Technical Document – Confidential

GSM PROTOCOL STACK

MULTILAYER TEST SPECIFICATION

ERROR HANDLING

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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.

This document describes the tests for the whole protocol stack according to GSM 11.10 chapter 26.5.

3 Parameters

```
#define REST_OCTET 0x2b
#define  ARFCN_BCCH      121
#define ARFCN_BCCH_B    48
#define ARFCN_BCCH_C    50
#define  NCC      0x5
#define  BCC      0x6
#define  BCC_B    0x3
#define  BSIC     ((NCC<<3)|(BCC))
#define  BSIC_B   ((NCC<<3)|(BCC_B))
#define  RFN      0
#define  SAPI_0   0

/*---------------------------------------------------------------------*\
| 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, section6.2 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
\*-----------------------------------------------------------------*/

#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(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(assignment_command_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x2E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(assignment_command_message_type)

IE_BEGIN(assignment_complete_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x29,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(assignment_complete_message_type)

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_SHOW,sres_031_000,SILENT)
IE_END(authentication_parameter_sres)

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(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(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(bearer_capability)
   BF(8,    4,            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(1,    0,            ACT_CHECK,   ext3,                        SILENT)
   BF(1,    0,            ACT_CHECK,   coding,                      SILENT)
   BF(2,    M2(0,0),      ACT_CHECK,   spare,                       SILENT)
   BF(4,    M4(0,1,0,0),  ACT_CHECK,   speech_version_indicator,    SILENT)

   BF(1,    0,            ACT_CHECK,   ext3,                        SILENT)
   BF(1,    0,            ACT_CHECK,   compression,                 SILENT)
   BF(2,    M2(0,0),      ACT_CHECK,   structure,                   SILENT)
   BF(1,    0,            ACT_CHECK,   duplication_mode,            SILENT)
   BF(1,    1,            ACT_CHECK,   configuration,               SILENT)
   BF(1,    0,            ACT_CHECK,   nirr,                        SILENT)
   BF(1,    1,            ACT_CHECK,   establishment,               SILENT)

   BF(1,    1,            ACT_CHECK,   ext3,                        SILENT)
   BF(2,    M2(0,0),      ACT_CHECK,   access_id,                   SILENT)
   BF(2,    M2(0,0),      ACT_CHECK,   rate_adaption,               SILENT)
   BF(3,    M3(0,0,0),    ACT_CHECK,   signalling_access_protocol,  SILENT)
IE_END(bearer_capability)

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(call_control_protocol_discriminator)
```

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

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(call_state_3)
   BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
   BF(6,          3,ACT_CHECK, call_state_value,"U3")
IE_END(call_state_3)

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_12)
   BF(2,          3,ACT_CHECK, coding_standard, "GSM Standard")
   BF(6,         12,ACT_CHECK, call_state_value,"U12")
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")
IE_END(call_state_19)

IE_BEGIN(aux_state_call_held_mpty_idle)
   BF(8,   M8(0,0,1,0,0,1,0,0),ACT_CHECK, auxilliary_state, "Aux State")
   BF(8,   1,ACT_CHECK, length, "length")
   BF(8,   M8(1,0,0,0,1,0,0,0),ACT_CHECK, state, "Call Held, Mpty Idle")
IE_END(aux_state_call_held_mpty_idle)

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( 4,15,ACT_CHECK,digit_12                    ,"Digit 12")
   BF( 4,7, ACT_CHECK,digit_11                    ,"Digit 11")
IE_END(called_party_bcd_number)

IE_BEGIN(called_party_subaddress_spare_bits)
   BF(8,    3,ACT_CHECK,length,SILENT)
   BF(8, 0x87,ACT_CHECK,octet_3,SILENT)
   BF(8, 0x50,ACT_CHECK,octet_4,SILENT)
   BF(8,    1,ACT_CHECK,octet_5,SILENT)
IE_END(called_party_subaddress_spare_bits)
```

```
IE_BEGIN(calling_party_bcd_spare_bits)
   BF(8,    3,ACT_CHECK,length,SILENT)
   BF(8,    0,ACT_CHECK,octet_3,SILENT)
   BF(8, 0x9C,ACT_CHECK,octet_3a,SILENT)
   BF(8,    1,ACT_CHECK,octet_4,SILENT)
IE_END(calling_party_bcd_spare_bits)

IE_BEGIN(calling_party_subaddress_spare_bits)
   BF(8,    3,ACT_CHECK,length,SILENT)
   BF(8, 0x87,ACT_CHECK,octet_3,SILENT)
   BF(8, 0x50,ACT_CHECK,octet_4,SILENT)
   BF(8,    1,ACT_CHECK,octet_5,SILENT)
IE_END(calling_party_subaddress_spare_bits)

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_10)
   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,       0x10,ACT_CHECK, cause,SILENT)
IE_END(cause_10)

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(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 ti")
IE_END(cause_81)

IE_BEGIN(cause_96_00)
   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,         96,ACT_CHECK, cause,"message not implemented")
   BF(8,       0x00,ACT_CHECK, diag_0,"IEI unknown")
IE_END(cause_96_00)

IE_BEGIN(cause_96_08)
   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,         96,ACT_CHECK, cause,"message not implemented")
   BF(8,          0,ACT_CHECK, diag_1,"IEI Cause")
IE_END(cause_96_08)

IE_BEGIN(cause_96_08_2)
   BF(8,          4,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,         96,ACT_CHECK, cause,"message not implemented")
   BF(8,          0,ACT_CHECK, diag_0,"IEI Cause")
   BF(8,       0x08,ACT_CHECK, diag_1,"IEI Cause")
IE_END(cause_96_08_2)

IE_BEGIN(cause_97_2F)
   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,       0x2F,ACT_CHECK, diag_0,"message type 0x2F")
IE_END(cause_97_2F)

IE_BEGIN(cause_98_02)
   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,         98,ACT_CHECK, cause,"message not expected")
   BF(8,       0x02,ACT_CHECK, diag_0,"message type 0x02")
IE_END(cause_98_02)

IE_BEGIN(cause_spare_bits)
   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,          1,ACT_SHOW,  spare,SILENT)
   BF(4,          0,ACT_CHECK, location,"User")
   BF(1,          1,ACT_CHECK, ext_2,SILENT)
   BF(7,          1,ACT_CHECK, cause,SILENT)
IE_END(cause_spare_bits)
```

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IE_BEGIN(cc_capabilities)
   BF(8,1,ACT_CHECK, length,       SILENT)
   BF(8,3,ACT_CHECK, dtmf_support, SILENT)
IE_END(cc_capabilities)

IE_BEGIN(cell_channel_description)
   BF(32,0x00000000,ACT_CHECK,ANONYMOUS,"Includes the       ")
   BF(32,0x00000000,ACT_CHECK,ANONYMOUS,"hopping sequence   ")
   BF(32,0x00020000,ACT_CHECK,ANONYMOUS,"ARFCNs, if hopping ")
   BF(32,0x20000000,ACT_CHECK,ANONYMOUS,"is used.           ")
IE_END(cell_channel_description)

IE_BEGIN(cell_channel_description_spare_bits)
   BF(32,0x00111000,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_spare_bits)

IE_BEGIN(cell_description)
   BF( 2,ARFCN_BCCH_B>>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_B      ,ACT_CHECK,arfcn_lo,"BCCH ARFCN (low part)")
IE_END(cell_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 estab. cause not supp.")
   BF(6,-90+111,ACT_CHECK,rxlev_access_min ,"-90 dBm")
IE_END(cell_selection_parameter)

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_seq_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_hopping)
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   BF( 5,M5(0,0,0,0,1),ACT_CHECK,    channel_type,"TCH Fullrate")
   BF( 3,            2,ACT_CHECK,    time_slot_number,"timeslot 2")
   BF( 3,            4,ACT_CHECK,    training_seq_code,SILENT)
   BF( 1,            1,ACT_CHECK,    hopping,"Yes")
   BF( 6,           23,ACT_CHECK,    maio,SILENT)
   BF( 6,           17,ACT_CHECK,    hsn,SILENT)
IE_END(channel_description_hopping)

IE_BEGIN(channel_description_hopping2)
   BF( 5,M5(0,0,0,0,1),ACT_CHECK,    channel_type,"TCH Fullrate")
   BF( 3,            2,ACT_CHECK,    time_slot_number,"timeslot 2")
   BF( 3,            4,ACT_CHECK,    training_seq_code,SILENT)
   BF( 1,            1,ACT_CHECK,    hopping,"Yes")
   BF( 6,            0,ACT_CHECK,    maio,SILENT)
   BF( 6,           63,ACT_CHECK,    hsn,SILENT)
IE_END(channel_description_hopping2)

IE_BEGIN(channel_description_set)
   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_seq_code,"same as BCCH     ")
   BF( 1,            0,ACT_CHECK,             hopping,"No              ")
   BF( 2,            3,ACT_CHECK,               spare,SILENT            )
   BF(10,   ARFCN_BCCH,ACT_CHECK,               arfcn,"ARFCN of the BCCH")
IE_END(channel_description_set)

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_modify_acknowledge_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(channel_mode_modify_acknowledge_message_type)

IE_BEGIN(channel_mode_modify_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x10,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(channel_mode_modify_message_type)

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

IE_BEGIN(channel_release_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x0D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(channel_release_message_type)

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")
```

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IE_END(channels_needed_for_mobiles_1_and_2)

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(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)

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_key_sequence_number_2_spare_bits)
   BF(1,        1,ACT_CHECK,       spare,SILENT)
   BF(3,M3(0,1,0),ACT_CHECK,key_sequence,"2")
IE_END(ciphering_key_sequence_number_2_spare_bits)

IE_BEGIN(ciphering_key_sequence_number_no_key)
   BF(1,        0,ACT_CHECK,       spare,SILENT)
   BF(3,M3(1,1,1),ACT_CHECK,key_sequence,"no key")
IE_END(ciphering_key_sequence_number_no_key)

IE_BEGIN(ciphering_mode_command_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(ciphering_mode_command_message_type)

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

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

IE_BEGIN(comprehension_required_ie)
   BF(8,       0x00,ACT_CHECK, octet_1, SILENT)
   BF(8,       0x01,ACT_CHECK, octet_2, SILENT)
   BF(8,       0xFF,ACT_CHECK, octet_3, SILENT)
IE_END(comprehension_required_ie)

IE_BEGIN(comprehension_required_ie2)
   BF(8,       0x00,ACT_CHECK, octet_1, SILENT)
   BF(8,       0x01,ACT_CHECK, octet_2, SILENT)
   BF(8,       0x00,ACT_CHECK, octet_3, SILENT)
IE_END(comprehension_required_ie2)

IE_BEGIN(comprehension_required_ie3)
   BF(8,       0x00,ACT_CHECK, octet_1, SILENT)
   BF(8,       0x01,ACT_CHECK, octet_2, SILENT)
   BF(8,       0xFE,ACT_CHECK, octet_3, SILENT)
IE_END(comprehension_required_ie3)

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(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(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 multiframes (not relevant)      ")
   BF(8,0,ACT_CHECK,t3212         ,"Infinite                             ")
IE_END(control_channel_description)

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_seq_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)
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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(handover_command_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x2B,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(handover_command_message_type)

IE_BEGIN(handover_reference)
   BF(8,0,ACT_CHECK,reference_value,"used for handover")
IE_END(handover_reference)

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(ia_rest_octets_set)   /* maximum length (11), no hop, no start
time */
   BF(8,0x00,ACT_CHECK,ANONYMOUS,SILENT) /*  0 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  1 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  2 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  3 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  4 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  5 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  6 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  7 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  8 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  9 */
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /* 10 */
IE_END(ia_rest_octets_set)

IE_BEGIN(iar_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(iar_rest_octets)

IE_BEGIN(iar_rest_octets_spare_bits)
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT) /*  0 */
   BF(8,0x56,ACT_CHECK,ANONYMOUS,SILENT) /*  1 */
   BF(8,0x29,ACT_CHECK,ANONYMOUS,SILENT) /*  2 */
IE_END(iar_rest_octets_spare_bits)

IE_BEGIN(identity_request_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
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   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(identity_type_error)
   BF(4,15,ACT_CHECK, type_of_identity,SILENT)
IE_END(identity_type_error)

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

IE_BEGIN(identity_type_imsi_spare_bits)
   BF(1,1,ACT_CHECK, spare,SILENT)
   BF(3,1,ACT_CHECK, type_of_identity,"IMSI")
IE_END(identity_type_imsi_spare_bits)

IE_BEGIN(ie_02E090)
   BF(8,       0x02,ACT_CHECK, octet_1, SILENT)
   BF(8,       0xE0,ACT_CHECK, octet_2, SILENT)
   BF(8,       0x90,ACT_CHECK, octet_3, SILENT)
IE_END(ie_02E090)

IE_BEGIN(ie_error)
   BF( 8,        0x5E,ACT_CHECK,      unknown_ie,SILENT)
   BF( 8,        0x01,ACT_CHECK,      length,    SILENT)
   BF( 8,        0xAB,ACT_CHECK,      octet_1,   SILENT)
IE_END(ie_error)

IE_BEGIN(ie_error3)
   BF( 8,        0x4C,ACT_CHECK,      unknown_ie,SILENT)
   BF( 8,        0x01,ACT_CHECK,      length,    SILENT)
   BF( 8,        0xAB,ACT_CHECK,      octet_1,   SILENT)
IE_END(ie_error3)

IE_BEGIN(ie_error4)
   BF( 8,        0x7D,ACT_CHECK,      unknown_ie,SILENT)
   BF( 8,        0x01,ACT_CHECK,      length,    SILENT)
   BF( 8,        0xAB,ACT_CHECK,      octet_1,   SILENT)
IE_END(ie_error4)

IE_BEGIN(ie_error5)
   BF( 8,        0x24,ACT_CHECK,      unknown_ie,SILENT)
   BF( 8,        0x01,ACT_CHECK,      length,    SILENT)
   BF( 8,        0xAB,ACT_CHECK,      octet_1,   SILENT)
IE_END(ie_error5)

IE_BEGIN(ie_error6)
   BF( 8,        0x92,ACT_CHECK,      unknown_ie,SILENT)
IE_END(ie_error6)

IE_BEGIN(ie_error7)
   BF( 8,        0xDA,ACT_CHECK,      unknown_ie,SILENT)
IE_END(ie_error7)
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IE_BEGIN(ie_error8)
   BF( 8,         0x69,ACT_CHECK,      unknown_ie,SILENT)
   BF( 8,         0x02,ACT_CHECK,      length,    SILENT)
   BF( 8,         0xAB,ACT_CHECK,      octet_1,   SILENT)
   BF( 8,         0x12,ACT_CHECK,      octet_2,   SILENT)
IE_END(ie_error8)

IE_BEGIN(ie_error9)
   BF( 8,         0x62,ACT_CHECK,      unknown_ie,SILENT)
   BF( 8,         0x05,ACT_CHECK,      length,    SILENT)
   BF( 8,         0xAB,ACT_CHECK,      octet_1,   SILENT)
   BF( 8,         0x12,ACT_CHECK,      octet_2,   SILENT)
   BF( 8,         0xAB,ACT_CHECK,      octet_3,   SILENT)
   BF( 8,         0x12,ACT_CHECK,      octet_4,   SILENT)
   BF( 8,         0xAB,ACT_CHECK,      octet_5,   SILENT)
IE_END(ie_error9)

IE_BEGIN(iei_1E)
   BF(8,0x1E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_1E)

IE_BEGIN(iei_2C)
   BF(8,0x2C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_2C)

IE_BEGIN(iei_04)
   BF(8,0x04,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_04)

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

IE_BEGIN(iei_5D)
   BF(8,0x5D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_5D)

IE_BEGIN(iei_5E)
   BF(8,0x5E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_5E)

IE_BEGIN(iei_6D)
   BF(8,0x6D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_6D)

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

IE_BEGIN(iei_15)
   BF(8,0x15,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_15)

IE_BEGIN(iei_17)
   BF(8,0x17,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_17)

IE_BEGIN(iei_34)
   BF(8,0x34,ACT_CHECK,ANONYMOUS,SILENT)
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IE_END(iei_34)

IE_BEGIN(iei_62)
   BF(8,0x62,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_62)

IE_BEGIN(iei_63)
   BF(8,0x63,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_63)

IE_BEGIN(iei_72)
   BF(8,0x72,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(iei_72)

IE_BEGIN(immediate_assignment_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x3F,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(immediate_assignment_message_type)

IE_BEGIN(immediate_assignment_reject_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x3A,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(immediate_assignment_reject_message_type)

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(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_19)
   BF(6,19,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1, 1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_19)

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)
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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(location_area_identification_no_lac)
   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(16,0xFFFE,ACT_CHECK,lac      ,"cleared Location area code   ")
IE_END(location_area_identification_no_lac)

IE_BEGIN(location_area_identification_C)
   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( 4,2     ,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_C)

IE_BEGIN(location_updating_accept_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(location_updating_accept_message_type)

IE_BEGIN(location_updating_request_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(location_updating_request_message_type)
IE_BEGIN( reject_cause )                              /* Ref.: [1], §10.5.3.6 */
 BF( 8,   0x21,       ACT_CHECK,  reject_cause,       "Service option not subscribed" )
IE_END( reject_cause )


IE_BEGIN( location_updating_reject_message_type )
   BF( 1,    0,ACT_CHECK, ANONYMOUS, SILENT)
   BF( 1,    0,ACT_SHOW, ANONYMOUS, SILENT)
   BF( 6, 0x04,ACT_CHECK,ANONYMOUS,SILENT )
IE_END( location_updating_reject_message_type )

IE_BEGIN(location_updating_type_normal)
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   BF(1, 0,ACT_CHECK,ANONYMOUS,"no follow on request pending")
   BF(1, 0,ACT_CHECK,ANONYMOUS,"spare")
   BF(2, 0,ACT_CHECK,ANONYMOUS,"normal location updating")
IE_END(location_updating_type_normal)

IE_BEGIN(message_type_2f)
   BF(1,    0, ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0, ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x2f, ACT_CHECK,ANONYMOUS,SILENT)
IE_END(message_type_2f)

IE_BEGIN(message_type_25)
   BF(1,    0, ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0, ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x25, ACT_CHECK,ANONYMOUS,SILENT)
IE_END(message_type_25)

IE_BEGIN(message_type_26)
   BF(1,    0, ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0, ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x26, ACT_CHECK,ANONYMOUS,SILENT)
IE_END(message_type_26)

IE_BEGIN(mm_cause_96)
   BF(8,96,ACT_CHECK,mm_cause,"mandatory error")
IE_END(mm_cause_96)

IE_BEGIN(mm_cause_97)
   BF(8,         97,ACT_CHECK, cause,"message not implemented")
IE_END(mm_cause_97)

IE_BEGIN(mm_status_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(mm_status_message_type)

IE_BEGIN(mobile_allocation)
   BF(8,0,ACT_CHECK,length,"length 0 due to hopping disabled")
IE_END(mobile_allocation)

IE_BEGIN(mobile_allocation_30)
   BF(8,1,ACT_CHECK,length,"hopping enabled")
   BF(8,2,ACT_CHECK,mob_alloc, "channel 30")
IE_END(mobile_allocation_30)

IE_BEGIN(mobile_allocation_124)
   BF(8,1,ACT_CHECK,length,"hopping enabled")
   BF(8,1,ACT_CHECK,mob_alloc, "channel 124")
IE_END(mobile_allocation_124)

IE_BEGIN(mobile_identity_imsi)             /* 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)
   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)
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   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_imsi)

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(mobile_identity_tmsi2)
 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, 0x00,      ACT_CHECK,          ANONYMOUS,      SILENT)
 BF( 8, 0x11,      ACT_CHECK,          ANONYMOUS,      SILENT)
 BF( 8, 0x22,      ACT_CHECK,          ANONYMOUS,      SILENT)
 BF( 8, 0x33,      ACT_CHECK,          ANONYMOUS,      SILENT)
IE_END(mobile_identity_tmsi2)

IE_BEGIN(mobile_station_classmark_1)
 BF( 1, 0,         ACT_CHECK, ANONYMOUS, "spare")
 BF( 2, M2(0,1),   ACT_CHECK, rev_lev,   "Used by phase 2 MSs")
 BF( 1, 1,         ACT_CHECK, es_ind,    "Early Class implemented" )
 BF( 1, 0,         ACT_CHECK, a5_1,      "algorithm A5/1 available" )
 BF( 3, M3(0,1,1), ACT_CHECK, rf_pow_cap,"Class 2" )
IE_END(mobile_station_classmark_1)

IE_BEGIN(mobility_management_protocol_discriminator)
   BF(4, 5,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(mobility_management_protocol_discriminator)

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(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,"Contr. Early classmark Send.")
   BF(1,        0,ACT_CHECK, a5_1,"encryption algorithm A5/1 available")
   BF(3,M3(0,1,1),ACT_CHECK, rf_power_capability,"class 2")
   BF(1,        0,ACT_CHECK, spare2,SILENT)
   BF(1,        0,ACT_CHECK, ps_capability,SILENT)
   BF(2,  M2(0,1),ACT_CHECK, ss_screening_indicator,SILENT)
   BF(1,        1,ACT_CHECK, sm_capability,"point to point SMS")
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   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 extention band G1")
   BF(1,        1,ACT_CHECK, classmark_3,"add. MS cap. information")
   BF(1,        0,ACT_CHECK, spare3,SILENT)
   BF(1,        0,ACT_CHECK, lcsva_capability,"LCSVA capability")
   BF(1,        1,ACT_CHECK, spare4,SILENT)
   BF(1,        0,ACT_CHECK, solsa, "solsa")
   BF(1,        1,ACT_CHECK, CMSP,"CM service prompt")
   BF(1,        0,ACT_CHECK, a5_3,"A5/3 not available")
   BF(1,        1,ACT_CHECK, a5_2,"A5/2 not available")
IE_END(ms_classmark)

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

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 */
   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(p1_rest_octets_spare_bits)
/* pag. req. type1 : 22 - 11 (L2 pseud. len) =  11 bytes */
   BF(8,0          ,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(p1_rest_octets_spare_bits)

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(page_mode_spare_bits)
   BF(2,2,ACT_CHECK,spare,"two spare bits with one bit set ")
   BF(2,2,ACT_CHECK,pm   ,"Paging Reorg")
IE_END(page_mode_spare_bits)

IE_BEGIN(page_mode_set)
   BF(2,3,ACT_CHECK,spare,"two spare bits  ")
   BF(2,0,ACT_CHECK,pm   ,"Normal Paging")
```

```
IE_END(page_mode_set)

IE_BEGIN(paging_request_type_1_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(paging_request_type_1_message_type)

IE_BEGIN(paging_response_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x27,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(paging_response_message_type)

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

IE_BEGIN(power_command_spare_bits)
   BF(2, 3,ACT_CHECK,spare_bits,SILENT)
   BF(6,10,ACT_CHECK,power,SILENT)
IE_END(power_command_spare_bits)

IE_BEGIN(progress_indicator_spare_bits)
   BF(8,    2,ACT_CHECK, length,"two octets")
   BF(8, 0xF0,ACT_CHECK, octet3,SILENT)
   BF(8,    8,ACT_CHECK, progress_description, SILENT)
IE_END(progress_indicator_spare_bits)

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

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_lup)
   BF(3,M3(0,0,0),ACT_CHECK ,establishment_cause,"location updating")
   BF(5,M5(1,1,1,1,1),ACT_SHOW,   random_reference,"ignore Random Ref.")
IE_END(rach_lup)

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_SHOW,   random_reference,"ignore Random Ref.")
IE_END(rach_moc)
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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(request_reference)
   BF(3,    M3(1,0,0),ACT_SHOW,random_access_info,"As in CHAN REQ")
   BF(5,M5(1,1,1,1,1),ACT_SHOW,  random_reference,SILENT)
   BF(5,            0,ACT_SHOW,               t1_,SILENT)
   BF(6,            0,ACT_SHOW,               t3 ,SILENT)
   BF(5,            0,ACT_SHOW,               t2 ,SILENT)
IE_END(request_reference)

IE_BEGIN(request_reference_2)
   BF(3,    M3(1,0,0),ACT_SHOW,random_access_info,SILENT)
   BF(5,M5(1,1,1,1,1),ACT_SHOW,ref,"not in the CHAN REQ sent by the MS!")
   BF(5,            0,ACT_SHOW,t1_,SILENT)
   BF(6,            0,ACT_SHOW,t3 ,SILENT)
   BF(5,            0,ACT_SHOW,t2 ,SILENT)
IE_END(request_reference_2)

IE_BEGIN(request_reference_3)
   BF(3,    M3(1,0,0),ACT_SHOW,random_access_info,SILENT)
   BF(5,M5(1,1,1,1,1),ACT_SHOW,ref,SILENT)
   BF(5,            0,ACT_SHOW,t1_,SILENT)
   BF(6,            0,ACT_SHOW,t3 ,SILENT)
   BF(5,            0,ACT_SHOW,t2 ,SILENT)
IE_END(request_reference_3)

IE_BEGIN(request_reference_4)
   BF(3,    M3(1,0,0),ACT_SHOW,random_access_info,SILENT)
   BF(5,M5(1,1,1,1,1),ACT_SHOW,ref,SILENT)
   BF(5,            0,ACT_SHOW,t1_,SILENT)
   BF(6,            0,ACT_SHOW,t3 ,SILENT)
   BF(5,            0,ACT_SHOW,t2 ,SILENT)
IE_END(request_reference_4)

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

IE_BEGIN(rr_cause_96)
   BF(8,96,ACT_CHECK,rr_cause,"mandatory error")
IE_END(rr_cause_96)

IE_BEGIN(rr_cause_97)
   BF(8,         97,ACT_CHECK, cause,"message not implemented")
IE_END(rr_cause_97)

IE_BEGIN(rr_management_protocol_discriminator)
   BF(4, 6,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(rr_management_protocol_discriminator)
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IE_BEGIN(rr_status_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(rr_status_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(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                    )
   BF(8,REST_OCTET       ,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                    )
   BF(8,REST_OCTET       ,ACT_CHECK,ANONYMOUS,SILENT                    )
   BF(8,REST_OCTET       ,ACT_CHECK,ANONYMOUS,SILENT                    )
IE_END(si_4_rest_octets)

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

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

IE_BEGIN(spare_half_octet_set)
   BF(4, 0xe,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(spare_half_octet_set)

IE_BEGIN(status_enquiry_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x34,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(status_enquiry_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_message_type_no_call_state)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x3D,ACT_CHECK,ANONYMOUS,SILENT)
   BF(8, 0x02,ACT_CHECK,ANONYMOUS,SILENT) /* Length */
   BF(1,    1,ACT_CHECK,ANONYMOUS,SILENT) /* Ext */
   BF(7, 0x60,ACT_CHECK,ANONYMOUS,SILENT) /* Coding Standard */
   BF(1,    1,ACT_CHECK,ANONYMOUS,SILENT) /* Ext */
   BF(7, 0x1F,ACT_CHECK,ANONYMOUS,SILENT) /* cause = UNSPECIFIED */
IE_END(status_message_type_no_call_state)

IE_BEGIN(system_information_type_1_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(system_information_type_1_message_type)

IE_BEGIN(system_information_type_2_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(system_information_type_2_message_type)

IE_BEGIN(system_information_type_3_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(system_information_type_3_message_type)

IE_BEGIN(system_information_type_4_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x1C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_4_message_type)

IE_BEGIN(system_information_type_5_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x1D,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_5_message_type)

IE_BEGIN(system_information_type_6_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x1E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(system_information_type_6_message_type)

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(timing_advance_set)
   BF(2,3,ACT_CHECK,          spare,SILENT)
```

```
   BF(6,0,ACT_CHECK,timing_advance,"0"   )
IE_END(timing_advance_set)

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(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_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)

IE_BEGIN(transaction_identifier_source_7)
   BF(4,M4(0,1,1,1),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_7)

IE_BEGIN(transaction_identifier_source_8)
   BF(4,M4(1,0,0,0),ACT_CHECK,ANONYMOUS,SILENT)
IE_END(transaction_identifier_source_8)

IE_BEGIN(unknown_ie)
   BF( 8,        0xA0,ACT_CHECK,      unknown_ie,SILENT)
IE_END(unknown_ie)

IE_BEGIN(unknown_ie2)
   BF( 8,        0x13,ACT_CHECK,      unknown_ie,SILENT)
   BF( 8,        0x02,ACT_CHECK,      length,    SILENT)
```

```
   BF( 8,         0xB6,ACT_CHECK,      octet_1,   SILENT)
   BF( 8,         0xB6,ACT_CHECK,      octet_2,   SILENT)
IE_END(unknown_ie2)

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

IE_BEGIN(wait_indication)
   BF(8,0,ACT_CHECK,t3122,"0 seconds")
IE_END(wait_indication)

IE_BEGIN(wait_indication_2)
   BF(8,0,ACT_CHECK,t3122,"0 seconds")
IE_END(wait_indication_2)

IE_BEGIN(wait_indication_3)
   BF(8,0,ACT_CHECK,t3122,"0 seconds")
IE_END(wait_indication_3)

IE_BEGIN(wait_indication_4)
   BF(8,0,ACT_CHECK,t3122,"0 seconds")
IE_END(wait_indication_4)

IE_BEGIN(hold_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(hold_message_type)

IE_BEGIN(hold_ack_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(hold_ack_message_type)

IE_BEGIN(hold_rej_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(hold_rej_message_type)

IE_BEGIN(retrieve_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x1C,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(retrieve_message_type)

IE_BEGIN(retrieve_rej_message_type)
   BF(1,    0,ACT_CHECK,ANONYMOUS,SILENT)
   BF(1,    0,ACT_SHOW, ANONYMOUS,SILENT)
   BF(6, 0x1E,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(retrieve_rej_message_type)

/*---------------------------------------------------------------------*\
| Messages
\*---------------------------------------------------------------------*/

MSG3_BEGIN(alerting)
   IE(transaction_identifier_dest)
```

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   IE(call_control_protocol_discriminator)
   IE(alerting_message_type)
MSG3_END(alerting)

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_ie_errors)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(assignment_command_message_type)
   IE(channel_description_hopping)
   IE(power_command)
   IE(ie_error7)
   IE(iei_62)
   IE(cell_channel_description)
   IE(ie_error8)
   IE(iei_72)
   IE(mobile_allocation_30)
MSG3_END(assignment_command_ie_errors)

MSG3_BEGIN(assignment_command_spare_bits)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(assignment_command_message_type)
   IE(channel_description_hopping2)
   IE(power_command_spare_bits)
   IE(iei_62)
   IE(cell_channel_description_spare_bits)
   IE(iei_72)
   IE(mobile_allocation_124)
MSG3_END(assignment_command_spare_bits)

MSG3_BEGIN(assignment_command_ti_4)
   IE(transaction_identifier_source_4)
   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_ti_4)

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(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_request_spare_bits)
   IE(skip_indicator)
   IE(mobility_management_protocol_discriminator)
   IE(authentication_request_message_type)
   IE(spare_half_octet_set)
   IE(ciphering_key_sequence_number_2_spare_bits)
   IE(authentication_parameter_rand)
MSG3_END(authentication_request_spare_bits)

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(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)
MSG3_END(call_confirmed)

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

MSG3_BEGIN(call_proceeding_ie_error)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(call_proceeding_message_type)
   IE(ie_error)
MSG3_END(call_proceeding_ie_error)

MSG3_BEGIN(call_proceeding_unexpected)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(call_proceeding_message_type)
MSG3_END(call_proceeding_unexpected)

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)
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   IE(channel_mode_modify_acknowledge_message_type)
   IE(channel_description_tch)
   IE(channel_mode_speech)
MSG3_END(channel_mode_modify_acknowledge)

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(channel_release_ie_errors)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(channel_release_message_type)
   IE(rr_cause)
   IE(ie_error9)
MSG3_END(channel_release_ie_errors)

MSG3_BEGIN(channel_release_no_cause)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(channel_release_message_type)
MSG3_END(channel_release_no_cause)

MSG3_BEGIN(channel_release_ti_6)
   IE(transaction_identifier_source_6)
   IE(rr_management_protocol_discriminator)
   IE(channel_release_message_type)
   IE(rr_cause)
MSG3_END(channel_release_ti_6)

MSG3_BEGIN(channel_request)
   IE(rach)
MSG3_END(channel_request)

MSG3_BEGIN(channel_request_lup)
   IE(rach_lup)
MSG3_END(channel_request_lup)

MSG3_BEGIN(channel_request_moc)
   IE(rach_moc)
MSG3_END(channel_request_moc)

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

MSG3_BEGIN(ciphering_mode_command_errors)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(ciphering_mode_command_message_type)
MSG3_END(ciphering_mode_command_errors)

MSG3_BEGIN(ciphering_mode_command_ie_error)
```

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   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(ciphering_mode_command_message_type)
   IE(ciphering_mode_setting)
   IE(cipher_response)
   IE(ie_error6)
MSG3_END(ciphering_mode_command_ie_error)

MSG3_BEGIN(ciphering_mode_command_ti_3)
   IE(transaction_identifier_source_3)
   IE(rr_management_protocol_discriminator)
   IE(ciphering_mode_command_message_type)
   IE(ciphering_mode_setting)
   IE(cipher_response)
MSG3_END(ciphering_mode_command_ti_3)

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(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_imsi)
MSG3_END(cm_service_request)

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

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

MSG3_BEGIN(connect_comprehension_required)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(connect_message_type)
   IE(comprehension_required_ie)
MSG3_END(connect_comprehension_required)

MSG3_BEGIN(disconnect)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(disconnect_message_type)
   IE(cause_10)
MSG3_END(disconnect)

MSG3_BEGIN(disconnect_ie_error)
   IE(transaction_identifier_source)
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   IE(call_control_protocol_discriminator)
   IE(disconnect_message_type)
   IE(ie_error3)
MSG3_END(disconnect_ie_error)

MSG3_BEGIN(disconnect_mtc)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(disconnect_message_type)
   IE(cause_10)
MSG3_END(disconnect_mtc)

MSG3_BEGIN(disconnect_no_cause)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(disconnect_message_type)
MSG3_END(disconnect_no_cause)

MSG3_BEGIN(disconnect_spare_bits)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(disconnect_message_type)
   IE(cause_spare_bits)
   IE(iei_1E)
   IE(progress_indicator_spare_bits)
MSG3_END(disconnect_spare_bits)

MSG3_BEGIN(disconnect_ti_1)
   IE(transaction_identifier_source_1)
   IE(call_control_protocol_discriminator)
   IE(disconnect_message_type)
   IE(cause_03)
MSG3_END(disconnect_ti_1)

MSG3_BEGIN(disconnect_ti_7)
   IE(transaction_identifier_source_7)
   IE(call_control_protocol_discriminator)
   IE(disconnect_message_type)
   IE(cause_03)
MSG3_END(disconnect_ti_7)

MSG3_BEGIN(handover_command_ie_error)
   IE(transaction_identifier_source)
   IE(rr_management_protocol_discriminator)
   IE(handover_command_message_type)
   IE(cell_description)
   IE(channel_description)
   IE(handover_reference)
   IE(power_command)
   IE(comprehension_required_ie)
MSG3_END(handover_command_ie_error)

MSG3_BEGIN(handover_command_ie_error2)
   IE(transaction_identifier_source)
   IE(rr_management_protocol_discriminator)
   IE(handover_command_message_type)
   IE(cell_description)
   IE(channel_description)
   IE(handover_reference)
   IE(power_command)
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   IE(comprehension_required_ie2)
MSG3_END(handover_command_ie_error2)

MSG3_BEGIN(handover_command_ti_5)
   IE(transaction_identifier_source_5)
   IE(rr_management_protocol_discriminator)
   IE(handover_command_message_type)
   IE(cell_description)
   IE(channel_description)
   IE(handover_reference)
   IE(power_command)
MSG3_END(handover_command_ti_5)

MSG3_BEGIN(identity_request_ie_error)
   IE(skip_indicator)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_error)
MSG3_END(identity_request_ie_error)

MSG3_BEGIN(identity_request_imsi)
   IE(skip_indicator)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi)

MSG3_BEGIN(identity_request_imsi_spare_bits)
   IE(skip_indicator)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet_set)
   IE(identity_type_imsi_spare_bits)
MSG3_END(identity_request_imsi_spare_bits)

MSG3_BEGIN(identity_request_imsi_ti_1)
   IE(transaction_identifier_source_1)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi_ti_1)

MSG3_BEGIN(identity_request_imsi_ti_2)
   IE(transaction_identifier_source_2)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi_ti_2)

MSG3_BEGIN(identity_request_imsi_ti_3)
   IE(transaction_identifier_source_3)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi_ti_3)
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MSG3_BEGIN(identity_request_imsi_ti_4)
   IE(transaction_identifier_source_4)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi_ti_4)

MSG3_BEGIN(identity_request_imsi_ti_5)
   IE(transaction_identifier_source_5)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi_ti_5)

MSG3_BEGIN(identity_request_imsi_ti_6)
   IE(transaction_identifier_source_6)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi_ti_6)

MSG3_BEGIN(identity_request_imsi_ti_8)
   IE(transaction_identifier_source_8)
   IE(mobility_management_protocol_discriminator)
   IE(identity_request_message_type)
   IE(spare_half_octet)
   IE(identity_type_imsi)
MSG3_END(identity_request_imsi_ti_8)

MSG3_BEGIN(identity_response_imsi)
   IE(skip_indicator)
   IE(mobility_management_protocol_discriminator)
   IE(identity_response_message_type)
   IE(mobile_identity_imsi)
MSG3_END(identity_response_imsi)

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_reject)
   IE(l2_pseudo_length_19)
   IE(transaction_identifier_source)
   IE(rr_management_protocol_discriminator)
   IE(immediate_assignment_reject_message_type)
   IE(page_mode)
```

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   IE(spare_half_octet)
   IE(request_reference)
   IE(wait_indication)
   IE(request_reference_2)
   IE(wait_indication_2)
   IE(request_reference_3)
   IE(wait_indication_3)
   IE(request_reference_4)
   IE(wait_indication_4)
   IE(iar_rest_octets)
MSG3_END(immediate_assignment_reject)

MSG3_BEGIN(immediate_assignment_reject_spare_bits)
   IE(l2_pseudo_length_19)
   IE(transaction_identifier_source)
   IE(rr_management_protocol_discriminator)
   IE(immediate_assignment_reject_message_type)
   IE(page_mode)
   IE(spare_half_octet)
   IE(request_reference)
   IE(wait_indication)
   IE(request_reference_2)
   IE(wait_indication_2)
   IE(request_reference_3)
   IE(wait_indication_3)
   IE(request_reference_4)
   IE(wait_indication_4)
   IE(iar_rest_octets_spare_bits)
MSG3_END(immediate_assignment_reject_spare_bits)
MSG3_BEGIN(immediate_assignment_reject_2_spare_bits)
   IE(l2_pseudo_length_19)
   IE(transaction_identifier_source)
   IE(rr_management_protocol_discriminator)
   IE(immediate_assignment_reject_message_type)
   IE(page_mode_spare_bits)
   IE(spare_half_octet)
   IE(request_reference)
   IE(wait_indication)
   IE(request_reference_2)
   IE(wait_indication_2)
   IE(request_reference_3)
   IE(wait_indication_3)
   IE(request_reference_4)
   IE(wait_indication_4)
   IE(iar_rest_octets_spare_bits)
MSG3_END(immediate_assignment_reject_2_spare_bits)

MSG3_BEGIN(immediate_assignment_reject_ti_2)
   IE(l2_pseudo_length_19)
   IE(transaction_identifier_source_2)
   IE(rr_management_protocol_discriminator)
   IE(immediate_assignment_reject_message_type)
   IE(page_mode)
   IE(spare_half_octet)
   IE(request_reference)
   IE(wait_indication)
   IE(request_reference_2)
   IE(wait_indication_2)
   IE(request_reference_3)
   IE(wait_indication_3)
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   IE(request_reference_4)
   IE(wait_indication_4)
   IE(iar_rest_octets)
MSG3_END(immediate_assignment_reject_ti_2)

MSG3_BEGIN(immediate_assignment_spare_bits)
   IE(l2_pseudo_length_21)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(immediate_assignment_message_type)
   IE(spare_half_octet_set)
   IE(page_mode_set)
   IE(channel_description_set)
   IE(request_reference)
   IE(timing_advance_set)
   IE(mobile_allocation)
   IE(ia_rest_octets_set)
MSG3_END(immediate_assignment_spare_bits)

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(immediate_assignment_ti_1)
   IE(l2_pseudo_length_21)
   IE(transaction_identifier_source_1)
   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_ti_1)

MSG3_BEGIN( location_updating_accept)
  IE( skip_indicator )
  IE( mobility_management_protocol_discriminator )
  IE( location_updating_accept_message_type )
  IE( location_area_identification_B)
  IE( iei_17)
  IE( mobile_identity_tmsi)
MSG3_END( location_updating_accept)


MSG3_BEGIN( location_updating_accept_comp_error )
  IE( skip_indicator )
  IE( mobility_management_protocol_discriminator )
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   IE( location_updating_accept_message_type )
   IE( location_area_identification_B)
   IE( comprehension_required_ie)
MSG3_END( location_updating_accept_comp_error )


MSG3_BEGIN( location_updating_accept_comp_error2 )
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_accept_message_type )
   IE( location_area_identification_B)
   IE( comprehension_required_ie3)
MSG3_END( location_updating_accept_comp_error2 )

MSG3_BEGIN( location_updating_accept_ie_error )
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_accept_message_type )
   IE( location_area_identification_B)
   IE( iei_17)
   IE( mobile_identity_imsi)
   IE( iei_17)
   IE( mobile_identity_tmsi)
MSG3_END( location_updating_accept_ie_error )


MSG3_BEGIN( location_updating_accept_unknown_ie )
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_accept_message_type )
   IE( location_area_identification)
   IE( unknown_ie)
   IE( iei_17)
   IE( mobile_identity_tmsi)
MSG3_END( location_updating_accept_unknown_ie )


MSG3_BEGIN( location_updating_accept_unknown_ie2 )
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_accept_message_type )
   IE( location_area_identification)
   IE( unknown_ie2)
   IE( iei_17)
   IE( mobile_identity_tmsi2)
MSG3_END( location_updating_accept_unknown_ie2 )


MSG3_BEGIN ( location_updating_request_A)
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_request_message_type )
   IE( ciphering_key_sequence_number )
   IE( location_updating_type_normal )
   IE( location_area_identification )
   IE( mobile_station_classmark_1 )
   IE( mobile_identity_imsi )
MSG3_END( location_updating_request_A )
```

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MSG3_BEGIN ( location_updating_request_A2)
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_request_message_type )
   IE( ciphering_key_sequence_number_no_key )
   IE( location_updating_type_normal )
   IE( location_area_identification_no_lac )
   IE( mobile_station_classmark_1 )
   IE( mobile_identity_imsi )
MSG3_END( location_updating_request_A2 )


MSG3_BEGIN ( location_updating_request_B)
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_request_message_type )
   IE( ciphering_key_sequence_number )
   IE( location_updating_type_normal )
   IE( location_area_identification_B )
   IE( mobile_station_classmark_1 )
   IE( mobile_identity_tmsi )
MSG3_END( location_updating_request_B )

MSG3_BEGIN ( location_updating_request_C)
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_request_message_type )
   IE( ciphering_key_sequence_number )
   IE( location_updating_type_normal )
   IE( location_area_identification_C )
   IE( mobile_station_classmark_1 )
   IE( mobile_identity_tmsi )
MSG3_END( location_updating_request_C )

MSG3_BEGIN( location_updating_reject )
   IE( skip_indicator )
   IE( mobility_management_protocol_discriminator )
   IE( location_updating_reject_message_type )
   IE( reject_cause )
MSG3_END( location_updating_reject )


MSG3_BEGIN(mm_status_96)
    IE(skip_indicator)
    IE(mobility_management_protocol_discriminator)
    IE(mm_status_message_type)
    IE(mm_cause_96)
MSG3_END(mm_status_96)

MSG3_BEGIN(mm_status_97)
    IE(skip_indicator)
    IE(mobility_management_protocol_discriminator)
    IE(mm_status_message_type)
    IE(mm_cause_97)
MSG3_END(mm_status_97)

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)
```

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   IE(mobile_identity_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_1)

MSG3_BEGIN(paging_request_type_1_spare_bits)
   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_imsi)
   IE(p1_rest_octets_spare_bits)
MSG3_END(paging_request_type_1_spare_bits)

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_1_tmsi2)
   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_tmsi2)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_1_tmsi2)

MSG3_BEGIN(paging_request_type_ti_1)
   IE(l2_pseudo_length_11)
   IE(transaction_identifier_source_1)
   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_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_ti_1)

MSG3_BEGIN(paging_request_type_ti_2)
   IE(l2_pseudo_length_11)
   IE(transaction_identifier_source_2)
   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_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_ti_2)

MSG3_BEGIN(paging_request_type_ti_3)
```

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   IE(l2_pseudo_length_11)
   IE(transaction_identifier_source_3)
   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_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_ti_3)

MSG3_BEGIN(paging_request_type_ti_4)
   IE(l2_pseudo_length_11)
   IE(transaction_identifier_source_4)
   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_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_ti_4)

MSG3_BEGIN(paging_request_type_ti_5)
   IE(l2_pseudo_length_11)
   IE(transaction_identifier_source_5)
   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_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_ti_5)

MSG3_BEGIN(paging_request_type_ti_6)
   IE(l2_pseudo_length_11)
   IE(transaction_identifier_source_6)
   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_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_ti_6)

MSG3_BEGIN(paging_request_type_ti_8)
   IE(l2_pseudo_length_11)
   IE(transaction_identifier_source_8)
   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_imsi)
   IE(p1_rest_octets)
MSG3_END(paging_request_type_ti_8)

MSG3_BEGIN(paging_response)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(paging_response_message_type)
   IE(spare_half_octet)
   IE(ciphering_key_sequence_number)
```

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   IE(ms_classmark)
   IE(mobile_identity_imsi)
MSG3_END(paging_response)

MSG3_BEGIN(paging_response_2)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(paging_response_message_type)
   IE(spare_half_octet)
   IE(ciphering_key_sequence_number_no_key)
   IE(ms_classmark)
   IE(mobile_identity_imsi)
MSG3_END(paging_response_2)

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

MSG3_BEGIN(release_96)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(release_message_type)
   IE(iei_08)
   IE(cause_96_08)
MSG3_END(release_96)

MSG3_BEGIN(release_complete)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(release_complete_message_type)
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_complete_ie_error)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(release_complete_message_type)
   IE(ie_error5)
MSG3_END(release_complete_ie_error)

MSG3_BEGIN(release_complete_ti_1_81)
   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_ti_1_81)

MSG3_BEGIN(release_complete_ti_2)
   IE(transaction_identifier_source_2)
   IE(call_control_protocol_discriminator)
   IE(release_complete_message_type)
MSG3_END(release_complete_ti_2)
```

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MSG3_BEGIN(release_ie_error)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(release_message_type)
   IE(ie_error4)
MSG3_END(release_ie_error)

MSG3_BEGIN(rr_status_96)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(rr_status_message_type)
   IE(rr_cause_96)
MSG3_END(rr_status_96)

MSG3_BEGIN(rr_status_97)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(rr_status_message_type)
   IE(rr_cause_97)
MSG3_END(rr_status_97)

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)
MSG3_END(setup)

MSG3_BEGIN(setup_8)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(setup_message_type)
   IE(iei_34)
   IE(signal_call_waiting)
MSG3_END(setup_8)

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

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_spare_bits)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(setup_message_type)
   IE(iei_34)
   IE(signal_call_waiting)
```

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   IE(iei_5C)
   IE(calling_party_bcd_spare_bits)
   IE(iei_5D)
   IE(calling_party_subaddress_spare_bits)
   IE(iei_6D)
   IE(called_party_subaddress_spare_bits)
MSG3_END(setup_spare_bits)

MSG3_BEGIN(status_30_u3)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_30)
   IE(call_state_3)
MSG3_END(status_30_u3)

MSG3_BEGIN(status_30_u10)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_30)
   IE(call_state_10)
MSG3_END(status_30_u10)

MSG3_BEGIN(status_30_u10_aux)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_30)
   IE(call_state_10)
   IE(aux_state_call_held_mpty_idle)
MSG3_END(status_30_u10_aux)

MSG3_BEGIN(status_30_u12)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_30)
   IE(call_state_12)
MSG3_END(status_30_u12)

MSG3_BEGIN(status_30_u19)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_30)
   IE(call_state_19)
MSG3_END(status_30_u19)

MSG3_BEGIN(status_96_u3)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_96_00)
   IE(call_state_3)
MSG3_END(status_96_u3)

MSG3_BEGIN(status_96_u10)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
```

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   IE(status_message_type)
   IE(cause_96_08)
   IE(call_state_10)
MSG3_END(status_96_u10)

MSG3_BEGIN(status_96_u10_2)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_96_08_2)
MSG3_END(status_96_u10_2)

MSG3_BEGIN(status_97_u10)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_97_2F)
   IE(call_state_10)
MSG3_END(status_97_u10)

MSG3_BEGIN(status_98_u10)
   IE(transaction_identifier_dest)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
   IE(cause_98_02)
   IE(call_state_10)
MSG3_END(status_98_u10)

MSG3_BEGIN(status_enquiry)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(status_enquiry_message_type)
MSG3_END(status_enquiry)

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

MSG3_BEGIN(status_no_cause)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(status_message_type)
MSG3_END(status_no_cause)

MSG3_BEGIN(status_no_call_state)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(status_message_type_no_call_state)
MSG3_END(status_no_call_state)

MSG3_BEGIN(system_information_type_1)
   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)
   IE(si_1_rest_octets)
```

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MSG3_END(system_information_type_1)

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)
   IE(si_1_rest_octets)
MSG3_END(system_information_type_1_B)

MSG3_BEGIN(system_information_type_2)
   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)
MSG3_END(system_information_type_2)

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)
MSG3_END(system_information_type_2_B)


MSG3_BEGIN(system_information_type_3)
   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)
   IE(si_3_rest_octets)
MSG3_END(system_information_type_3)

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)
   IE(si_3_rest_octets)
MSG3_END(system_information_type_3_B)
```

```
MSG3_BEGIN(system_information_type_3_C)
   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_C)
   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_C)

MSG3_BEGIN(system_information_type_3_new_lai)
   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_B)
   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_new_lai)

MSG3_BEGIN(system_information_type_4)
   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)
   IE(si_4_rest_octets)
MSG3_END(system_information_type_4)

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)
   IE(si_4_rest_octets)
MSG3_END(system_information_type_4_B)

MSG3_BEGIN(system_information_type_4_C)
   IE(l2_pseudo_length_12)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(system_information_type_4_message_type)
   IE(location_area_identification_C)
   IE(cell_selection_parameter)
   IE(rach_control_parameter)
   IE(si_4_rest_octets)
```

```
MSG3_END(system_information_type_4_C)

MSG3_BEGIN(system_information_type_4_new_lai)
   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)
   IE(si_4_rest_octets)
MSG3_END(system_information_type_4_new_lai)

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_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)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(system_information_type_6_message_type)
   IE(cell_identity)
   IE(location_area_identification)
   IE(cell_options)
   IE(ncc_permitted)
MSG3_END(system_information_type_6)

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(system_information_type_6_C)
   IE(skip_indicator)
   IE(rr_management_protocol_discriminator)
   IE(system_information_type_6_message_type)
   IE(cell_identity)
   IE(location_area_identification_C)
   IE(cell_options)
   IE(ncc_permitted)
MSG3_END(system_information_type_6_C)


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(unknown_cc_message_2f_ti_0)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(message_type_2f)
MSG3_END(unknown_cc_message_2f_ti_0)

MSG3_BEGIN(unknown_mm_message_25_ti_0)
   IE(transaction_identifier_source)
   IE(mobility_management_protocol_discriminator)
   IE(message_type_26)
   IE(ie_02E090)
MSG3_END(unknown_mm_message_25_ti_0)

MSG3_BEGIN(unknown_pd_message)
   IE(transaction_identifier_source)
   IE(unknown_protocol_discriminator)
   IE(status_enquiry_message_type)
MSG3_END(unknown_pd_message)

MSG3_BEGIN(unknown_rr_message_25_ti_0)
   IE(transaction_identifier_source)
   IE(rr_management_protocol_discriminator)
   IE(message_type_25)
   IE(ie_02E090)
MSG3_END(unknown_rr_message_25_ti_0)

MSG3_BEGIN(hold)
   IE(transaction_identifier_source_8)
   IE(call_control_protocol_discriminator)
   IE(hold_message_type)
MSG3_END(hold)

MSG3_BEGIN(hold_ack)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(hold_ack_message_type)
MSG3_END(hold_ack)

MSG3_BEGIN(hold_rej_no_cause)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(hold_rej_message_type)
MSG3_END(hold_rej_no_cause)

MSG3_BEGIN(retrieve)
   IE(transaction_identifier_source_8)
   IE(call_control_protocol_discriminator)
   IE(retrieve_message_type)
MSG3_END(retrieve)

MSG3_BEGIN(retrieve_rej_no_cause)
   IE(transaction_identifier_source)
   IE(call_control_protocol_discriminator)
   IE(retrieve_rej_message_type)
MSG3_END(retrieve_rej_no_cause)
```

4 TEST CASES

4.1 Preambles

4.1.1 MER001: 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 , -60 );
BS_ON_OFF  ( 0 , TRUE );

AT_SEND ("AT+CFUN=1", "Switch On");
AT_SEND ("AT+COPS=0", "automatic registration");

COMMAND ("MMI CONFIG KEY_SEQUENCE=#*99*0")  /* enable recording */
ISS_DELAY (20000);
```

History: 23.01.98 LE Initial

4.1.2 MER002: Mobile Terminated Call (CC, U10)

Description: The mobile station is paged and in CC state U10.
Preamble: MER001
Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command,SILENT);
BS_MSG3_AWAIT(0,ciphering_mode_complete,SILENT);

BS_MSG3_SEND (0,setup_no_signal,SILENT);
BS_MSG3_AWAIT(0,call_confirmed,SILENT);

BS_MSG3_SEND (0,assignment_command,SILENT);
BS_MSG3_AWAIT (0,assignment_complete,SILENT);

BS_MSG3_AWAIT(0,alerting,SILENT);

AT_SEND ("ATA", "hook off");
BS_MSG3_AWAIT(0,connect,SILENT);
BS_MSG3_SEND (0,connect_acknowledge,SILENT);
```

History:	23.01.98	LE	Initial

4.1.3 MER003: Power On (Two Cells, A better than B)

Description: This test describes the initialization of environment and activation of the Mobile Station with two base stations. The mobile station selects Cell A.

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 , -60 );
BS_ON_OFF  ( 0 , TRUE );

BS_SET_SYS_INFO ( 1 , system_information_type_1_B );
BS_SET_SYS_INFO ( 1 , system_information_type_2_B );
BS_SET_SYS_INFO ( 1 , system_information_type_3_B );
BS_SET_SYS_INFO ( 1 , system_information_type_4_B );
BS_SET_SYS_INFO_SACCH ( 1 , system_information_type_5_B );
BS_SET_SYS_INFO_SACCH ( 1 , system_information_type_6_B );

BS_SET_SCH ( 1 , BSIC_B , RFN );
BS_SET_ARFCN ( 1 , ARFCN_BCCH_B );
BS_SET_POWER ( 1 , -70 );
BS_ON_OFF  ( 1 , TRUE );

AT_SEND ("AT+CFUN=1", "Switch On");
AT_SEND ("AT+COPS=0", "automatic registration");

ISS_DELAY (20000);
```

History: 26.01.98 LE Initial

4.1.4 MER004: Mobile Originated Call (CC, U3)

Description: The mobile station starts a call and is in CC state U3.
Preamble: MER001
Script:

```
AT_SEND ("ATD03039094117;", "Dial");

BS_RACH_AWAIT(0,channel_request_moc,SILENT);
BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);

BS_MSG3_SEND (0,immediate_assignment_tch,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,cm_service_request,SILENT);


BS_MSG3_SEND (0,channel_mode_modify,SILENT);
BS_MSG3_AWAIT(0,channel_mode_modify_acknowledge,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command,SILENT);
BS_MSG3_AWAIT(0,ciphering_mode_complete,SILENT);

BS_MSG3_AWAIT(0,setup_moc,SILENT);
BS_MSG3_SEND (0,call_proceeding,SILENT);
```

History:	26.01.98	LE	Initial

4.1.5 MER005: Power On (Two Cells, B better than A)

Description: This test describes the initialization of environment and activation of the Mobile Station with two base stations. The mobile station selects Cell B and starts Location Updating.
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 , -70 );
BS_ON_OFF  ( 0 , TRUE );

BS_SET_SYS_INFO ( 1 , system_information_type_1_B );
BS_SET_SYS_INFO ( 1 , system_information_type_2_B );
BS_SET_SYS_INFO ( 1 , system_information_type_3_B );
BS_SET_SYS_INFO ( 1 , system_information_type_4_B );
BS_SET_SYS_INFO_SACCH ( 1 , system_information_type_5_B );
BS_SET_SYS_INFO_SACCH ( 1 , system_information_type_6_B );

BS_SET_SCH ( 1 , BSIC_B , RFN );
BS_SET_ARFCN ( 1 , ARFCN_BCCH_B );
BS_SET_POWER ( 1 , -60 );
BS_ON_OFF  ( 1 , TRUE );

AT_SEND ("AT+CFUN=1", "Switch On");
AT_SEND ("AT+COPS=0", "automatic registration");

SET_TIMEOUT (30000);

BS_RACH_AWAIT(1,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (1, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (1, 0);
BS_MSG3_SEND (1,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (1, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(1,location_updating_request_A,SILENT);
BS_MSG3_SEND (1,location_updating_accept, SILENT);
BS_MSG3_AWAIT(1,tmsi_reallocation_complete,SILENT);

BS_MSG3_SEND (1,channel_release, SILENT);

ISS_DELAY (20000);
```

History: 26.01.98 LE Initial

4.1.6 MER006: Mobile Originated Call (CC, U1)

Description: The mobile station starts a call and is in CC state U1.
Preamble: MER001
Script:

```
AT_SEND ("ATD03039094117;", "Dial");

BS_RACH_AWAIT(0,channel_request_moc,SILENT);
BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);

BS_MSG3_SEND (0,immediate_assignment_tch,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,cm_service_request,SILENT);


BS_MSG3_SEND (0,channel_mode_modify,SILENT);
BS_MSG3_AWAIT(0,channel_mode_modify_acknowledge,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command,SILENT);
BS_MSG3_AWAIT(0,ciphering_mode_complete,SILENT);

BS_MSG3_AWAIT(0,setup_moc,SILENT);
```

History:	26.01.98	LE	Initial

4.2 Handling of unknown, unforeseen, and errorneous protocol data

4.2.1 MER100: Unknown Protocol Discriminator (26.5.1)

Description: An MS ignores messages with unknown protocol discriminator. This allows for the introduction of new messages which will be ignored by MS of earlier phases.
To verify that a MS supporting TCH and the call control protocol ignores a message containing an undefined protocol discriminator in the special case of a message coded otherwise like a CC STATUS ENQUIRY message received by the MS having a mobile terminating call in CC-state U10, "active".

Preamble: MER002

Script:

```
BS_MSG3_SEND (0, unknown_pd_message,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 10000);
```

History:	23.01.98	LE	Initial

4.2.2 MER101: TI and skip indicator / RR / Idle Mode (26.5.2.1.1)

Description: The MS ignores RR messages with skip indicator different to 0. This allows for the introduction of new RR messages which will be ignored by MS of earlier phases, especially on the downlink CCCH and BCCH.
A radio resource message received with skip indicator different from 0000 shall be ignored.
To verify that the MS ignores an RR message with skip indicator different from H'0 in the special case of a PAGING REQUEST TYPE 1 message received in the MM-state "idle, updated" and in RR-idle mode.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);

BS_MSG3_SEND (0,paging_request_type_ti_1,SILENT);
BS_RACH_EXPECT_TIMEOUT (0, 5000);

BS_MSG3_SEND (0,paging_request_type_ti_2,SILENT);
BS_RACH_EXPECT_TIMEOUT (0, 5000);

BS_MSG3_SEND (0,paging_request_type_ti_3,SILENT);
BS_RACH_EXPECT_TIMEOUT (0, 5000);

BS_MSG3_SEND (0,paging_request_type_ti_4,SILENT);
BS_RACH_EXPECT_TIMEOUT (0, 5000);

BS_MSG3_SEND (0,paging_request_type_ti_5,SILENT);
BS_RACH_EXPECT_TIMEOUT (0, 5000);

BS_MSG3_SEND (0,paging_request_type_ti_6,SILENT);
BS_RACH_EXPECT_TIMEOUT (0, 5000);

BS_MSG3_SEND (0,paging_request_type_ti_8,SILENT);
BS_RACH_EXPECT_TIMEOUT (0, 5000);
```

History: 23.01.98 LE Initial

4.2.3 MER102: TI and skip indicator / RR / RR-Connection established (26.5.2.1.2)

Description: A radio resource message received with skip indicator different from H'0 shall be ignored.

To verify that the MS ignores RR messages with skip indicator different from H'0 in the case of a message being received during the RR-connection establishment in the MM-state "idle, updated" / "wait for network command" and in RR-connected mode.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);

BS_MSG3_SEND (0,immediate_assignment_ti_1,SILENT);
BS_MSG3_SEND (0,immediate_assignment_reject_ti_2,SILENT);

BS_RACH_AWAIT(0,channel_request,SILENT);
BS_STORE_RACH_PARAMS (0, 0);

BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,authentication_request,SILENT);
BS_MSG3_AWAIT(0,authentication_response,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command_ti_3,SILENT);

BS_MSG3_SEND (0,identity_request_imsi,SILENT);
BS_MSG3_AWAIT(0,identity_response_imsi,SILENT);

BS_MSG3_SEND (0,assignment_command_ti_4,SILENT);

BS_MSG3_SEND (0,handover_command_ti_5,SILENT);

BS_MSG3_SEND (0,channel_release_ti_6,SILENT);

BS_MSG3_SEND (0,identity_request_imsi,SILENT);
BS_MSG3_AWAIT(0,identity_response_imsi,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);
```

History: 23.01.98 LE Initial

4.2.4 MER103: TI and skip indicator / MM (26.5.2.2)

Description: The MS ignores MM messages with skip indicator different to 0. This allows for the introduction of new MM messages which will be ignored by MS of earlier phases.
A mobility management message received with skip indicator different from 0000 shall be ignored. To verify that the MS ignores an MM message with skip indicator different from H'0 in the special case of an IDENTITY REQUEST message received.

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,identity_request_imsi_ti_1,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,identity_request_imsi_ti_2,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,identity_request_imsi_ti_3,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,identity_request_imsi_ti_4,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,identity_request_imsi_ti_5,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,identity_request_imsi_ti_6,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,identity_request_imsi_ti_8,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);
```

History:	23.01.98	LE	Initial

4.2.5 MER104: TI and skip indicator / CC (26.5.2.3)

Description: Whenever any call control message except SETUP or RELEASE COMPLETE is received specifying a transaction identifier with a value different from 111, which is not recognized as relating to an active call or to a call in progress, the receiving entity shall send a RELEASE COMPLETE message with cause value #81 "invalid transaction identifier value" using the received transaction identifier value and remain in the Null state.

Preamble: MER002
Script:

```
BS_MSG3_SEND (0,disconnect_ti_1, SILENT);
BS_MSG3_AWAIT(0,release_complete_ti_1_81,SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);

BS_MSG3_SEND (0,release_complete_ti_2,SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);

BS_MSG3_SEND (0,setup_8, SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);

BS_MSG3_SEND (0,setup, SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);

BS_MSG3_SEND (0,disconnect_ti_7, SILENT);
BS_MSG3_EXPECT_TIMEOUT (0, 3000);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);
```

History:	23.01.98	LE	Initial

4.2.6 MER105: Undefined message type / CC (26.5.3.1)

Description: If the Mobile Station receives a message with message type not defined for the PD, it shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #97 "message type non-existent or not implemented". To verify that a MS supporting the call control protocol for at least one BC, having a mobile terminating call in CC-state U10, "active", on receipt of a message with CC protocol discriminator and an arbitrary undefined message type, returns a STATUS message with cause value #97 to the peer CC entity without changing the state of the active call (this is verified by use of the status enquiry procedure).

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,unknown_cc_message_2f_ti_0, SILENT);
BS_MSG3_AWAIT(0,status_97_u10, SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);
```

History: 23.01.98 LE Initial

4.2.7 MER106: Undefined message type / MM (26.5.3.2)

Description: If the Mobile Station receives a message with message type not defined for the PD, it shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #97 "message type non-existent or not implemented". To verify that a MS supporting the call control protocol for at least one BC, having a mobile terminating call in CC-state U10, "active", on receipt of a message with MM protocol discriminator and message type undefined for the mobility management protocol, returns an MM STATUS message with reject cause value #97 without changing the state of the active call (this is verified by use of the status enquiry procedure.) This is tested in the special case where the CC TI has value 0 (so that it has the same encoding as the skip indicator when sent from the SS) and where the message type has the same encoding as DISCONNECT in CC.

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,unknown_mm_message_25_ti_0, SILENT);
BS_MSG3_AWAIT(0,mm_status_97, SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10, SILENT);
```

History:	23.01.98	LE	Initial

4.2.8 MER107: Undefined message type / RR (26.5.3.3)

Description: If the Mobile Station receives a message with message type not defined for the PD, it shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #97 "message type non-existent or not implemented". To verify that an MS in RR connected mode on receipt of a message with RR protocol discriminator and message type undefined for the RR protocol, returns an RR STATUS message with reject cause value #97 without changing its state (this is checked by observing that the MS does not send L3 messages.)

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,unknown_rr_message_25_ti_0, SILENT);
BS_MSG3_AWAIT(0,rr_status_97, SILENT);

BS_MSG3_SEND (0,setup, SILENT);
BS_MSG3_AWAIT(0,call_confirmed,SILENT);

BS_MSG3_SEND (0,channel_release, SILENT);
```

History:	23.01.98	LE	Initial

4.2.9 MER108: Unexpected message type / CC (26.5.3.4)

Description: If the Mobile Station receives a message not consistent with the protocol state, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #98 "Message type not compatible with protocol state".
To verify that a MS supporting the call control protocol for at least one BC, having a call in CC-state U10, "active", on receipt of an inopportune CC message, returns a STATUS message with reject cause value #98 without changing the state of the active call (this is verified by use of the status enquiry procedure.) This is tested in the special case where the inopportune CC message is a CALL PROCEEDING message relating to the active call.

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,call_proceeding_unexpected, SILENT);
BS_MSG3_AWAIT(0,status_98_u10, SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);
```

History:	23.01.98	LE	Initial

4.2.10 MER109: Duplicated information elements (26.5.4.1)

Description: If an information element with format T, TV, or TLV is repeated in a message in which repetition of the information element is not specified, only the contents of the information element appearing first shall be handled and all subsequent repetitions of the information element shall be ignored.
To verify that the MS ignores an unforeseen second occurrence of an information element with format T, TV, or TLV in the special case of the mobile identity IE which has format TLV in the LOCATION UPDATING ACCEPT message.

Preamble: MER003

Script:

```
BS_SET_POWER (0, -90);

SET_TIMEOUT (30000);

BS_RACH_AWAIT(1,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (1, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (1, 0);
BS_MSG3_SEND (1,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (1, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(1,location_updating_request_A,SILENT);
BS_MSG3_SEND (1,location_updating_accept_ie_error, SILENT);
BS_MSG3_SEND (1,channel_release, SILENT);

ISS_DELAY (10000);

BS_CONFIG_CHANNEL (1, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (1,paging_request_type_1_tmsi,SILENT);
BS_RACH_EXPECT_TIMEOUT (1, 5000);

BS_MSG3_SEND (1,paging_request_type_1,SILENT);
BS_RACH_AWAIT(1,channel_request,SILENT);
BS_MSG3_SEND (1,immediate_assignment_reject,SILENT);
```

History:	26.01.98	LE	Initial

4.2.11 MER110: Missing mandatory IE error / Special Case / RR (26.5.5.1.1.1)

Description: The MS shall accept a CHANNEL RELEASE message whether it contains an RR cause or not. This allows for the shortening of the message in the future.
When on receipt of a message a "missing mandatory IE" error is diagnosed the MS shall proceed as follows: If the message is a CHANNEL RELEASE message, the actions taken shall be the same as specified for a normal RR-connection release.
To verify that the MS in RR connected mode releases the connection upon receipt of a CHANNEL RELEASE message with missing RR cause (which is "mandatory" in that message).

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,channel_release_no_cause, SILENT);

ISS_DELAY (10000);

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);
```

History:	26.01.98	LE	Initial

4.2.12 MER111: Missing mandatory IE error / General Case / RR (26.5.5.1.1.2)

Description: In the general case, the MS has to report an RR message with missing mandatory IE by the use of an RR STATUS message, but otherwise to ignore it. This is a recovery mechanism for unforeseen states.
When on receipt of a message a "missing mandatory IE" error is diagnosed the MS shall proceed as follows: If the message is not one of the messages listed in sections 8.5.1, 8.5.2, and 8.5.3 of GSM 04.08, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a status message (STATUS, RR STATUS or MM STATUS depending on the protocol discriminator) with cause value #96 "invalid mandatory information".
To verify that the MS in RR connected mode ignores a ciphering mode command message in which the ciphering mode setting IE and cipher response IE are missing except for the fact that it returns a RR STATUS message.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command_errors,SILENT);
BS_MSG3_AWAIT(0,rr_status_96,SILENT);
```

History:	26.01.98	LE	Initial

4.2.13 MER112: Mandatory IE error / RR / Comprehension required (26.5.5.1.2)

Description: When an RR message containing an IE unknown in the message, but encoded as "comprehension required" (see subclause 10.5 / GSM 04.08) is received, the MS shall proceed as follows: When the message is not one of the messages listed in GSM 04.08 sections 8.5.1, 8.5.2, and 8.5.3, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a RR STATUS message with cause value #96 "invalid mandatory information".
To verify that the MS having an RR-connection established ignores a HANDOVER COMMAND message containing in the non-imperative part an IE encoded as comprehension required except for the fact that it returns a RR STATUS message with cause # 96 "invalid mandatory information".

Preamble: MER002

Script:

```
BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_SEND (0,handover_command_ie_error,SILENT);
BS_MSG3_AWAIT(0,rr_status_96,SILENT);
```

History:	26.01.98	LE	Initial

4.2.14 MER212: Mandatory IE error / RR / Comprehension required (26.5.5.1.2)

Description: When an RR message containing an IE unknown in the message, but encoded as "comprehension required" (see subclause 10.5 / GSM 04.08) is received, the MS shall proceed as follows: When the message is not one of the messages listed in GSM 04.08 sections 8.5.1, 8.5.2, and 8.5.3, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a RR STATUS message with cause value #96 "invalid mandatory information".
To verify that the MS having an RR-connection established ignores a HANDOVER COMMAND message containing in the non-imperative part an IE encoded as comprehension required except for the fact that it returns a RR STATUS message with cause # 96 "invalid mandatory information".
Anite-Version !

Preamble: MER002

Script:

```
BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_SEND (0,handover_command_ie_error2,SILENT);
BS_MSG3_AWAIT(0,rr_status_96,SILENT);
```

History:	26.01.98	LE	Initial

4.2.15 MER113: Mandatory IE error / MM / Syntax Error I (26.5.5.2.1)

Description: When an MM message containing a syntactically incorrect mandatory IE is received, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a MM STATUS message with cause value #96 "invalid mandatory information".
To verify that an MS supporting at least one BC, having a CC entity in state U10, "active", ignores an MM message with syntactically incorrect IE except for the fact that it sends an MM STATUS message with reject cause #96. This is tested in the special case of an IDENTITY REQUEST message in which the (mandatory) identity type IE specifies a reserved value for the type of identity; that the MS otherwise ignores the message is checked by means of the status enquiry procedure.

Preamble: MER002

Script:

```
BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);

BS_MSG3_SEND (0,identity_request_ie_error,SILENT);
BS_MSG3_AWAIT(0,mm_status_96,SILENT);

BS_MSG3_SEND (0,status_enquiry,SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);
```

History:	26.01.98	LE	Initial

4.2.16 MER114: Mandatory IE error / MM / Syntax Error II (26.5.5.2.2)

Description: When an MM message containing a syntactically incorrect mandatory IE is received, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns an MM STATUS message with cause value #96 "invalid mandatory information".
To verify that an MS having been paged and having an RR connection established ignores an MM message with syntactically incorrect IE except for the fact that it sends an MM STATUS message with reject cause #96. This is tested in the special case of an IDENTITY REQUEST message in which the (mandatory) *identity type* IE specifies a reserved value for the type of identity; the fact that the MS otherwise ignores the message is checked by testing that it answers as usual to an incoming SETUP message.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,identity_request_ie_error,SILENT);
BS_MSG3_AWAIT(0,mm_status_96,SILENT);

BS_MSG3_SEND (0,setup_no_signal,SILENT);
BS_MSG3_AWAIT(0,call_confirmed,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);
```

History:	26.01.98	LE	Initial

4.2.17 MER115: Mandatory IE error / MM / Comprehension required (26.5.5.2.3)

Description: The "comprehension required" mechanism allows for the introduction of essential new information elements into messages, such that a message is ignored and a report is sent if the new information element is not understood.
When an MM message containing an IE unknown in the message, but encoded as "comprehension required" (see subclause 10.5 / GSM 04.08) is received, the MS shall ignore the message except for the fact that, if an RR-connection exists, it returns an MM STATUS message with cause value #96 "invalid mandatory information".
To verify that the MS on receipt of an MM message containing an IE unknown in the message, but encoded as "comprehension required" ignores the message except for the fact that it returns an MM STATUS message with cause value #96 "invalid mandatory information"; this in the special case of the MM message being a LOCATION UPDATING ACCEPT responding to a LOCATION UPDATING REQUEST from the MS.

Preamble: MER003

Script:

```
BS_SET_POWER (0, -90);

SET_TIMEOUT (30000);

BS_RACH_AWAIT(1,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (1, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (1, 0);
BS_MSG3_SEND (1,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (1, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(1,location_updating_request_A,SILENT);
BS_MSG3_SEND (1,location_updating_accept_comp_error, SILENT);
BS_MSG3_AWAIT(1,mm_status_96,SILENT);

ISS_DELAY (10000);

BS_RACH_AWAIT(1,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (1, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (1, 0);
BS_MSG3_SEND (1,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (1, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(1,location_updating_request_A2,SILENT);
BS_MSG3_SEND (1,location_updating_accept, SILENT);
BS_MSG3_AWAIT(1,tmsi_reallocation_complete,SILENT);

BS_MSG3_SEND (1,channel_release,SILENT);
```

History: 26.01.98 LE Initial

4.2.18 MER215: Mandatory IE error / MM / Comprehension required (26.5.5.2.3)

Description: The "comprehension required" mechanism allows for the introduction of essential new information elements into messages, such that a message is ignored and a report is sent if the new information element is not understood.
When an MM message containing an IE unknown in the message, but encoded as "comprehension required" (see subclause 10.5 / GSM 04.08) is received, the MS shall ignore the message except for the fact that, if an RR-connection exists, it returns an MM STATUS message with cause value #96 "invalid mandatory information".
To verify that the MS on receipt of an MM message containing an IE unknown in the message, but encoded as "comprehension required" ignores the message except for the fact that it returns an MM STATUS message with cause value #96 "invalid mandatory information"; this in the special case of the MM message being a LOCATION UPDATING ACCEPT responding to a LOCATION UPDATING REQUEST from the MS.
Anite Version !

Preamble: MER003

Script:

```
BS_SET_POWER (0, -90);

SET_TIMEOUT (30000);

BS_RACH_AWAIT(1,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (1, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (1, 0);
BS_MSG3_SEND (1,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (1, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(1,location_updating_request_A,SILENT);
BS_MSG3_SEND (1,location_updating_accept_comp_error2, SILENT);
BS_MSG3_AWAIT(1,mm_status_96,SILENT);

ISS_DELAY (10000);

BS_RACH_AWAIT(1,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (1, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (1, 0);
BS_MSG3_SEND (1,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (1, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(1,location_updating_request_A2,SILENT);
BS_MSG3_SEND (1,location_updating_accept, SILENT);
BS_MSG3_AWAIT(1,tmsi_reallocation_complete,SILENT);

BS_MSG3_SEND (1,channel_release,SILENT);
```

History:	26.01.98	LE	Initial

4.2.19 MER116: Mandatory IE error / CC / Missing Disconnect IE (26.5.5.3.1.1)

Description: When on receipt of a message a "missing mandatory IE" error is diagnosed, the MS shall proceed as follows: If the message is a DISCONNECT message, a RELEASE message shall be returned with cause value # 96 "invalid mandatory information" and normal call clearing applies.
To verify that the MS having an MT call in state U10, "active", on receipt of a DISCONNECT message in which the mandatory cause IE is missing shall return a RELEASE message with cause value #96 "invalid mandatory information".

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,disconnect_no_cause, SILENT);
BS_MSG3_AWAIT(0,release_96,SILENT);

BS_MSG3_SEND (0,release_complete, SILENT);
BS_MSG3_SEND (0,channel_release,SILENT);
```

History:	26.01.98	LE	Initial

4.2.20 MER117: Mandatory IE error / CC / Missing General Case (26.5.5.3.1.2)

Description: When on receipt of a message a "missing mandatory IE" error is diagnosed, the MS shall proceed as follows: If the message is not a SETUP, RELEASE, DISCONNECT, RELEASE COMPLETE, HOLD REJECT or RETRIEVE REJECT message, it shall ignore the message except for the fact that it returns a STATUS message specifying cause value #96.
To verify that the MS having an MT call in state U10, "active", on receipt of a STATUS message in which the mandatory cause IE and call state IE are missing shall ignore the message except for the fact that it return a STATUS message with cause value #96 "invalid mandatory information" (that the MS does not change state is checked by use of the status enquiry procedure).

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,status_no_cause, SILENT);
BS_MSG3_AWAIT(0,status_96_u10_2,SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);
```

History:	26.01.98	LE	Initial

4.2.21 MER118: Mandatory IE error / CC / Comprehension required (26.5.5.3.2)

Description: When a CC message containing an IE unknown in the message, but encoded as "comprehension required" (see GSM 04.08, section 10.5) is received, the MS shall proceed as follows: When the message is not one of the messages listed in GSM 04.08 sections 8.5.1, 8.5.2, and 8.5.3, the Mobile Station shall ignore the message except for the fact that, if an RR-connection exists, it returns a STATUS message with cause value #96 "invalid mandatory information".
To verify that an MS supporting the call control protocol for at least one BC having a call control entity in state U3 ignores a CONNECT message containing in the non-imperative part an IE encoded as comprehension required except for the fact that it returns a STATUS message with cause value #96 "invalid mandatory information".

Preamble: MER004

Script:

```
BS_MSG3_SEND (0,connect_comprehension_required, SILENT);
BS_MSG3_AWAIT(0,status_96_u3,SILENT);

BS_MSG3_SEND (0,status_enquiry_moc, SILENT);
BS_MSG3_AWAIT(0,status_30_u3,SILENT);
```

History:	26.01.98	LE	Initial

4.2.22 MER119: Unknown IE / MM / unknown in the protocol (26.5.6.1.1)

Description: The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".
To verify that the MS on receipt of an MM message containing an IE unknown in the message and unknown in the MM protocol which is not encoded as "comprehension required" ignores that IE; this in the special case of the MM message being a LOCATION UPDATING ACCEPT responding to a LOCATION UPDATING REQUEST from the MS.

Preamble: MER005

Script:

```
BS_SET_POWER (1, -90);

SET_TIMEOUT (30000);

BS_RACH_AWAIT(0,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,location_updating_request_B,SILENT);
BS_MSG3_SEND (0,location_updating_accept_unknown_ie, SILENT);
BS_MSG3_AWAIT(0,tmsi_reallocation_complete,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);
```

History:	26.01.98	LE	Initial

4.2.23 MER120: Unknown IE / MM / unknown in the message (26.5.6.1.2)

Description: The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".
To verify that the MS on receipt of an MM message containing an IE unknown in the message, but known in the MM protocol, which is not encoded as "comprehension required" ignores that IE; this in the special case of the MM message being a LOCATION UPDATING ACCEPT responding to a LOCATION UPDATING REQUEST from the MS.

Preamble: MER005

Script:

```
BS_SET_POWER (1, -90);

BS_RACH_AWAIT(0,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,location_updating_request_B,SILENT);
BS_MSG3_SEND (0,location_updating_accept_unknown_ie2, SILENT);
BS_MSG3_AWAIT(0,tmsi_reallocation_complete,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);

ISS_DELAY (5000)

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1_tmsi2,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);
```

History:	26.01.98	LE	Initial

4.2.24 MER121: Unknown IE / CC / Call Establishment (26.5.6.2.1)

Description: The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".
To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of the CC message being a CALL PROCEEDING message received by the MS in state U1.

Preamble: MER006

Script:

```
BS_MSG3_SEND (0,call_proceeding_ie_error, SILENT);

BS_MSG3_SEND (0,status_enquiry_moc, SILENT);
BS_MSG3_AWAIT(0,status_30_u3,SILENT);
```

History:	26.01.98	LE	Initial

4.2.25 MER122: Unknown IE / CC / Disconnect (26.5.6.2.2)

Description: The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".
To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of a DISCONNECT message received by the MS in state U10.

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,disconnect_ie_error, SILENT);
BS_MSG3_AWAIT(0,release_96,SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u19,SILENT);
```

History:	26.01.98	LE	Initial

4.2.26 MER123: Unknown IE / CC / Release (26.5.6.2.3)

Description: The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".
To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of a RELEASE message received by the MS having sent in state U10 a DISCONNECT message.

Preamble: MER002

Script:

```
AT_SEND ("ATH", "Hook On");

BS_MSG3_AWAIT(0,disconnect, SILENT);
BS_MSG3_SEND (0,release_ie_error,SILENT)
BS_MSG3_AWAIT(0,release_complete_empty, SILENT);
BS_MSG3_SEND (0,channel_release, SILENT);
```

History:	26.01.98	LE	Initial

4.2.27 MER124: Unknown IE / CC / Release Complete (26.5.6.2.4)

Description: The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".
To verify that an MS supporting the CC protocol for at least one BC receiving a CC message containing an IE unknown in the message which is not encoded as "comprehension required" ignores that IE; this in the special case of a RELEASE COMPLETE message received by the MS in state U19.

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,disconnect_mtc, SILENT);
BS_MSG3_AWAIT(0,release,SILENT);

BS_MSG3_SEND (0,release_complete_ie_error, SILENT);

ISS_DELAY (20000);

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);
```

History:	26.01.98	LE	Initial

4.2.28 MER125: Unknown IE / RR (26.5.6.3)

Description: The MS shall ignore all IEs unknown in a message which are not encoded as "comprehension required".
To verify that the MS ignores an IE which is unknown in a message for Radio Resource Management in the special cases of CIPHERING MODE COMMAND, ASSIGNMENT COMMAND and CHANNEL RELEASE.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command_ie_error,SILENT);
BS_MSG3_AWAIT(0,ciphering_mode_complete,SILENT);

BS_MSG3_SEND (0,assignment_command_ie_errors,SILENT);
BS_MSG3_AWAIT (0,assignment_complete,SILENT);

BS_MSG3_SEND (0,channel_release_ie_errors,SILENT);

ISS_DELAY (10000);

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);
```

History:	26.01.98	LE	Initial

4.2.29 MER126: Spare Bits / RR / Paging Channel (26.5.7.1.1)

Description: The MS shall ignore the value of spare bits.
To verify that the MS in the MM-state "idle, updated" and in RR-idle mode ignores the value of spare bits in the special case where these spare bits are contained in the SI3 and SI4 messages. That the MS ignores the value of the spare bits is checked by changing the LAI in those message and observing the MS initiating a location update though the spare bits do not all have the default value.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1_spare_bits,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment_reject,SILENT);
```

History:	26.01.98	LE	Initial

4.2.30 MER127: Spare Bits / RR / BCCH (26.5.7.1.2)

Description: The MS shall ignore the value of spare bits.
To verify that the MS in the MM-state "idle, updated" and in RR-idle mode ignores the value of spare bits in the special case of the spare bits occurring in the P1 Rest Octets IE of a PAGING REQUEST TYPE 1 message. That the spare bits are ignored is checked by addressing the MS in that PAGING REQUEST message and verifying that the MS responds to that paging.

Preamble: MER001

Script:

```
BS_SET_SYS_INFO ( 0 , system_information_type_3_new_lai );
BS_SET_SYS_INFO ( 0 , system_information_type_4_new_lai );

SET_TIMEOUT (50000);

BS_RACH_AWAIT(0,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment_reject,SILENT);
```

History:	26.01.98	LE	Initial

4.2.31 MER128: Spare Bits / RR / AGCH (26.5.7.1.3)

Description: The MS shall ignore the value of spare bits.
To verify that the MS in the MM-state "idle, updated" and in RR-idle mode ignores the value of spare bits in the special case of the spare bits occurring in the Page Mode IE, the Spare Half Octet IE, the Channel Description IE, the Timing Advance IE, the IA Rest Octet IE, and in the IAR Rest Octet IE.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment_spare_bits,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);

ISS_DELAY (10000);

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment_reject_spare_bits,SILENT);

ISS_DELAY (6000);

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);
```

History:	26.01.98	LE	Initial

4.2.32 MER228: Spare Bits / RR / AGCH (26.5.7.1.3, Anite Version)

Description: The MS shall ignore the value of spare bits.
To verify that the MS in the MM-state "idle, updated" and in RR-idle mode ignores the value of spare bits in the special case of the spare bits occurring in the Page Mode IE, the Spare Half Octet IE, the Channel Description IE, the Timing Advance IE, the IA Rest Octet IE, and in the IAR Rest Octet IE.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment_spare_bits,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);

ISS_DELAY (10000);

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment_reject_2_spare_bits,SILENT);

ISS_DELAY (6000);

BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);
```

History:	26.01.98	LE	Initial

4.2.33 MER129: Spare Bits / RR / Connected Mode (26.5.7.1.4)

Description: The MS shall ignore the value of spare bits.
To verify that the MS in the MM-state "MM-Connection active" and in RR-Connected mode ignores the value of spare bits in the special case of the spare bits occurring in the Cell Channel Description IE and in the Power Command IE.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command,SILENT);
BS_MSG3_AWAIT(0,ciphering_mode_complete,SILENT);

BS_MSG3_SEND (0,setup,SILENT);
BS_MSG3_AWAIT(0,call_confirmed,SILENT);
BS_MSG3_AWAIT(0,alerting,SILENT);

BS_MSG3_SEND (0,assignment_command_spare_bits,SILENT);
BS_MSG3_AWAIT (0,assignment_complete,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);
```

History:	23.01.98	LE	Initial

4.2.34 MER130: Spare Bits / MM (26.5.7.2)

Description: The MS shall ignore the value of spare bits.
To verify that the MS in the MM-state "wait net cmd" and in RR-Connected mode ignores the value of spare bits in the special case of the spare bits occurring in the Cipher Key Seq. Number IE or in the Identity Type IE.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,authentication_request_spare_bits,SILENT);
BS_MSG3_AWAIT(0,authentication_response,SILENT);

BS_MSG3_SEND (0,identity_request_imsi_spare_bits,SILENT);
BS_MSG3_AWAIT(0,identity_response_imsi,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);
```

History:	26.01.98	LE	Initial

4.2.35 MER131: Spare Bits / CC (26.5.7.3)

Description: The MS shall ignore the value of spare bits.
To verify that the MS in the MM-state "connection established" and in RR-Connected mode ignores the value of spare bits in the special case of the spare bits occurring in the Calling Party BCD Number IE, Calling Party Subaddress IE, Called Party Subaddress IE, Cause IE and Progress Indicator IEs.

Preamble: MER001

Script:

```
BS_CONFIG_CHANNEL (0, PCH, UNACK, SAPI_0);
BS_MSG3_SEND (0,paging_request_type_1,SILENT);
BS_RACH_AWAIT(0,channel_request,SILENT);

BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,paging_response,SILENT);

BS_MSG3_SEND (0,authentication_request,SILENT);
BS_MSG3_AWAIT(0,authentication_response,SILENT);

BS_MSG3_SEND (0,ciphering_mode_command,SILENT);
BS_MSG3_AWAIT(0,ciphering_mode_complete,SILENT);

BS_MSG3_SEND (0,setup_spare_bits, SILENT);
BS_MSG3_AWAIT(0,call_confirmed,SILENT);
BS_MSG3_AWAIT(0,alerting,SILENT);

AT_SEND ("ATA", "Hook Off");
BS_MSG3_AWAIT(0,connect,SILENT);

BS_MSG3_SEND (0,assignment_command,SILENT);
BS_MSG3_AWAIT(0,assignment_complete,SILENT);

BS_MSG3_SEND (0,connect_acknowledge,SILENT);

BS_MSG3_SEND (0,disconnect_spare_bits,SILENT);
BS_MSG3_SEND (0,status_enquiry,SILENT);
BS_MSG3_AWAIT(0,status_30_u12,SILENT);

BS_MSG3_SEND (0,release,SILENT);
BS_MSG3_AWAIT(0,release_complete,SILENT);

BS_MSG3_SEND (0,channel_release,SILENT);
```

History: 26.01.98 LE Initial

4.2.36 MER132: Mandatory IE error / CC / No Cause in HOLD REJ

Description: When on receipt of a message: a "missing mandatory IE" error is diagnosed, the mobile station shall proceed as follows: 04.08 §8.5.3e) If the message is a HOLD REJECT or RETRIEVE REJECT message, it shall be treated as a normal HOLD REJECT or RETRIEVE REJECT message.
To verify that an MS supporting the call control protocol for at least one BC having a call control entity in state HOLD and whilst attempting to go back to call active mode, reads the HOLD REJ message, and upon detecting no Cause IE, proceeds as normal i.e. remains in call hold state

Preamble: MER002

Script:

```
AT_SEND ("AT+CHLD=2", "Put call on HOLD");
BS_MSG3_AWAIT(0,hold,SILENT);
BS_MSG3_SEND (0,hold_rej_no_cause, SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);
```

History:	05.12.02	ZMM	Initial

4.2.37 MER133: Mandatory IE error / CC / No Cause in RETRIEVE REJ

Description: When on receipt of a message: a "missing mandatory IE" error is diagnosed, the mobile station shall proceed as follows: 04.08 §8.5.3e) If the message is a HOLD REJECT or RETRIEVE REJECT message, it shall be treated as a normal HOLD REJECT or RETRIEVE REJECT message.
To verify that an MS supporting the call control protocol for at least one BC having a call control entity in state HOLD, when attempting to retrieve the held call with a RETRIEVE command, and receiving a RETRIEVE REJ message; reads the RETRIEVE REJ message, and upon detecting no Cause IE, proceeds as normal i.e. remains in call hold state

Preamble: MER002

Script:

```
AT_SEND ("AT+CHLD=2", "Put call on HOLD");
BS_MSG3_AWAIT(0,hold,SILENT);
BS_MSG3_SEND (0,hold_ack, SILENT);

AT_SEND ("AT+CHLD=1", "Retrieve call");
BS_MSG3_AWAIT(0,retrieve,SILENT);
BS_MSG3_SEND (0,retrieve_rej_no_cause, SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10_aux,SILENT);
```

History:	05.12.02	ZMM	Initial

4.2.38 MER134: Mandatory IE error / CC / Missing General Case

Description: When on receipt of a message a "missing mandatory IE" error is diagnosed, the MS shall proceed as follows: If the message is not a SETUP, RELEASE, DISCONNECT, RELEASE COMPLETE, HOLD REJECT or RETRIEVE REJECT message, it shall ignore the message except for the fact that it returns a STATUS message specifying cause value #96.
To verify that the MS having an MT call in state U10, "active", on receipt of a STATUS message in which the mandatory cause IE and call state IE are missing shall ignore the message except for the fact that it return a STATUS message with cause value #96 "invalid mandatory information" (that the MS does not change state is checked by use of the status enquiry procedure).
This test complements MER117/MER118 where the STATUS message lacks a call state IEI

Preamble: MER002

Script:

```
BS_MSG3_SEND (0,status_no_call_state, SILENT);
BS_MSG3_AWAIT(0,status_96_u10,SILENT);

BS_MSG3_SEND (0,status_enquiry, SILENT);
BS_MSG3_AWAIT(0,status_30_u10,SILENT);
```

History:	20.02.03	ZMM	Initial

4.3 Additional Testcases

4.3.1 MER200: Interaction Manual and Automatic Registration

Description: First the list of the available PLMNs is requested and one of the available PLMNs is selection.
Registration on this PLMN is forbidden. If the MS is set back to automatic mode it shall search again for a suitable network.

Preamble: MER001

Script:

```
BS_SET_SYS_INFO ( 1 , system_information_type_1 );
BS_SET_SYS_INFO ( 1 , system_information_type_2 );
BS_SET_SYS_INFO ( 1 , system_information_type_3_C );
BS_SET_SYS_INFO ( 1 , system_information_type_4_C );
BS_SET_SYS_INFO_SACCH ( 1 , system_information_type_5 );
BS_SET_SYS_INFO_SACCH ( 1 , system_information_type_6_C );

BS_SET_SCH ( 1 , BSIC , RFN );
BS_SET_ARFCN ( 1 , ARFCN_BCCH_C );
BS_SET_POWER ( 1 , -70 );
BS_ON_OFF  ( 1 , TRUE );

AT_SEND ("AT+COPS=?", "request available PLMNs");
ISS_DELAY (10000)
AT_SEND ("AT+COPS=1,2,\"26202\"", "register manually");

SET_TIMEOUT (30000);

BS_RACH_AWAIT(1,channel_request_lup,SILENT);

BS_CONFIG_CHANNEL (1, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (1, 0);
BS_MSG3_SEND (1,immediate_assignment,SILENT);

BS_CONFIG_CHANNEL (1, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(1,location_updating_request_A,SILENT);
 BS_MSG3_SEND_BEGIN ( 1, location_updating_reject, "P4: Reject cause = PLMN not allowed." )
    BF_SET_VAL      ( reject_cause, 0x0B,        "PLMN not allowed" )
 BS_MSG3_SEND_END( )

BS_MSG3_SEND (1,channel_release, SILENT);

ISS_DELAY (10000);

COMMAND ("MMI CONFIG KEY_SEQUENCE=#*99*1")  /* disable recording */
COMMAND ("MMI CONFIG KEY_SEQUENCE=#*99*2")  /* read post mortem  */
ISS_DELAY (10000);
```

History: 26.01.98 LE 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/>