_message_type)
    IE(channel_description_tch)
    IE(channel_mode_speech)
MSG3_END(channel_mode_modify)

MSG3_BEGIN(channel_mode_modify_acknowledge)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(channel_mode_modify_acknowledge_message_type)
    IE(channel_description_tch)
    IE(channel_mode_speech)
MSG3_END(channel_mode_modify_acknowledge)

MSG3_BEGIN(setup) /* contains 'signal' but no 'Bearer Cap' */
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(setup_message_type)
    IE(iei_34)
    IE(signal_call_waiting)
    IE(iei_5C)
    IE(calling_party_bcd_number)
MSG3_END(setup)

MSG3_BEGIN(setup_user_to_user)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(setup_message_type)
    IE(iei_34)
    IE(signal_call_waiting)
    IE(iei_7E)
    IE(user_user_setup)
MSG3_END(setup_user_to_user)

MSG3_BEGIN(setup_no_signal)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(setup_message_type)
MSG3_END(setup_no_signal)

MSG3_BEGIN(setup_moc)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(setup_message_type)
    IE(iei_04)
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    IE(bearer_capability)
    IE(iei_5E)
    IE(called_party_bcd_number)
MSG3_END(setup_moc)

MSG3_BEGIN(setup_mocEFR)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(setup_message_type)
    IE(iei_04)
    IE(bearer_capabilityEFR)
    IE(iei_5E)
    IE(called_party_bcd_number)
MSG3_END(setup_mocEFR)

MSG3_BEGIN(setup_data)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(setup_message_type)
    IE(iei_04)
    IE(bearer_capability_data)
    IE(iei_5E)
    IE(called_party_bcd_number)
MSG3_END(setup_data)

MSG3_BEGIN(call_confirmed) /* contains bearer capability */
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(call_confirmed_message_type)
    IE(iei_04)
    IE(bearer_capability)
    IE(iei_15)
    IE(cc_capabilities)
MSG3_END(call_confirmed)

MSG3_BEGIN(call_confirmed_user_busy) /* contains cause user busy */
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(call_confirmed_message_type)
    IE(iei_04)
    IE(bearer_capability)
    IE(iei_08)
    IE(cause_17)
    IE(iei_15)
    IE(cc_capabilities)
MSG3_END(call_confirmed_user_busy)

MSG3_BEGIN(call_proceeding)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(call_proceeding_message_type)
MSG3_END(call_proceeding)

MSG3_BEGIN(connect)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(connect_message_type)
MSG3_END(connect)

MSG3_BEGIN(unknown_message)
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    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(unknown_message_type)
MSG3_END(unknown_message)

MSG3_BEGIN(unknown_message_mtc)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(unknown_message_type)
MSG3_END(unknown_message_mtc)

MSG3_BEGIN(alerting)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(alerting_message_type)
MSG3_END(alerting)

MSG3_BEGIN(progress)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(progress_message_type)
    IE(progress_indicator_32)
MSG3_END(progress)

MSG3_BEGIN(progress_1)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(progress_message_type)
    IE(progress_indicator_8)
MSG3_END(progress_1)

MSG3_BEGIN(assignment_command)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(assignment_command_message_type)
    IE(description_of_the_first_channel_after_time)
    IE(power_command)
    IE(iei_63)
    IE(mode_of_the_first_channel)
MSG3_END(assignment_command)

MSG3_BEGIN(assignment_command_efr)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(assignment_command_message_type)
    IE(description_of_the_first_channel_after_time)
    IE(power_command)
    IE(iei_63)
    IE(mode_of_the_first_channel_efr)
MSG3_END(assignment_command_efr)

MSG3_BEGIN(assignment_complete)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(assignment_complete_message_type)
    IE(rr_cause)
MSG3_END(assignment_complete)

MSG3_BEGIN(handover_complete)
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    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(handover_complete_message_type)
    IE(rr_cause)
MSG3_END(handover_complete)

MSG3_BEGIN(connect_acknowledge)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(connect_acknowledge_message_type)
MSG3_END(connect_acknowledge)

MSG3_BEGIN(status_enquiry_0)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_0)

MSG3_BEGIN(status_enquiry_1)
    IE(transaction_identifier_dest_1)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_1)

MSG3_BEGIN(status_enquiry_2)
    IE(transaction_identifier_dest_2)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_2)

MSG3_BEGIN(status_enquiry_3)
    IE(transaction_identifier_dest_3)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_3)

MSG3_BEGIN(status_enquiry_4)
    IE(transaction_identifier_dest_4)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_4)

MSG3_BEGIN(status_enquiry_5)
    IE(transaction_identifier_dest_5)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_5)

MSG3_BEGIN(status_enquiry_6)
    IE(transaction_identifier_dest_6)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_6)

MSG3_BEGIN(status_enquiry_0_mtc)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_enquiry_message_type)
MSG3_END(status_enquiry_0_mtc)
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MSG3_BEGIN(status_enquiry_1_mtc)
  IE(transaction_identifier_source_1)
  IE(call_control_protocol_discriminator)
  IE(status_enquiry_message_type)
MSG3_END(status_enquiry_1_mtc)
```

```
MSG3_BEGIN(status_enquiry_2_mtc)
  IE(transaction_identifier_source_2)
  IE(call_control_protocol_discriminator)
  IE(status_enquiry_message_type)
MSG3_END(status_enquiry_2_mtc)
```

```
MSG3_BEGIN(status_enquiry_3_mtc)
  IE(transaction_identifier_source_3)
  IE(call_control_protocol_discriminator)
  IE(status_enquiry_message_type)
MSG3_END(status_enquiry_3_mtc)
```

```
MSG3_BEGIN(status_enquiry_4_mtc)
  IE(transaction_identifier_source_4)
  IE(call_control_protocol_discriminator)
  IE(status_enquiry_message_type)
MSG3_END(status_enquiry_4_mtc)
```

```
MSG3_BEGIN(status_enquiry_5_mtc)
  IE(transaction_identifier_source_5)
  IE(call_control_protocol_discriminator)
  IE(status_enquiry_message_type)
MSG3_END(status_enquiry_5_mtc)
```

```
MSG3_BEGIN(status_enquiry_6_mtc)
  IE(transaction_identifier_source_6)
  IE(call_control_protocol_discriminator)
  IE(status_enquiry_message_type)
MSG3_END(status_enquiry_6_mtc)
```

```
MSG3_BEGIN(notify)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(notify_message_type)
  IE(notify_user_resumed)
MSG3_END(notify)
```

```
MSG3_BEGIN(disconnect_t303)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(disconnect_message_type)
  IE(cause_102_303)
MSG3_END(disconnect_t303)
```

```
MSG3_BEGIN(disconnect_t310)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(disconnect_message_type)
  IE(cause_102_310)
MSG3_END(disconnect_t310)
```

```
MSG3_BEGIN(disconnect_t313)
  IE(transaction_identifier_dest)
```

```
    IE(call_control_protocol_discriminator)
    IE(disconnect_message_type)
    IE(cause_102_313)
MSG3_END(disconnect_t313)
```

```
MSG3_BEGIN(disconnect_8)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(disconnect_message_type)
    IE(cause_16)
    IE(iei_1E)
    IE(progress_indicator_8)
MSG3_END(disconnect_8)
```

```
MSG3_BEGIN(disconnect_8_mtc)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(disconnect_message_type)
    IE(cause_16)
    IE(iei_1E)
    IE(progress_indicator_8)
MSG3_END(disconnect_8_mtc)
```

```
MSG3_BEGIN(disconnect_ms)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(disconnect_message_type)
    IE(cause_16)
MSG3_END(disconnect_ms)
```

```
MSG3_BEGIN(disconnect_user_to_user)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(disconnect_message_type)
    IE(cause_16)
    IE(iei_7E)
    IE(user_user_disconnect)
MSG3_END(disconnect_user_to_user)
```

```
MSG3_BEGIN(disconnect)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(disconnect_message_type)
    IE(cause_16)
MSG3_END(disconnect)
```

```
MSG3_BEGIN(release_complete)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_03)
MSG3_END(release_complete)
```

```
MSG3_BEGIN(release_complete_empty)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
MSG3_END(release_complete_empty)
```

```
MSG3_BEGIN(release)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(release_message_type)
MSG3_END(release)

MSG3_BEGIN(release_mtc)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(release_message_type)
MSG3_END(release_mtc)

MSG3_BEGIN(release_t305)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(release_message_type)
  IE(iei_08)
  IE(cause_16)
MSG3_END(release_t305)

MSG3_BEGIN(release_bs)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(release_message_type)
  IE(iei_08)
  IE(cause_31)
MSG3_END(release_bs)

MSG3_BEGIN(release_complete_88)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(release_complete_message_type)
  IE(iei_08)
  IE(cause_88)
MSG3_END(release_complete_88)

MSG3_BEGIN(release_complete_bs)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(release_complete_message_type)
MSG3_END(release_complete_bs)

MSG3_BEGIN(release_complete_0)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(release_complete_message_type)
  IE(iei_08)
  IE(cause_81)
MSG3_END(release_complete_0)

MSG3_BEGIN(release_complete_1)
  IE(transaction_identifier_source_1)
  IE(call_control_protocol_discriminator)
  IE(release_complete_message_type)
  IE(iei_08)
  IE(cause_81)
MSG3_END(release_complete_1)

MSG3_BEGIN(release_complete_2)
```

```
    IE(transaction_identifier_source_2)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_2)

MSG3_BEGIN(release_complete_3)
    IE(transaction_identifier_source_3)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_3)

MSG3_BEGIN(release_complete_4)
    IE(transaction_identifier_source_4)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_4)

MSG3_BEGIN(release_complete_5)
    IE(transaction_identifier_source_5)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_5)

MSG3_BEGIN(release_complete_6)
    IE(transaction_identifier_source_6)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_6)

MSG3_BEGIN(release_complete_0_mtc)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_0_mtc)

MSG3_BEGIN(release_complete_1_mtc)
    IE(transaction_identifier_dest_1)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_1_mtc)

MSG3_BEGIN(release_complete_2_mtc)
    IE(transaction_identifier_dest_2)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
```

```
    IE(cause_81)
MSG3_END(release_complete_2_mtc)

MSG3_BEGIN(release_complete_3_mtc)
    IE(transaction_identifier_dest_3)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_3_mtc)

MSG3_BEGIN(release_complete_4_mtc)
    IE(transaction_identifier_dest_4)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_4_mtc)

MSG3_BEGIN(release_complete_5_mtc)
    IE(transaction_identifier_dest_5)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_5_mtc)

MSG3_BEGIN(release_complete_6_mtc)
    IE(transaction_identifier_dest_6)
    IE(call_control_protocol_discriminator)
    IE(release_complete_message_type)
    IE(iei_08)
    IE(cause_81)
MSG3_END(release_complete_6_mtc)

MSG3_BEGIN(channel_release)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(channel_release_message_type)
    IE(rr_cause)
MSG3_END(channel_release)

MSG3_BEGIN(status_30_1)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_1)
MSG3_END(status_30_1)

MSG3_BEGIN(status_30_3)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_3)
MSG3_END(status_30_3)

MSG3_BEGIN(status_30_4)
```

```
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_4)
MSG3_END(status_30_4)
```

```
MSG3_BEGIN(status_30_7)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_7)
MSG3_END(status_30_7)
```

```
MSG3_BEGIN(status_30_8)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_8)
MSG3_END(status_30_8)
```

```
MSG3_BEGIN(status_30_9)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_9)
MSG3_END(status_30_9)
```

```
MSG3_BEGIN(status_30_10)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_10)
MSG3_END(status_30_10)
```

```
MSG3_BEGIN(status_30_10_mtc)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_10)
MSG3_END(status_30_10_mtc)
```

```
MSG3_BEGIN(status_30_11)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_11)
MSG3_END(status_30_11)
```

```
MSG3_BEGIN(status_30_11_mtc)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
```

```
    IE(call_state_11)
MSG3_END(status_30_11_mtc)

MSG3_BEGIN(status_30_12)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_12)
MSG3_END(status_30_12)

MSG3_BEGIN(status_30_12_mtc)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_12)
MSG3_END(status_30_12_mtc)

MSG3_BEGIN(status_30_19)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_19)
MSG3_END(status_30_19)

MSG3_BEGIN(status_30_19_mtc)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_30)
    IE(call_state_19)
MSG3_END(status_30_19_mtc)

MSG3_BEGIN(status_97_1)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_1)
MSG3_END(status_97_1)

MSG3_BEGIN(status_97_3)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_3)
MSG3_END(status_97_3)

MSG3_BEGIN(status_97_4)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_4)
MSG3_END(status_97_4)

MSG3_BEGIN(status_97_7)
```

```
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_7)
MSG3_END(status_97_7)
```

```
MSG3_BEGIN(status_97_8)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_8)
MSG3_END(status_97_8)
```

```
MSG3_BEGIN(status_97_9)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_9)
MSG3_END(status_97_9)
```

```
MSG3_BEGIN(status_97_11)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_11)
MSG3_END(status_97_11)
```

```
MSG3_BEGIN(status_97_12)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(status_message_type)
    IE(cause_97_20)
    IE(call_state_12)
MSG3_END(status_97_12)
```

```
MSG3_BEGIN(stop_dtmf)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(stop_dtmf_message_type)
MSG3_END(stop_dtmf)
```

```
MSG3_BEGIN(stop_dtmf_acknowledge)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(stop_dtmf_acknowledge_message_type)
MSG3_END(stop_dtmf_acknowledge)
```

```
MSG3_BEGIN(start_dtmf_reject)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_reject_message_type)
    IE(cause_03)
MSG3_END(start_dtmf_reject)
```

```
MSG3_BEGIN(start_dtmf_0)
    IE(transaction_identifier_dest)
```

```
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_0)
MSG3_END(start_dtmf_0)
```

```
MSG3_BEGIN(start_dtmf_1)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_1)
MSG3_END(start_dtmf_1)
```

```
MSG3_BEGIN(start_dtmf_2)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_2)
MSG3_END(start_dtmf_2)
```

```
MSG3_BEGIN(start_dtmf_3)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_3)
MSG3_END(start_dtmf_3)
```

```
MSG3_BEGIN(start_dtmf_4)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_4)
MSG3_END(start_dtmf_4)
```

```
MSG3_BEGIN(start_dtmf_5)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_5)
MSG3_END(start_dtmf_5)
```

```
MSG3_BEGIN(start_dtmf_6)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_6)
MSG3_END(start_dtmf_6)
```

```
MSG3_BEGIN(start_dtmf_7)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_7)
```

```
MSG3_END(start_dtmf_7)

MSG3_BEGIN(start_dtmf_8)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_message_type)
  IE(iei_2C)
  IE(keypad_facility_8)
MSG3_END(start_dtmf_8)

MSG3_BEGIN(start_dtmf_9)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_message_type)
  IE(iei_2C)
  IE(keypad_facility_9)
MSG3_END(start_dtmf_9)

MSG3_BEGIN(start_dtmf_A)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_message_type)
  IE(iei_2C)
  IE(keypad_facility_A)
MSG3_END(start_dtmf_A)

MSG3_BEGIN(start_dtmf_B)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_message_type)
  IE(iei_2C)
  IE(keypad_facility_B)
MSG3_END(start_dtmf_B)

MSG3_BEGIN(start_dtmf_C)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_message_type)
  IE(iei_2C)
  IE(keypad_facility_C)
MSG3_END(start_dtmf_C)

MSG3_BEGIN(start_dtmf_D)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_message_type)
  IE(iei_2C)
  IE(keypad_facility_D)
MSG3_END(start_dtmf_D)

MSG3_BEGIN(start_dtmf_star)
  IE(transaction_identifier_dest)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_message_type)
  IE(iei_2C)
  IE(keypad_facility_star)
MSG3_END(start_dtmf_star)

MSG3_BEGIN(start_dtmf_hash)
  IE(transaction_identifier_dest)
```

```
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_message_type)
    IE(iei_2C)
    IE(keypad_facility_hash)
MSG3_END(start_dtmf_hash)
```

```
MSG3_BEGIN(start_dtmf_acknowledge_0)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_0)
MSG3_END(start_dtmf_acknowledge_0)
```

```
MSG3_BEGIN(start_dtmf_acknowledge_1)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_1)
MSG3_END(start_dtmf_acknowledge_1)
```

```
MSG3_BEGIN(start_dtmf_acknowledge_2)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_2)
MSG3_END(start_dtmf_acknowledge_2)
```

```
MSG3_BEGIN(start_dtmf_acknowledge_3)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_3)
MSG3_END(start_dtmf_acknowledge_3)
```

```
MSG3_BEGIN(start_dtmf_acknowledge_4)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_4)
MSG3_END(start_dtmf_acknowledge_4)
```

```
MSG3_BEGIN(start_dtmf_acknowledge_5)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_5)
MSG3_END(start_dtmf_acknowledge_5)
```

```
MSG3_BEGIN(start_dtmf_acknowledge_6)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_6)
```

```
MSG3_END(start_dtmf_acknowledge_6)

MSG3_BEGIN(start_dtmf_acknowledge_7)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_acknowledge_message_type)
  IE(iei_2C)
  IE(keypad_facility_7)
MSG3_END(start_dtmf_acknowledge_7)

MSG3_BEGIN(start_dtmf_acknowledge_8)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_acknowledge_message_type)
  IE(iei_2C)
  IE(keypad_facility_8)
MSG3_END(start_dtmf_acknowledge_8)

MSG3_BEGIN(start_dtmf_acknowledge_9)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_acknowledge_message_type)
  IE(iei_2C)
  IE(keypad_facility_9)
MSG3_END(start_dtmf_acknowledge_9)

MSG3_BEGIN(start_dtmf_acknowledge_A)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_acknowledge_message_type)
  IE(iei_2C)
  IE(keypad_facility_A)
MSG3_END(start_dtmf_acknowledge_A)

MSG3_BEGIN(start_dtmf_acknowledge_B)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_acknowledge_message_type)
  IE(iei_2C)
  IE(keypad_facility_B)
MSG3_END(start_dtmf_acknowledge_B)

MSG3_BEGIN(start_dtmf_acknowledge_C)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_acknowledge_message_type)
  IE(iei_2C)
  IE(keypad_facility_C)
MSG3_END(start_dtmf_acknowledge_C)

MSG3_BEGIN(start_dtmf_acknowledge_D)
  IE(transaction_identifier_source)
  IE(call_control_protocol_discriminator)
  IE(start_dtmf_acknowledge_message_type)
  IE(iei_2C)
  IE(keypad_facility_D)
MSG3_END(start_dtmf_acknowledge_D)

MSG3_BEGIN(start_dtmf_acknowledge_star)
  IE(transaction_identifier_source)
```

```
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_star)
MSG3_END(start_dtmf_acknowledge_star)

MSG3_BEGIN(start_dtmf_acknowledge_hash)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(start_dtmf_acknowledge_message_type)
    IE(iei_2C)
    IE(keypad_facility_hash)
MSG3_END(start_dtmf_acknowledge_hash)

MSG3_BEGIN(handover_command)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(handover_command_message_type)
    IE(cell_description)
    IE(channel_description_ho)
    IE(handover_reference)
    IE(power_command)
    IE(iei_D)
    IE(sync_ind_synch)
MSG3_END(handover_command)

MSG3_BEGIN(handover_access)
    IE(handover_reference)
MSG3_END(handover_access)

MSG3_BEGIN(handover_failure)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(handover_failure_message_type)
    IE(rr_cause_1)
MSG3_END(handover_failure)

MSG3_BEGIN(assignment_failure)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(assignment_failure_message_type)
    IE(rr_cause_6F)
MSG3_END(assignment_failure)

MSG3_BEGIN(modify_data)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(modify_message_type)
    IE(bearer_capability_data)
MSG3_END(modify_data)

MSG3_BEGIN(modify_reject)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(modify_reject_message_type)
    IE(bearer_capability)
    IE(cause_57)
MSG3_END(modify_reject)

MSG3_BEGIN(system_information_type_1_A)
```

```
IE(l2_pseudo_length_21)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_1_message_type)
IE(cell_channel_description)
IE(rach_control_parameter_reest)
IE(si_1_rest_octets)
MSG3_END(system_information_type_1_A)
MSG3_BEGIN(system_information_type_2_A)
IE(l2_pseudo_length_22)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_2_message_type)
IE(bcch_frequency_list)
IE(ncc_permitted)
IE(rach_control_parameter_reest)
MSG3_END(system_information_type_2_A)
MSG3_BEGIN(system_information_type_3_A)
IE(l2_pseudo_length_18)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_3_message_type)
IE(cell_identity)
IE(location_area_identification)
IE(control_channel_description)
IE(cell_options)
IE(cell_selection_parameter)
IE(rach_control_parameter_reest)
IE(si_3_rest_octets)
MSG3_END(system_information_type_3_A)
MSG3_BEGIN(system_information_type_4_A)
IE(l2_pseudo_length_12)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_4_message_type)
IE(location_area_identification)
IE(cell_selection_parameter)
IE(rach_control_parameter_reest)
IE(si_4_rest_octets)
MSG3_END(system_information_type_4_A)

MSG3_BEGIN(system_information_type_1_B)
IE(l2_pseudo_length_21)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_1_message_type)
IE(cell_channel_description)
IE(rach_control_parameter_reest)
IE(si_1_rest_octets)
MSG3_END(system_information_type_1_B)
MSG3_BEGIN(system_information_type_2_B)
IE(l2_pseudo_length_22)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_2_message_type)
IE(bcch_frequency_list)
IE(ncc_permitted)
IE(rach_control_parameter_reest)
MSG3_END(system_information_type_2_B)
MSG3_BEGIN(system_information_type_3_B)
```

```
IE(l2_pseudo_length_18)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_3_message_type)
IE(cell_identity_B)
IE(location_area_identification_B)
IE(control_channel_description)
IE(cell_options)
IE(cell_selection_parameter)
IE(rach_control_parameter_reest)
IE(si_3_rest_octets)
MSG3_END(system_information_type_3_B)
MSG3_BEGIN(system_information_type_4_B)
IE(l2_pseudo_length_12)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_4_message_type)
IE(location_area_identification_B)
IE(cell_selection_parameter)
IE(rach_control_parameter_reest)
IE(si_4_rest_octets)
MSG3_END(system_information_type_4_B)
MSG3_BEGIN(system_information_type_5_B)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_5_message_type)
IE(bcch_frequency_list)
MSG3_END(system_information_type_5_B)
MSG3_BEGIN(system_information_type_6_B)
IE(skip_indicator)
IE(rr_management_protocol_discriminator)
IE(system_information_type_6_message_type)
IE(cell_identity)
IE(location_area_identification_B)
IE(cell_options)
IE(ncc_permitted)
MSG3_END(system_information_type_6_B)

MSG3_BEGIN( tmsi_reallocation_command)
IE( skip_indicator )
IE( mobility_management_protocol_discriminator )
IE( tmsi_reallocation_command_message_type )
IE( location_area_identification )
IE( mobile_identity_tmsi )
MSG3_END( tmsi_reallocation_command)

MSG3_BEGIN( tmsi_reallocation_complete)
IE( skip_indicator )
IE( mobility_management_protocol_discriminator )
IE( tmsi_reallocation_complete_message_type )
MSG3_END( tmsi_reallocation_complete)

MSG3_BEGIN(ss_register_unstructured_data)
IE(transaction_identifier_source)
IE(supplementary_services_protocol_discriminator)
IE(ss_register_message_type)
IE(iei_1C)
IE(facility_unstructured_data)
IE(iei_7F)
IE(ss_version)
MSG3_END(ss_register_unstructured_data)
```


4 TEST CASES

4.1 Preambles

4.1.1 ATI001: Power On

Description: This test describes the initialization of environment and activation of the Mobile Station.

Preamble: None

Script:

```
ISS_INIT (4);

BS_SET_SYS_INFO ( 0 , system_information_type_1 );
BS_SET_SYS_INFO ( 0 , system_information_type_2 );
BS_SET_SYS_INFO ( 0 , system_information_type_3 );
BS_SET_SYS_INFO ( 0 , system_information_type_4 );
BS_SET_SYS_INFO_SACCH ( 0 , system_information_type_5 );
BS_SET_SYS_INFO_SACCH ( 0 , system_information_type_6 );

BS_SET_SCH ( 0 , BSIC , RFN );
BS_SET_ARFCN ( 0 , ARFCN_BCCH );
BS_SET_POWER ( 0 , -50 );
BS_ON_OFF ( 0 , TRUE );

AT_SEND ("AT+CFUN=1\r\n", SILENT);
AT_RECEIVE("OK", SILENT);
```

History: 01.02.99 AK Initial

4.1.2 ATI010: Request Subscriber Number

Description: This command requests the subscriber numbers.

Preamble: ATI001

Script:

```
AT_SEND ("AT+CNUM\r\n", SILENT) ;  
  
AT_RECEIVE (" +CNUM: \"Condat\", \"030390940\", 129", SILENT) ;  
AT_RECEIVE (" +CNUM: \"Mathias\", \"017165432\", 129, 4", SILENT) ;  
AT_RECEIVE (" +CNUM: \"ANDREAS\", \"01234567890123456789\", 129, 65, 1, 1", SILENT) ;  
  
AT_RECEIVE ("OK", SILENT) ;
```

History: **01.02.99** **SAB** **Initial**

4.1.3 ATI011: Request Subscriber Number

Description: This command requests the subscriber numbers.

Preamble: ATI010

Script:

```
AT_SEND ("AT+CNUM\r\n", SILENT) ;  
  
AT_RECEIVE (" +CNUM: \"Condat\", \"030390940\", 129", SILENT) ;  
AT_RECEIVE (" +CNUM: \"Mathias\", \"017165432\", 129, 4", SILENT) ;  
AT_RECEIVE (" +CNUM: \"ANDREAS\", \"01234567890123456789\", 129, 65, 1, 1", SILENT) ;  
  
AT_RECEIVE ("OK", SILENT) ;
```

History: **01.02.99** **SAB** **Initial**

4.1.4 ATI110: Storing of SMS Profile

Description: This procedure stores a SMS profile.

Preamble: ATI001

Script:

```
AT_SEND ("AT+CSCA=\"+49171123456789\"\\r\n", SILENT) ;  
  
AT_RECEIVE ("OK", SILENT) ;  
  
AT_SEND ("AT+CSMP=25, \"94/05/06, 22:10:00-08\", 10, 20\r\n", SILENT) ;  
  
AT_RECEIVE ("OK", SILENT) ;  
  
AT_SEND ("AT+CSCB=1, \"1-2, 3-4, 5-6, 7, 8, 9, 10-11, 12, 13, 14\", \"1, 3, 5\"\\r\n", SILENT) ;  
  
AT_RECEIVE ("OK", SILENT) ;  
  
AT_SEND ("AT+CSAS=2\\r\n", SILENT) ;  
  
AT_RECEIVE ("OK", SILENT) ;
```

History: **01.02.99** **SAB** **Initial**

4.1.5 ATI111: Changing of SMS Profile

Description: This procedure changes a SMS profile.

Preamble: AT1110

Script:

```
AT_SEND ("AT+CSCA=\"0172987654321\"\\r\\n", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSMP=17,2,3,4\\r\\n", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSCB=0, \"\", \"\"\\r\\n", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSCA?\\r\\n", SILENT);  
  
AT_RECEIVE ("CSCA: \"0172987654321\",129", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSMP?\\r\\n", SILENT);  
  
AT_RECEIVE ("CSMP: 17,2,3,4", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSCB?\\r\\n", SILENT);  
  
AT_RECEIVE ("CSCB: 0, \"\", \"\"", SILENT);  
  
AT_RECEIVE ("OK", SILENT);
```

History: 01.02.99 SAB Initial

4.1.6 AT1112: Restoring of SMS Profile

Description: This procedure restores a SMS profile.

Preamble: AT1111

Script:

```
AT_SEND ("AT+CRES=2\\r\\n", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSCA?\\r\\n", SILENT);  
  
AT_RECEIVE ("CSCA: \"49171123456789\",145", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSMP?\\r\\n", SILENT);  
  
AT_RECEIVE ("CSMP: 25, \"94/05/06,22:10:00-08\",10,20", SILENT);  
  
AT_RECEIVE ("OK", SILENT);  
  
AT_SEND ("AT+CSCB?\\r\\n", SILENT);
```

```
AT_RECEIVE (" +CSCB: 1, \ "1-2, 3-4, 5-6, 7, 8, 9, 10-11, 12, 13, 14 \ " , \ "1, 3, 5 \ " " , SILENT ) ;
```

```
AT_RECEIVE ("OK" , SILENT ) ;
```

History: 01.02.99 SAB Initial

4.1.7 AT113: Selecting ME Memory

Description: This procedure is used to test the selection of ME memory for storing short messages.

Preamble: AT1001

Script:

```
AT_SEND ("AT+CPMS=\ "ME \ " , \ "SM \ " , \ "ME \ " \r \n" , SILENT ) ;
```

```
AT_RECEIVE (" +CPMS: 0, 1, 0, 3, 0, 1" , SILENT ) ;
```

```
AT_RECEIVE ("OK" , SILENT ) ;
```

```
AT_SEND ("AT+CPMS=\ "ME \ " , \ "ME \ " , \ "ME \ " \r \n" , SILENT ) ;
```

```
AT_RECEIVE (" +CPMS: 0, 1, 0, 1, 0, 1" , SILENT ) ;
```

```
AT_RECEIVE ("OK" , SILENT ) ;
```

History: 01.02.99 SAB Initial

4.1.8 AT114: Write a Short Message to ME Memory

Description: This procedure is used to test whether a short message is written to ME memory successfully.

Preamble: AT113

Script:

```
AT_SEND ("AT+CMGW=\ "01711124 \ " \r \n" , SILENT ) ;
```

```
AT_RECEIVE (" \r \n > " , SILENT ) ;
```

```
AT_SEND ("This is the short message \r \n" , SILENT ) ;
```

```
AT_RECEIVE (" +CMGW: 1" , SILENT ) ;
```

```
AT_RECEIVE ("OK" , SILENT ) ;
```

```
AT_SEND ("AT+CMGR=1 \r \n" , SILENT ) ;
```

```
AT_RECEIVE (" +CMGR: \ "STO UNSENT \ " , \ "01711124 \ " , \ "ANDREAS \ " , 129, 17, 0, 0, 167, , , 25" , SILENT ) ;
```

```
AT_RECEIVE (" \r \n This is the short message" , SILENT ) ;
```

```
AT_RECEIVE ("OK" , SILENT ) ;
```

History: 01.02.99 SAB Initial

4.1.9 AT1020: Request Preferred PLMN List

Description: This command requests the list of preferred PLMN's.

Preamble: AT1001

Script:

```
AT_SEND ("AT+CPOL? \r \n" , SILENT ) ;
```

```
AT_RECEIVE("+CPOL: 1,2,\"23410\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 2,2,\"23455\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 3,2,\"23450\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 4,2,\"23458\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 5,2,\"23430\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 6,2,\"23433\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 7,2,\"23415\\\"\",SILENT);
```

```
AT_RECEIVE("OK",SILENT);
```

```
AT_SEND ("AT+CPOL?\r\n",SILENT);
```

```
AT_RECEIVE("+CPOL: 1,2,\"23410\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 2,2,\"23455\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 3,2,\"23450\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 4,2,\"23458\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 5,2,\"23430\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 6,2,\"23433\\\"\",SILENT);  
AT_RECEIVE("+CPOL: 7,2,\"23415\\\"\",SILENT);
```

```
AT_RECEIVE("OK",SILENT);
```

History: 01.02.99 SAB Initial

4.1.10 ATi030: Read SIM binary field

Description: This command requests the binary field Efecc from SIM.

Preamble: ATi001

Script:

```
AT_SEND ("AT+CRSM=176,28464,0,0,30\r\n",SILENT);
```

```
AT_RECEIVE("+CRSM: 144,0,32F40132F45532F40532F48532F40332F43332F451FFFFFFFFFFFFFFFF",SILENT);
```

```
AT_RECEIVE("OK",SILENT);
```

History: 13.01.00 AK Initial

4.1.11 ATi310: Testing of AT Command Extension Mechanism

Description:

Preamble: ATi001

Script:

```
AT_SEND ("AT%H\r\n",SILENT);
```

```
AT_RECEIVE("<unsolicited result code>",SILENT);
```

```
AT_RECEIVE("Hello",SILENT);
```

```
AT_RECEIVE("",SILENT);
```

```
AT_RECEIVE("World",SILENT);
```

```
AT_RECEIVE("OK",SILENT);
```

History: 01.02.99 SAB Initial

4.1.12 ATi320: Testing of AT Command Extension Mechanism

Description:

Preamble: ATi001

Script:

```
AT_SEND ("ATi0\r\n", SILENT) ;
```

```
AT_RECEIVE("<manufacturer1>", SILENT) ;
```

```
AT_RECEIVE("OK", SILENT) ;
```

```
AT_SEND ("ATi1\r\n", SILENT) ;
```

```
AT_RECEIVE("<manufacturer2>", SILENT) ;
```

```
AT_RECEIVE("OK", SILENT) ;
```

```
AT_SEND ("ATi9\r\n", SILENT) ;
```

```
AT_RECEIVE("<manufacturer2>", SILENT) ;
```

```
AT_RECEIVE("OK", SILENT) ;
```

History: 25.09.00 ENZ Initial

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/>>