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**Technical Document – Confidential**

**GSM PROTOCOL STACK**

**TEST SPECIFICATION**

**GENERIC CALL SETUP**

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1. Initial version
2. Adapted to new PCM/ FFS configuration data; Reworked a lot to improve quality / coverage

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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.

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

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

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

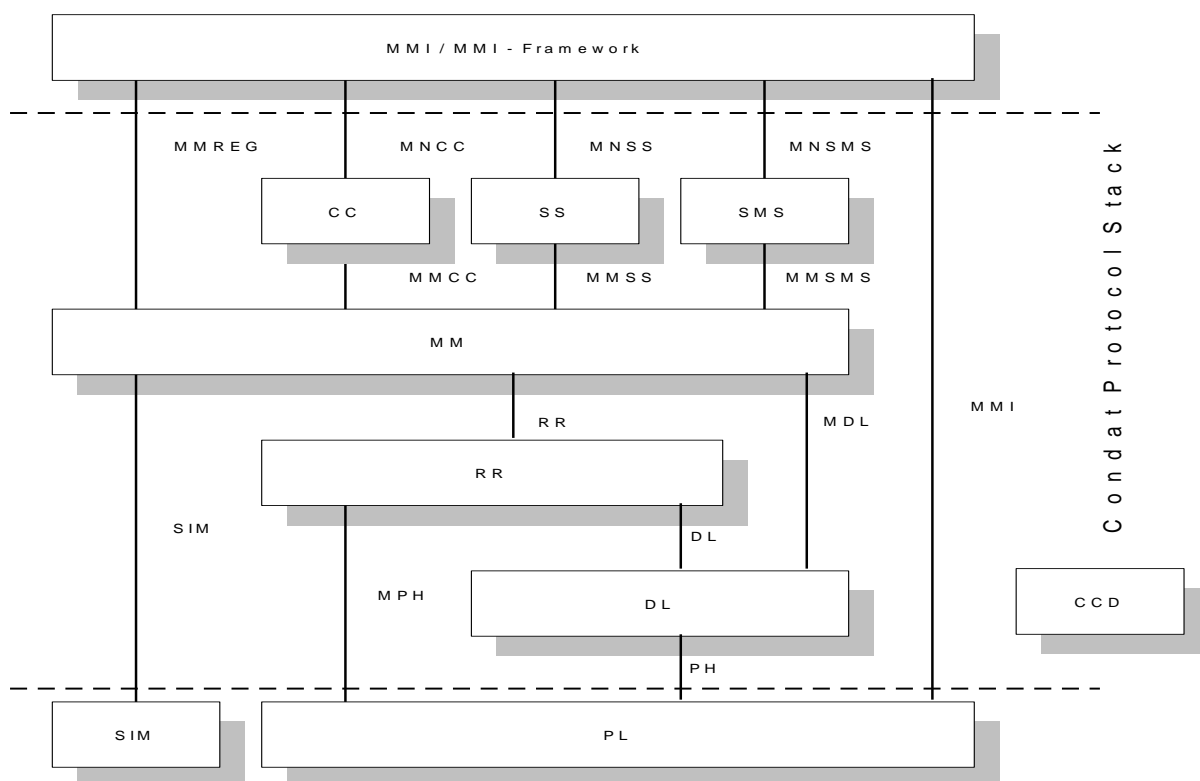


Figure 1: Mobile-station protocol architecture

This document describes the tests for the whole protocol stack according to GSM 11.10 chapter 10.

### 3 Parameters

```
#define REST_OCTET 0x2b
/*-----*\
| GSM 11.10
| 10 Generic call set up procedure
| 10.1 Generic call setup-up procedure for mobile terminating speech calls
| 10.1.2 Definition of system information messages
\*-----*/
/*-----*\
| Information Elements
\*-----*/
/*-----*\
| BCCH Frequency list:
| Indicates seven surrounding cells on any ARFCN of the supported
| band, excluding ARFCNs in or immediately adjacent to those
| specified in section 6.2 (GSM 11.10).
| From GSM 11.10, section 6.2 the following ARFCN are given :
|     10, 14, 17, 18, 22, 24, 26, 30, 31, 34, 38, 42, 45, 46, 50,
|     52, 54, 58, 59, 62, 66, 70, 73, 74, 78, 80, 82, 86, 87, 90,
|     94, 98, 101, 102, 106, 108, 110, 114
| The following 7 cells are chosen :
|     121,117,      76,      48,      12,7,1
| Thus BA is : 01100000 00000800 00008000 00000841
\*-----*/
IE_BEGIN(bcch_frequency_list)
    BF(32,0x01100000,ACT_CHECK,ANONYMOUS,"bit 128 thru 97")
    BF(32,0x00000800,ACT_CHECK,ANONYMOUS,"bit 96 thru 65")
    BF(32,0x00008000,ACT_CHECK,ANONYMOUS,"bit 64 thru 33")
    BF(32,0x00000841,ACT_CHECK,ANONYMOUS,"bit 32 thru 1")
IE_END(bcch_frequency_list)

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

IE_BEGIN(cell_identity)
    BF(16,0x0001,ACT_CHECK,ANONYMOUS,"CI VALUE 0001 hex (not relevant)")
IE_END(cell_identity)

IE_BEGIN(cell_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(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(l2_pseudo_length_12)
    BF(6,12,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_12)

IE_BEGIN(l2_pseudo_length_18)
    BF(6,18,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_18)

IE_BEGIN(l2_pseudo_length_21)
    BF(6,21,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_21)

IE_BEGIN(l2_pseudo_length_22)
    BF(6,22,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,0,ACT_CHECK,ANONYMOUS,SILENT)
    BF(1,1,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_22)

#define MCC 0x262 /* 262 decimal (not relevant) */
#define MNC 1 /* 01 decimal (not relevant) */
#define LAC 0x0001 /* 0001 hex (not relevant) */
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(ncc_permitted)
    BF(8,0xFF,ACT_CHECK,ncc_permit,"e.g. all NCCs permitted")
IE_END(ncc_permitted)

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

```

```
IE_END(rach_control_parameter)

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

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

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

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

IE_BEGIN(si_4_rest_octets) /* optionally contains cell (re)select params */
    BF(1, 0, ACT_CHECK, p1, "C2 parameters not present")
    BF(7, REST_OCTET & 0x7F, ACT_CHECK, ANONYMOUS, SILENT)
    BF(8, REST_OCTET, ACT_CHECK, ANONYMOUS, SILENT)
    BF(8, REST_OCTET, ACT_CHECK, ANONYMOUS, SILENT)
    BF(8, REST_OCTET, ACT_CHECK, ANONYMOUS, SILENT)
    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(system_information_type_1_message_type)
    BF(8, 0x19, ACT_CHECK, ANONYMOUS, SILENT)
IE_END(system_information_type_1_message_type)

IE_BEGIN(system_information_type_2_message_type)
    BF(8, 0x1A, ACT_CHECK, ANONYMOUS, SILENT)
IE_END(system_information_type_2_message_type)

IE_BEGIN(system_information_type_3_message_type)
    BF(8, 0x1B, ACT_CHECK, ANONYMOUS, SILENT)
IE_END(system_information_type_3_message_type)

IE_BEGIN(system_information_type_4_message_type)
    BF(8, 0x1C, ACT_CHECK, ANONYMOUS, SILENT)
IE_END(system_information_type_4_message_type)

IE_BEGIN(system_information_type_5_message_type)
    BF(8, 0x1D, ACT_CHECK, ANONYMOUS, SILENT)
IE_END(system_information_type_5_message_type)

IE_BEGIN(system_information_type_6_message_type)
    BF(8, 0x1E, ACT_CHECK, ANONYMOUS, SILENT)
IE_END(system_information_type_6_message_type)
```

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

IE_BEGIN(immediate_assignment_message_type)
    BF(8, 0x3F,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(immediate_assignment_message_type)

IE_BEGIN(paging_response_message_type)
    BF(8, 0x27,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(paging_response_message_type)

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

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

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

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

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

IE_BEGIN(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)

/*-----*\
| Messages
\*-----*/
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)
MSG3_END(system_information_type_1)

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_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_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_5)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(system_information_type_5_message_type)
    IE(bcch_frequency_list)
MSG3_END(system_information_type_5)

MSG3_BEGIN(system_information_type_6)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(system_information_type_6_message_type)
    IE(cell_identity)
    IE(location_area_identification)
    IE(cell_options)
    IE(ncc_permitted)
MSG3_END(system_information_type_6)

/*-----*/
| GSM 11.10
| 10 Generic call set up procedure
| 10.1 Generic call setup-up procedure for mobile terminating speech calls
| 10.1.4 Specific message contents
/*-----*/
/*-----*/
| Information Elements
/*-----*/
#define ARFCN_BCCH      122
#define NCC              0x5
#define BCC              0x6
#define BSIC             ((NCC<<3) | (BCC))
#define RFN              0

```



```

IE_BEGIN(authentication_parameter_rand)
    BF(32,0x80000000,ACT_CHECK,rand_127_096,SILENT)
    BF(32,0x00000012,ACT_CHECK,rand_095_064,SILENT)
    BF(32,0x34000000,ACT_CHECK,rand_063_032,SILENT)
    BF(32,0x0000000F,ACT_CHECK,rand_031_000,SILENT)
IE_END(authentication_parameter_rand)

IE_BEGIN(authentication_parameter_sres)
    BF(32,0x0000000F,ACT_NOP,sres_031_000,SILENT)
IE_END(authentication_parameter_sres)

IE_BEGIN(bearer_capability)
    BF(8, 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, "GSM")
    BF(1, 0, ACT_CHECK, transfer_mode, "CIRCUIT")
    BF(3, 0, ACT_CHECK, info_transfer_capability, "SPEECH")

    BF(1, 0, ACT_CHECK, ext3a_1, SILENT)
    BF(1, 0, ACT_CHECK, ext_other_1, SILENT)
    BF(2, 0, ACT_CHECK, spare3a_1, SILENT)
    BF(4, 4, ACT_CHECK, speech_version_indication_1, "AMR full rate")

    BF(1, 0, ACT_CHECK, ext3a_2, SILENT)
    BF(1, 0, ACT_CHECK, ext_other_2, SILENT)
    BF(2, 0, ACT_CHECK, spare3a_2, SILENT)
    BF(4, 5, ACT_CHECK, speech_version_indication_2, "AMR half rate")

    BF(1, 1, ACT_CHECK, ext3a_3, SILENT)
    BF(1, 0, ACT_CHECK, ext_other_3, SILENT)
    BF(2, 0, ACT_CHECK, spare3a_3, SILENT)
    BF(4, 0, ACT_CHECK, speech_version_indication_3, "GSM full rate")
IE_END(bearer_capability)

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

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

IE_BEGIN(channels_needed_for_mobiles_1_and_2)
    BF(2,0,ACT_CHECK,second_channel,"spare, any channel")

```

```

    BF(2,0,ACT_CHECK, first_channel,"spare, any channel")
IE_END(channels_needed_for_mobiles_1_and_2)

IE_BEGIN(cc_capabilities)
    BF(8,1,ACT_CHECK, length, SILENT)
    BF(6,0,ACT_CHECK, spare, SILENT)
    BF(1,1,ACT_CHECK, pcp, SILENT)
    BF(1,1,ACT_CHECK, dtmf_support, SILENT)
IE_END(cc_capabilities)

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

IE_BEGIN(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(cm_service_type_ec)
    BF(4,M4(0,0,1,0),ACT_CHECK,service_type,"emergency call establishment")
IE_END(cm_service_type_ec)

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_no_key)
    BF(1, 0,ACT_CHECK, spare,SILENT)
    BF(3,M3(1,1,1),ACT_CHECK,key_sequence,"no key is available (MS->BS)")
IE_END(ciphering_key_sequence_number_no_key)

IE_BEGIN(ciphering_key_sequence_number_any)
    BF(1, 0,ACT_CHECK, spare,SILENT)
    BF(3,M3(0,1,1),ACT_NOP,key_sequence,"any key - is not checked here")
IE_END(ciphering_key_sequence_number_any)

IE_BEGIN(ciphering_mode_setting)
    BF(3,M3(0,0,0),ACT_CHECK,algorithm_identifier,"A5/1 ")
    BF(1, 1,ACT_CHECK, start_ciphering,"Start ciphering")
IE_END(ciphering_mode_setting)

IE_BEGIN(cipher_response)
    BF(3,0,ACT_CHECK, spare,SILENT )
    BF(1,0,ACT_CHECK,cipher_response,"IMEISV shall not be included")
IE_END(cipher_response)

IE_BEGIN(description_of_the_first_channel_after_time)
    BF( 5,M5(0,0,0,0,1),ACT_CHECK, channel_type,"TCH ")
    BF( 3, 3,ACT_CHECK, ime_slot_number,"three ")

```

```

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

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

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

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

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

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

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

IE_BEGIN(l2_pseudo_length_11) /* pag req type 1 with TMSI (one mobile)*/
    BF(8, 0,ACT_CHECK,ANONYMOUS,SILENT)
IE_END(l2_pseudo_length_11)

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

IE_BEGIN(mobile_identity) /* has 8 octets, IMSI */
    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_5,SILENT)
    BF(4,          0,ACT_CHECK, digit_4,SILENT)
    BF(4,          7,ACT_CHECK, digit_7,SILENT)
    BF(4,          4,ACT_CHECK, digit_6,SILENT)
    BF(4,          1,ACT_CHECK, digit_9,SILENT)

```

```

        BF(4,          1,ACT_CHECK, digit_8,SILENT)
        BF(4,          9,ACT_CHECK, digit_11,SILENT)
        BF(4,          4,ACT_CHECK, digit_10,SILENT)
        BF(4,          2,ACT_CHECK, digit_13,SILENT)
        BF(4,          1,ACT_CHECK, digit_12,SILENT)
    IE_END(mobile_identity)

    IE_BEGIN(mobile_identity_imei)                                /* has 8 octets, IMEI */
        BF(8,          8,ACT_CHECK, length,"8 octets to come")
        BF(4,          1,ACT_CHECK, digit_1,SILENT)
        BF(1,          1,ACT_CHECK,odd_even,"odd")
        BF(3,  M3(0,1,0),ACT_CHECK, type,"IMEI")
        BF(4,          5,ACT_CHECK, digit_3,SILENT)
        BF(4,          3,ACT_CHECK, digit_2,SILENT)
        BF(4,          9,ACT_CHECK, digit_5,SILENT)
        BF(4,          7,ACT_CHECK, digit_4,SILENT)
        BF(4,          2,ACT_CHECK, digit_7,SILENT)
        BF(4,          0,ACT_CHECK, digit_6,SILENT)
        BF(4,          6,ACT_CHECK, digit_9,SILENT)
        BF(4,          4,ACT_CHECK, digit_8,SILENT)
        BF(4,          1,ACT_CHECK, digit_11,SILENT)
        BF(4,          8,ACT_CHECK, digit_10,SILENT)
        BF(4,          2,ACT_CHECK, digit_13,SILENT)
        BF(4,          1,ACT_CHECK, digit_12,SILENT)
        BF(4,          0,ACT_CHECK, digit_15,SILENT)
        BF(4,          2,ACT_CHECK, digit_14,SILENT)
    IE_END(mobile_identity_imei)

    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,"No '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 4")
        BF(1,          0,ACT_CHECK, spare2,SILENT)
        BF(1,          0,ACT_CHECK, ps_capability,"no pseudo-synch capability")
        BF(2,  M2(0,1),ACT_CHECK, ss_screening_indicator,"phase 2")
        BF(1,          1,ACT_CHECK, sm_capability,"point to point SMS")
        BF(1,          0,ACT_CHECK, vbs,"no VBS cap. or no notific. wanted")
        BF(1,          0,ACT_CHECK, vgcs,"no VGCS cap. or no notific. wanted")
        BF(1,          0,ACT_CHECK, frequency_capability,"no extention band G1")
        BF(1,          1,ACT_CHECK, classmark_3,"no add. MS cap. information")
        BF(1,          0,ACT_CHECK, spare3,SILENT)
        BF(1,          0,ACT_CHECK, lcsva, "LCS not supported")
        BF(1,          1,ACT_CHECK, ucs2, SILENT)
        BF(1,          0,ACT_CHECK, solsa, "The ME does not support SoLSA")
        BF(1,          1,ACT_CHECK, cmstp, "CM Service Prompt")
        BF(1,          0,ACT_CHECK, a5_3,"A5/3 not available")
        BF(1,          1,ACT_CHECK, a5_2,"A5/2 available")
    IE_END(ms_classmark)

```

```

IE_BEGIN(p1_rest_octets)
/* pag. req. type1 : 22 - 11 (L2 pseud. len) = 11 bytes */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 0 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 1 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 2 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 3 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 4 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 5 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 6 */
BF(8,REST_OCTET,ACT_CHECK,ANONYMOUS,SILENT) /* 7 */
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(page_mode)
BF(2,0,ACT_CHECK,spare,"two spare bits ")
BF(2,0,ACT_CHECK,pm,"Normal Paging")
IE_END(page_mode)

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

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

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

IE_BEGIN(rach_ecc)
BF(3,M3(1,0,1),ACT_CHECK,establishment_cause,"ECC")
BF(5,M5(1,1,1,1,1),ACT_NOP,random_reference,"ignore Random Ref.")
IE_END(rach_ecc)

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

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

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

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

IE_BEGIN(timing_advance)

```

```
        BF(2,0,ACT_CHECK, spare,SILENT)
        BF(6,0,ACT_CHECK,timing_advance,"0" )
    IE_END(timing_advance)

    IE_BEGIN(transaction_identifier_source)
        BF(4,M4(0,0,0,0),ACT_NOP,ANONYMOUS,SILENT)
    IE_END(transaction_identifier_source)

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

    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(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(emergency_setup_message_type)
        BF(1, 0,ACT_CHECK,ANONYMOUS,SILENT)
        BF(1, 0,ACT_SHOW, ANONYMOUS,SILENT)
        BF(6, 0x0E,ACT_CHECK,ANONYMOUS,SILENT)
    IE_END(emergency_setup_message_type)

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

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

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

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

```
/*-----*\
| Messages
\*-----*/
MSG3_BEGIN(paging_request_type_1)
    IE(l2_pseudo_length_11)
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(paging_request_type_1_message_type)
    IE(channels_needed_for_mobiles_1_and_2)
    IE(page_mode)
    IE(mobile_identity)
    IE(p1_rest_octets)
MSG3_END(paging_request_type_1)

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

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

MSG3_BEGIN(channel_request_ecc)
    IE(rach_ecc)
MSG3_END(channel_request_ecc)

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_facch)
    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(description_of_the_first_channel_after_time)
    IE(request_reference)
    IE(timing_advance)
    IE(mobile_allocation)
    IE(ia_rest_octets)
MSG3_END(immediate_assignment_facch)

/*
 * as in MSP001 MTCs+power on/off are repeated in a loop, the CKSN cannot
 * be checked as it is coming from the SIM for the first MTC and then it is
 * assigned by the network; these 2 values differ!
 */
MSG3_BEGIN(paging_response_any_CKSN)
```

```
    IE(skip_indicator)
    IE(rr_management_protocol_discriminator)
    IE(paging_response_message_type)
    IE(spare_half_octet)
    IE(ciphering_key_sequence_number_any)
    IE(ms_classmark)
    IE(mobile_identity)
MSG3_END(paging_response_any_CKSN)

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

MSG3_BEGIN(authentication_response)
    IE(skip_indicator)
    IE(mobility_management_protocol_discriminator)
    IE(authentication_response_message_type)
    IE(authentication_parameter_sres)
MSG3_END(authentication_response)

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

MSG3_BEGIN(cm_service_request_ec)
    IE(skip_indicator)
    IE(mobility_management_protocol_discriminator)
    IE(cm_service_request_message_type)
    IE(ciphering_key_sequence_number_no_key)
    IE(cm_service_type_ec)
    IE(ms_classmark)
    IE(mobile_identity_imei)
MSG3_END(cm_service_request_ec)

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

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

MSG3_BEGIN(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_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)
    IE(iei_15)
    IE(cc_capabilities)
MSG3_END(setup_moc)

MSG3_BEGIN(emergency_setup)
    IE(transaction_identifier_source)
    IE(call_control_protocol_discriminator)
    IE(emergency_setup_message_type)
    IE(iei_04)
    IE(bearer_capability)
MSG3_END(emergency_setup)

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)
/*
 * for some unknown reason (network problems?) there was a design
 * decision in 1997 to not send the cc_capabilities IE in CALL CONF
 */
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(connect)
    IE(transaction_identifier_dest)
    IE(call_control_protocol_discriminator)
    IE(connect_message_type)
MSG3_END(connect)

MSG3_BEGIN(alerting)
    IE(transaction_identifier_dest)
    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_complete)
    IE (skip_indicator)
    IE (rr_management_protocol_discriminator)
    IE (assignment_complete_message_type)
    IE (rr_cause)
MSG3_END (assignment_complete)

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

## 4 TEST CASES

### 4.1 Call Setup

#### 4.1.1 MSP001: Call Setup Procedure for Mobile Terminated Calls (10.1)

**Description:** This test describes the generic mobile terminated call setup procedure.

**Preamble:** None

**Script:**

```
REPEAT (COUNT, 3)
ISS_INIT (1)

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 , -10 )
BS_ON_OFF ( 0 , TRUE )

ISS_DELAY (1000); /* Give simulation environment some time to start PS. */

COMMAND ("SIM CONFIG PIN_DISABLE=1") /* Disable PIN Check */

AT_SEND ("AT+CFUN=1\r\n", "switch on");
AT_RECEIVE ("OK", SILENT );
AT_SEND ("AT+COPS=0\r\n", "automatic registration");
AT_RECEIVE ("OK", 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)

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_any_CKSN,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,SILENT)
BS_MSG3_AWAIT(0,call_confirmed,SILENT)

BS_MSG3_AWAIT(0,alerting,SILENT)
AT_SEND ("ATA\r\n", "hook off");

BS_MSG3_AWAIT (0,connect,SILENT)
BS_MSG3_SEND (0,assignment_command,SILENT)
```

```
BS_CONFIG_CHANNEL (0, FACCH, 1, SAPI_0)
BS_MSG3_AWAIT(0,assignment_complete,SILENT)
BS_MSG3_SEND (0,connect_acknowledge,SILENT)
```

```
ISS_DELAY (10000)
```

```
AT_SEND ("AT+CFUN=0\r\n", "switch off");
```

```
ISS_DELAY (10000)
```

```
REPEAT_END(COUNT)
```

History:	17.11.97	VK	Initial
	11.12.97	VK	move to original MLA001.TDS
	27.04.98	VK	introduce REPEAT(COUNT,4)
	14.10.02	SBK	don't check CKSN anymore (by pur-
pose)			

## 4.1.2 MSP002: Call Setup Procedure for Mobile Originated Calls (10.2)

**Description:** This test describes the generic mobile originated call setup procedure.

**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 , -10 );
BS_ON_OFF ( 0 , TRUE );

COMMAND ("SIM CONFIG PIN_DISABLE=1"); /* Disable PIN Check */
AT_SEND ("AT+CFUN=1\r\n", "switch on");
AT_RECEIVE ("OK", SILENT );
AT_SEND ("AT+COPS=0\r\n", "automatic registration");
AT_RECEIVE ("OK", SILENT );

ISS_DELAY (20000);

AT_SEND ("ATD03039094117;\r\n", "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,SILENT);

BS_CONFIG_CHANNEL (0, SDCCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,cm_service_request,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_AWAIT(0,setup_moc,SILENT);
BS_MSG3_SEND (0,call_proceeding,SILENT);

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

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

BS_CONFIG_CHANNEL (0, FACCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,assignment_complete,SILENT);

BS_MSG3_SEND (0,connect,SILENT);
BS_MSG3_AWAIT(0,connect_acknowledge,SILENT);

ISS_DELAY (20000);

AT_SEND ("AT+CFUN=0\r\n", "switch off");
```

History:	16.12.97	LE	Initial
----------	----------	----	---------

## 4.2 Structured Procedures

### 4.2.1 MSP020: MOC, Early Assignment (26.9.2)

**Description:** This test describes a mobile originated call with early assignment.

**Preamble:** None

**Script:**

```
ISS_INIT (1)

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 , -10 )
BS_ON_OFF ( 0 , TRUE )

AT_SEND ("AT+CFUN=1\r\n", "switch on");
AT_RECEIVE ("OK", SILENT );
AT_SEND ("AT+COPS=0\r\n", "automatic registration");
AT_RECEIVE ("OK", SILENT );

ISS_DELAY (20000)

AT_SEND ("ATD03039094117;\r\n", "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_facch,SILENT);

BS_CONFIG_CHANNEL (0, FACCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,cm_service_request,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_AWAIT(0,setup_moc,SILENT);
BS_MSG3_SEND (0,call_proceeding,SILENT);

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

BS_MSG3_SEND (0,alerting,SILENT);

BS_MSG3_SEND (0,connect,SILENT);
BS_MSG3_AWAIT(0,connect_acknowledge,SILENT);

ISS_DELAY (20000);

AT_SEND ("AT+CFUN=0\r\n", "switch off");
```

History: 18.06.99 LE Initial

## 4.2.2 MSP030: MOC, No SIM Card, Emergency Call (26.9.6.2)

**Description:** No SIM card is inserted. An emergency call is started.

**Preamble:** None

**Script:**

```
ISS_INIT (1)

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 , -10 )
BS_ON_OFF ( 0 , TRUE )

COMMAND ("SIM CONFIG MODE=1") /* No SIM Card */
SET_TIMEOUT (20000)
AT_SEND ("AT+CFUN=1\r\n", "switch on");
AT_RECEIVE ("ERROR", "expect ERROR due to no SIM");
AT_SEND ("AT+COPS=0\r\n", "automatic registration");

ISS_DELAY (20000)

AT_SEND ("ATD112;\r\n", "dial emergency number");

BS_RACH_AWAIT(0,channel_request_ecc,"CHANNEL REQUEST");
BS_CONFIG_CHANNEL (0, AGCH, UNACK, SAPI_0);
BS_STORE_RACH_PARAMS (0, 0);
BS_MSG3_SEND (0,immediate_assignment_facch,SILENT);

BS_CONFIG_CHANNEL (0, FACCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,cm_service_request_ec,"CM SERVICE REQUEST");
BS_MSG3_SEND (0,authentication_request,SILENT);
BS_MSG3_AWAIT(0,authentication_response,"AUTHENTICATION RESPONSE");
BS_MSG3_SEND (0,ciphering_mode_command,SILENT);
BS_MSG3_AWAIT(0,ciphering_mode_complete,"CIPHERING MODE COMPLETE");
BS_MSG3_AWAIT(0,emergency_setup,"EMERGENCY SETUP");
BS_MSG3_SEND (0,call_proceeding,SILENT);

BS_MSG3_SEND (0,assignment_command,SILENT);
BS_MSG3_AWAIT(0,assignment_complete,"ASSIGNMENT COMPLETE");

BS_MSG3_SEND (0,alerting,SILENT);

BS_MSG3_SEND (0,connect,SILENT);
BS_MSG3_AWAIT(0,connect_acknowledge,"CONNECT ACK");

ISS_DELAY (20000);

AT_SEND ("AT+CFUN=0\r\n", "switch off");
```

History: 18.06.99 LE Initial



### 4.2.3 MSP040: MOC, Early Assignment (FTA 26.9.2)

**Description:** The structured procedure 26.9.2 is processed.

**Preamble:** None

**Script:**

```
ISS_INIT (1)

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 , -10 )
BS_ON_OFF ( 0 , TRUE )

AT_SEND ("AT+CFUN=1\r\n", "switch on");
AT_RECEIVE ("OK", SILENT );
AT_SEND ("AT+COPS=0\r\n", "automatic registration");
AT_RECEIVE ("OK", SILENT );

ISS_DELAY (20000)

AT_SEND ("ATD03039094117;\r\n", "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_facch,SILENT);

BS_CONFIG_CHANNEL (0, FACCH, 1, SAPI_0);
BS_MSG3_AWAIT(0,cm_service_request,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_AWAIT(0,setup_moc,SILENT);
BS_MSG3_SEND (0,call_proceeding,SILENT);

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

BS_MSG3_SEND (0,alerting,SILENT);

ISS_DELAY (20000);

BS_MSG3_SEND (0,connect,SILENT);
BS_MSG3_AWAIT(0,connect_acknowledge,SILENT);

ISS_DELAY (20000);

AT_SEND ("AT+CFUN=0\r\n", "switch off");
```

History: 18.06.99 LE Initial



## Appendices

### A. Acronyms

<b>DS-WCDMA</b>	Direct Sequence/Spread Wideband Code Division Multiple Access
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### B. Glossary

<b>International Mobile Telecommunication 2000 (IMT-2000/ITU-2000)</b>	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: <a href="http://www.imt-2000.org/">http://www.imt-2000.org/</a> >
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