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European Standard (Telecommunications series)

**Digital Enhanced Cordless Telecommunications (DECT);
Cordless Terminal Mobility (CTM);
Feature Package 2 (FP2);
Short Message Service (SMS) Profile
Point to Point (PP)**



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ETSI

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16
Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Internet

secretariat@etsi.fr
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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

| Proposed national transposition dates | |
|--|---------------------------------|
| Date of latest announcement of this EN (doa): | 3 months after ETSI publication |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | 6 months after doa |
| Date of withdrawal of any conflicting National Standard (dow): | 6 months after doa |

Introduction

The present document is part of the CTM standards series covering the CTM services beyond phase 2. These services are specified by means of feature packages. The present document concerns CTM Feature Package 2 (FP.2), which covers the CTM Short Message Service (SMS), Point to Point (PTP).

The present document mainly specifies requirements concerning the DECT protocol layers used across the air interface, with the objective to ensure interoperability between DECT PPs and FPs supporting this service.

1 Scope

The present document specifies the set of technical requirements for Digital Enhanced Cordless Telecommunications (DECT) Fixed Part (FP) and DECT Portable Part (PP) necessary for the support the CTM Short Message Service (SMS), Point to Point (PTP). The service description for the CTM SMS service is provided in DEN/NA-020067. CTM-SMS-PTP includes the following two services:

- SMS Mobile Originated (CTM-SMS-MO), for transport of short messages from PT to FT;
- SMS Mobile Terminated (CTM-SMS-MT), for transport of short messages from FT to PT.

The Short Message Service, Cell Broadcast is not part of the CTM SMS service and hence outside the scope of the present document.

In order to facilitate re-use of existing GSM Service Centers, the present document applies the upper GSM protocols up-to and including the GSM SMS-RP protocol. Therefore, interworking functions handling the encapsulation of GSM SMS-RP messages are specified.

The network behind the FP is outside the scope of the present document. This implies that FP-procedures concerning the interworking towards CTM network access interface protocols, as defined for the alpha reference point, are outside the scope of the present document. Any information provided concerning the network behind the FP is provided for informative, descriptive reasons only.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".
- [2] EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".
- [3] EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".
- [4] EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".
- [5] EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".
- [6] EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".
- [7] EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".
- [8] EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".

- [9] ETS 300 755: "Digital Enhanced Cordless Telecommunications (DECT); Data Service Profile (DSP); Multimedia Messaging Service (MMS) with specific provision for facsimile services; (Service type F, class 2)".
- [10] ETS 300 757 (1996): "Digital European Cordless Telecommunications (DECT); Data Service Profile (DSP); Low rate messaging service (service type E, class 2)".
- [11] EN 300 824: "Digital Enhanced Cordless Telecommunications (DECT); Cordless Terminal Mobility (CTM); CTM Access Profile (CAP)".
- [12] ETS 300 764: "Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); Implementation of short message service, point-to-point and cell broadcast".
- [13] EN 300 444: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP)".
- [14] ISO/IEC 9646-7 (1995): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [15] EN 301 144: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7); Signalling application for the mobility management service on the alpha interface".
- [16] ETS 300 559: "European digital cellular telecommunications system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface (GSM 04.11)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in GAP [13] and the following apply.

SMS-SC: SMS Short Message Center. It is the logical entity able to store and forward short messages

3.2 Symbols

The symbols defined in this clause are applied for procedures, features, services in the present document if not explicitly otherwise stated. The interpretation of status columns in all tables is as follows:

| | |
|-----|---|
| M | for mandatory to support (provision mandatory, process mandatory); |
| O | for optional to support (provision optional, process mandatory); |
| I | for out-of-scope (provision optional, process optional) not subject for testing; |
| C | for conditional to support (process mandatory); |
| N/A | for not-applicable (in the given context the specification makes it impossible to use this capability). |

Provision mandatory, process mandatory means that the indicated feature, service or procedure shall be implemented as described in the present document, and may be subject to testing.

Provision optional, process mandatory means that the indicated feature, service or procedure may be implemented, and if implemented, the feature, service or procedure shall be implemented as described in the present document, and may be subject to testing.

NOTE: The used notation is based on the notation proposed in ISO/IEC 9646-7 [14].

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|------------|--|
| ADPCM | Adaptive Pulse Code Modulation |
| CAP | CTM Access Profile |
| C-Plane | Control data Plane |
| CTM | Cordless Terminal Mobility |
| CTM-SMS-PP | CTM SMS Point to Point |
| DAM | DECT Authentication Module |
| DECT CC | DECT Call Control |
| FP | Fixed Part |
| FT | Fixed Termination |
| GAP | Generic Access Profile |
| IE | Information Element |
| IWU | Interworking Unit |
| LRMS | Low Rate Messaging Service |
| LRMS-PTP | Low Rate Messaging Service, Point to Point |
| MMSP | Multimedia Messaging Service Protocol |
| NWK | DECT Network Layer |
| PAP | Public Access Profile |
| PHL | Physical Layer |
| PP | Portable Part |
| PT | Portable Termination |
| PTP | Point-To-Point |
| RPDU | Relay Protocol Data Unit |
| SC | Service Center |
| SIM | Subscriber Identity Module |
| SM | Short Message |
| SM-CP | SMS Control Layer Protocol |
| SM-RP | SMS Relay Layer Protocol |
| SM-TP | SMS Transfer Layer Protocol |
| SMS | Short Message Service |
| SMS-MO | SMS Mobile Originated |
| SMS-MT | SMS Mobile Terminated |
| TPDU | Transfer Protocol Data Unit |
| U-Plane | User data Plane |

4 Feature and service definitions

4.1 Application features

Incoming message storage [A.1]: ability to store incoming SMS message(s).

Message interworking [A.2]: ability to interwork SMS-RP message and primitives.

4.2 MMS features

Outgoing message transfer (M.1): ability to transfer a SMS message, across the air interface in the direction from FP to PP.

Incoming message transfer (M.2): ability to transfer a SMS message, across the air interface in the direction from PP to FP.

4.3 NWK features

Incoming messaging call (N.1): incoming call for an SMS operation.

Outgoing messaging call (N.2): outgoing call for an SMS operation.

4.4 DLC services

LAPC class B service and Lc [D.1]: multiple frame acknowledged C-plane data link service providing a single data link between one FT and one PT. The higher layer information is segmented (if necessary) and transmitted in numbered frames. The Lc provides frame delimiting, transparency and frame synchronization.

5 General requirements

5.1 General

CTM feature packages are defined to extend/enhance the CTM phase 2 service. The requirements on the DECT protocols used for the support of CTM phase 2 are covered by the CTM Access Profile (CAP) [13]. The present document specifies additions and/or modification to the requirements specified in the CTM Access Profile (CAP) [13].

NOTE 1: Although the CTM SMS service resembles the GSM SMS service, the requirements differ from those specified in the GSM SMS Interworking Profile (IWP); contrary to the GSM SMS IWP the present document does not require support for procedures like GSM - authentication and ciphering nor does it require the PP to support GSM identity storage procedures.

The present document completely specifies the minimum requirements regarding the DECT air interface protocols for the PP and FP.

NOTE 2: The minimum requirements for the present document are aligned as much as possible with those of DECT Data profile E, class 2 [10], with conditions "LRMS PTP supported" and "GAP call control supported".

It is important to note that the present document does not require the support of a U-plane service for the transfer of SMS messages.

The present document applies the protocols (procedures, messages) defined in the DECT common interface specification EN 300 175, Parts 1 to 8 [1] to [8], the DECT Generic Access Profile (GAP) [13], the CTM Access Profile (CAP) [11], the DECT Data profile E, class 2 [10] and the GSM SMS Interworking Profile [12].

5.2 Reference configurations

Reference configurations describe functional groupings by using reference points. The reference configuration represented in figure 1 is based on the reference configuration shown in the alpha interface specification (see EN 301 144 [15]), which applies for the public CTM access network.

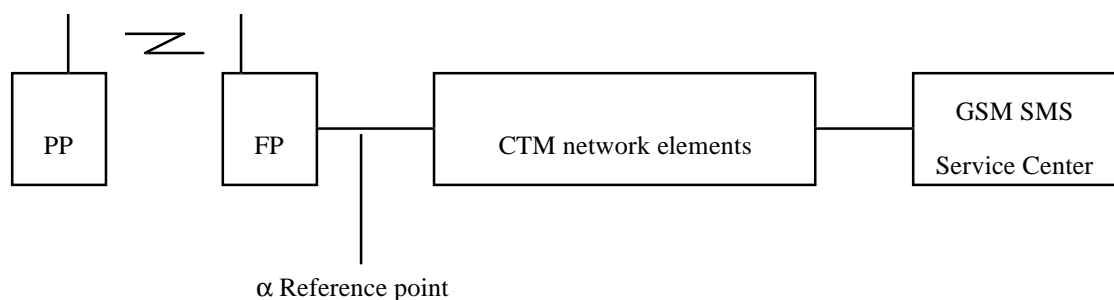


Figure 1: Reference configuration

For public CTM networks, the FP shall interface the network via alpha reference point. However, the network interworking requirements for SMS are outside the scope of the present document.

NOTE 1: The above implies that the present document may equally well be used in other network configurations e.g. for business CTM network for which FP's network interface need not conform to a standard.

NOTE 2: In general, reference points may or may not correspond to physical interfaces. The figure includes functional groupings and reference points not related to the air interface for descriptive reasons only.

5.3 Protocol architecture

Figure 2 provides an overview of the protocol architecture. The figure shows that the following protocol layers are within scope of the present document:

- the DECT protocol layers (PHL up to NWK) as specified in EN 300 175 [1] to [8];
- the DECT Multimedia Messaging Service Protocol (MMSP) layer.

The MMSP, which is specified in the DECT Data profile F, class 2 [9], is described as a "virtual" protocol layer, since no real protocol behaviour is defined. MMSP only specifies a series of messages which are actually transferred via a set of dedicated NWK-CC IEs. In the present document MMSP is handled as a normal protocol layer in order to align with [9] and to clarify the message contents.

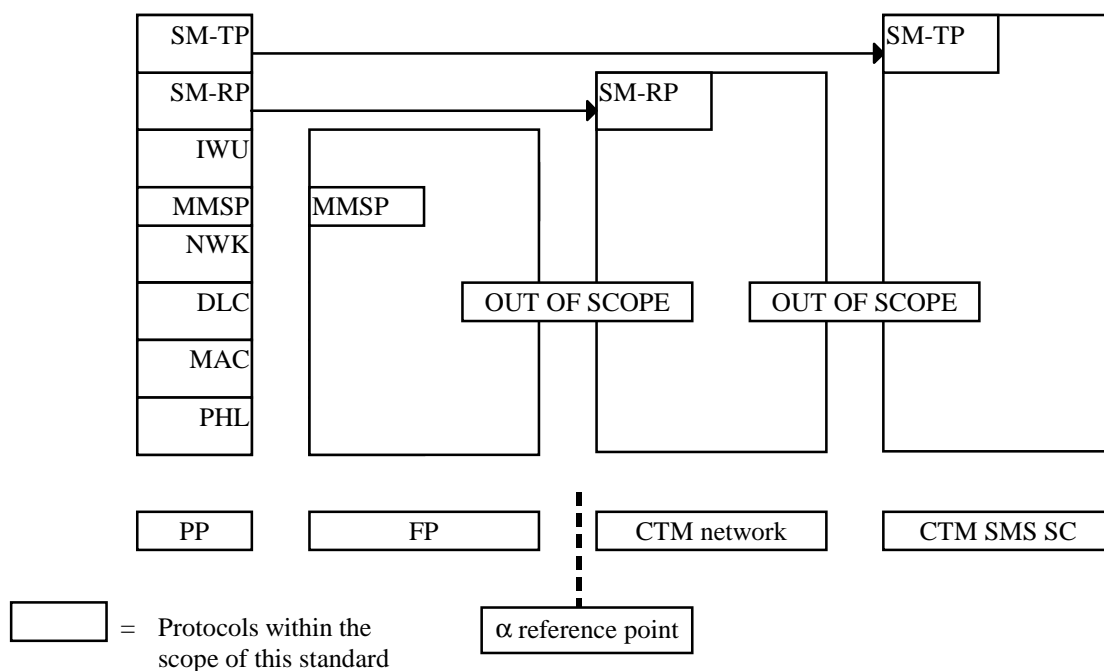


Figure 2: Protocol stack for CTM SMS

NOTE: The figure above shows that the SM-RP protocol may be located within the CTM network. However, this is just one of the possible locations.

Although in principle the SM-TP and SM-RP protocols are outside the scope of the present document, the assumption is that these protocols are used as defined in the GSM standards. This assumption has implications for the present document; the MMS shall support the transfer of GSM SMS RP messages.

6 Interoperability requirements

6.1 Application features

Table 1: Application features status

| Feature supported | | | | | |
|-------------------|--------------------------|------|----|--------|-----|
| Item no. | Name of feature | Ref. | PT | Status | |
| | | | | R/B | P |
| A.1 | Incoming message storage | 6.7 | M | N/A | N/A |
| A.2 | Message interworking | 6.7 | M | M | M |

6.2 MMS features

MMS shall support a max. SDU size of 254 octets.

NOTE: The above length can be supported by using the existing <<IWU to IWU>>. MMS should support the transfer of encapsulated GSM RP messages. Since GSM 4.11 is ambiguous about the maximum length (values of 255, 248 and 251 are stated), it does not seem justified to extend the definition of <<IWU to IWU>>.

Table 2: MMS features status

| Feature supported | | | | | |
|-------------------|---------------------------|------|----|--------|---|
| Item no. | Name of feature | Ref. | PT | Status | |
| | | | | R/B | P |
| M.1 | Outgoing message transfer | 6.8 | M | M | M |
| M.2 | Incoming message transfer | 6.8 | M | M | M |

6.3 NWK features

In order to simultaneously support incoming and outgoing SMS message transfer and speech, NWK shall simultaneously support at least two CC- instances for messaging calls and one CC instance for speech.

Table 3: NWK features status

| Feature supported | | | | | |
|-------------------|-------------------------|------|----|--------|---|
| Item no. | Name of feature | Ref. | PT | Status | |
| | | | | R/B | P |
| N.1 | Outgoing messaging call | 6.9 | M | M | M |
| N.2 | Incoming messaging call | 6.9 | M | M | M |

6.4 DLC services

Table 4: DLC services status

| Feature supported | | | | | |
|-------------------|-----------------------------|------|--------|-----|---|
| Item no. | Name of feature | Ref. | Status | | |
| | | | PT | FT | |
| | | | | R/B | P |
| D.1 | LAPC class B service and Lc | 6.10 | O | O | O |

6.5 MAC services

None.

NOTE: Only support of the Cs channel is required.

6.6 PHL services

None.

6.7 Application feature to procedure mapping

Table 5: MMS feature to procedure mapping

| Feature | Procedure | GAP Ref. | FP-2 Ref. | PT | FT | |
|------------------------------|-----------------------------------|----------|-----------|----|-----|-----|
| | | | | | R/B | P |
| A.1 Incoming message storage | | | | M | N/A | N/A |
| | Incoming message storage | | 7.1 | M | N/A | N/A |
| A.2 Message interworking | | | | M | M | M |
| | Message encapsulation | | 7.2 | M | M | M |
| | General interworking requirements | | 7.3 | M | M | M |
| | Message/primitive interworking | | 7.4 | M | M | M |

6.8 MMS feature to procedure mapping

Table 6: MMS feature to procedure mapping

| Feature | Procedure | GAP Ref. | FP-2 Ref. | PT | FT | |
|-------------------------------|------------------------|----------|-----------|----|-----|---|
| | | | | | R/B | P |
| M.1 Outgoing message transfer | | | | M | M | M |
| | Message send procedure | | 8.1 | M | M | M |
| M.2 Incoming message transfer | | | | M | M | M |
| | Message send procedure | | 8.1 | M | M | M |

6.9 NWK feature to procedure mapping

Table 7: NWK feature to procedure mapping

| Feature | Procedure | GAP Ref. | FP-2 Ref. | PT | FT | |
|-----------------------------|------------------------------------|----------|-----------|----|-----|---|
| | | | | | R/B | P |
| N.1 Outgoing messaging call | | | | M | M | M |
| | Outgoing messaging call request | | 9.2 | M | M | M |
| | Outgoing call connection | | 9.3 | M | M | M |
| | Sending messaging information | | 9.7 | | | |
| | Normal call release | 8.7 | | M | M | M |
| | Abnormal call release | 8.8 | | M | M | M |
| | Partial release | 8.9 | | O | O | O |
| N.2 Incoming messaging call | | | | M | M | M |
| | Incoming messaging call request | | 9.5 | M | M | M |
| | Incoming messaging call connection | | 9.6 | M | M | M |
| | Sending messaging information | | 9.7 | M | M | M |
| | Normal call release | 8.7 | | M | M | M |
| | Abnormal call release | 8.8 | | M | M | M |
| | Partial release | 8.0 | | O | O | O |
| | Terminal capability indication | | 9.8 | M | M | M |

NOTE: The present document does not include requirements concerning the support of external handover. Handover procedures are considered inappropriate since they require transfer of MMSP-state information and message information from FP-1 to FP-2 via the backbone network, which is regarded as too complicated. It is considered that retransmission of the SMS message by the SMS message centre provides a better solution.

6.10 DLC feature to procedure mapping

Table 8: DLC feature to procedure mapping

| Feature | Procedure | GAP Ref. | FP-2 Ref. | PT | FT | |
|----------------------------|---|----------|-----------|----|-----|---|
| | | | | | R/B | P |
| D.1 Class B service and Lc | | | | O | O | O |
| | Class B link establishment | | 10.1 | M | M | M |
| | Class B acknowledged information transfer | | 10.2 | M | M | M |
| | Class B link release | | 10.3 | M | M | M |
| | Class B link re- establishment | | 10.4 | M | M | M |

7 Application procedures

7.1 Incoming message storage

The PP shall be able to storage at least one incoming SMS message.

NOTE: The PP is not mandated to support a SIM or DAM card.

7.2 Message encapsulation

The PP- & FP IWU shall encapsulate complete SM-RP messages, without additions or modifications, within one or more <<IWU-TO-IWU>> IE, i.e. SM-RP octet 1 shall be the 1st octet of the <IWU-TO-IWU INFORMATION> within the first <<IWU-TO-IWU>> IE and so on.

NOTE: The GSM SMS-RP messages are carried transparently across the DECT air interface; there is no need to convert the information contained within these messages e.g. from GSM to the DECT character set.

7.3 General interworking requirements

7.3.1 Mapping of SMS message transfers onto CC- transactions

Both the FP and the PP shall support the simultaneous transfer of an incoming and an outgoing message, even when a speech call is ongoing in parallel.

In case SMS message transfer is performed while a speech call is going on involving the same PP, the SMS message transfer shall apply an separate/independent CC instance, with a different transaction identifier.

Likewise, if both incoming and outgoing SMS messages are transferred simultaneously, the incoming SMS messages shall be handled by a different CC-transaction than the outgoing SMS messages.

7.3.2 Authentication and ciphering

Before sending an SMS message over air interface, the ciphering procedure shall be completed successfully. If ciphering keys have not yet been allocated, the authentication procedure shall be performed first. The ciphering and authentication procedures shall be performed as defined in GAP [13] (thus DECT standard ciphering & authentication; not GSM).

7.4 Message/primitive interworking

Since they do not affect interworking, there is no need to constrain the implementation of the IWF and/MMS functionality by defining requirements concerning the handling of local primitives. However, an informative annex is provided to illustrate possible interactions between the SMS-RP, IWU, MMS and NWK layers (see annex B).

Although in normal cases the PP application initiates release of the SMS messaging related connection(s), the FP application is also allowed to initiate release. The PP and/or the FP application should at least initiate release of the connection in the following error cases:

- ciphering failure;
- an error in the backbone network to which the FP is connected.

The IWU should include an appropriate release reason, the value of which may depend on interworking rules specified in other standards.

8 MMS procedures

NOTE Since the MMSP procedures are completely symmetrical, they are not specified per direction as done for other layers.

8.1 Messaging send procedure

The procedure shall be performed as defined in ETS 300 755 [9], subclause A.1.3.2. This subclause specifies the minimum requirements with regard to the present document.

Figure 3 provides an overview of the possible sequences MMS-messages for the messaging send procedure. The same sequence applies in both directions.

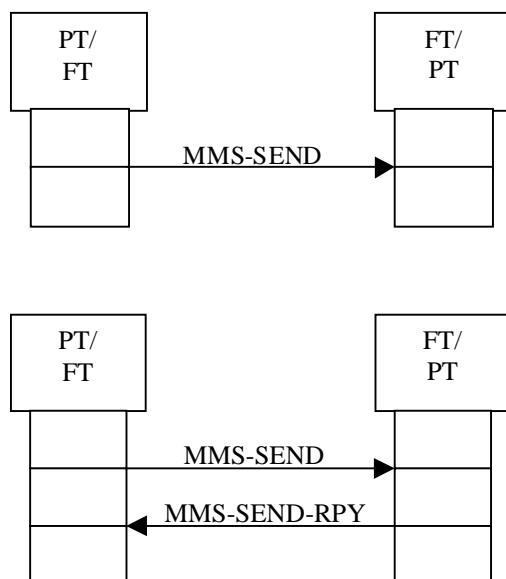


Figure 3: Messaging send scenario's

The information elements listed in the following message specifications are all mapped onto the equivalent network layer information elements.

Table 9: Values used within the {MMS-SEND} message

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------|---|-------------------------------------|--|
| <<MMS-Generic-Hdr>> | | | |
| | <MMS command type> | 00000B | MMS-SEND |
| | <Reply requested> | 00B 01B | No reply requested Reply requested from MCE (note 1) |
| | <MMS message identifier- I/R> | 0 | Initiator |
| | <MMS message identifier - Rply seq> | 00 | Value always used for initial request |
| | <MMS message identifier - Action ID part 1> | All | In case more than one SMS messages is transferred simultaneously concerning one PP, the action ID is used to distinguish them. Always the lowest possible available number shall be used |
| | <Service type> | 0010011 | GSM SMS |
| <<MMS-Obj-Hdr>> | <Reserv> | 00B | Reserved |
| | <Length description> | 00B | User data length specified |
| | <Number of length octets> | 000B | 1 octet |
| | <User data length, octet 1> | 1-254 | |
| | <Source user data category > | 11B | Other user data |
| | <Source user data transfer encoding> | 00000B | No transfer encoding |
| | <Source user data type> | 010010B | Encapsulated: GSM SMS |
| <<IWU- to IWU>> | <length> | 4-55 | Reflects the length of the present information element |
| | <S/R> | 1B | Transmission of message |
| | <Protocol discriminator> | 010100B | MMS user data (E data profile) |
| | < IWU to IWU information>> | All | User data; the actual text message |

NOTE 1: In the present document only reply requested by MCE, in this case the peer MMS- entity, is considered to be useful. Acknowledgements by the EE can be done at higher layers e.g. using SMS-RP messages. However, since the MMS-reply does not facilitate the inclusion of user data, it is undesirable to map these EE acknowledgments onto the MMS-reply.

NOTE 2: In order to comply with data profile F.2 table A.3.7, <MMS message identifier>, <Service type> and <User data length> are included even though they are not essential considering that some information is carried within the upper layer GSM-SMS protocols, while other information could be handled by defining profile specific default values.

Table 10: Values used within the {MMS-SEND-RPY} message

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------|---|-------------------------------------|--|
| <<MMS-Generic-Hdr>> | | | |
| | <MMS command type> | 00001B | MMS-SEND-RPY; reply to MMS-SEND |
| | <Reply requested> | 00B | No reply requested |
| | <MMS message identifier - I/R> | 1 | Replying entity |
| | <MMS message identifier - Rply seq> | 11 | There is always only one reply to a request (New SMS messages are send with a different action ID) |
| | <MMS message identifier - Action ID part 1> | All | Same value as used in the MMS-SEND |
| | <Service type> | 0010011 | GSM-SMS |
| | <Command outcome> | All | |

NOTE 3: In order to comply with data profile table A.3.9, <MMS message identifier> and <Command outcome> are included even though they are not essential considering that this information is also carried within the upper layer GSM-SMS protocols.

NOTE 4: In case a side wishes to transfer more than one message it need not apply a different CC-instance for every message. However, the transfer of a new message should not be started before the completion of the transfer of the previous message. In case of acknowledged transfer, this implies that the new message should not be transferred prior to the reception of a MMS-SEND-RPY for the current message.

9 NWK layer procedure descriptions

9.1 Summary of outgoing call messages, normal case

Figure 4 shows the sequence(s) of outgoing messaging call related messages that shall be supported.

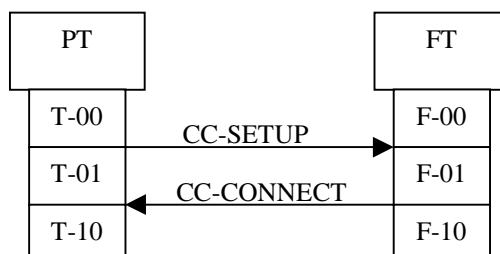


Figure 4: Outgoing messaging call scenario

9.2 Outgoing messaging call request

The procedure shall be performed as defined in subclause 9.3.1.1 of EN 300 175-5 [5]. The minimum requirements with regard to the present document are as defined in subclause 8.2 of EN 300 444 [13], with the additions/modifications as specified in this subclause.

The PP shall only initiate the outgoing messaging call request procedure towards an FP that has indicated support of an E.2 based low rate messaging service by means of extended higher layer capability broadcast bit a43.

Table 11: Values used within the {CC-SETUP} message

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------------|--------------------------------------|-------------------------------------|--------------------------|
| <<Basic service>> | | | |
| | <Call class> | 4 | Message call setup |
| | <Basic service> | 15 | Other |
| <<IWU attributes>> | <Coding standard> | 1 | Profile defined |
| | <Profile> | 3 | E data profile |
| | <Negotiation indicator> | 0 | Negotiation not possible |
| | <Profile subtype> | 0 | CTM FP2 |
| <<Connection attributes>> | <Symmetry> | 1 | Symmetric connection |
| | <Connection identity> | 0 | Unknown/not applicable |
| | <Target bearers> | 0 | None |

In case the FP receives a request for a not supported messaging service, indicated by a <Profile subtype> value other than CTM FP-2, it shall reject the messaging call request using the procedure defined in EN 300 444 [13], subclause 8.2.2.3 with the additions/modifications as specified in the following.

Table 12: Values used within the {CC-RELEASE-COM} message

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------|--------------------------------------|-------------------------------------|--------------------------|
| <<Release reason>> | | | |
| | <Reason reason code> | 6 | Service not implemented |

9.3 Outgoing messaging call connect

The procedure shall be performed as defined in subclause 9.3.1.8 of EN 300 175-5 [5]. The minimum requirements with regard to the present document are as defined in subclause 8.16 of EN 300 444 [13], with the additions/modifications as specified in this subclause.

U-plane connection is not applicable, because messaging calls do not require a U-plane service.

9.4 Summary of incoming call messages, normal case

Figure 5 shows the sequence(s) of incoming messaging call related messages that shall be supported.

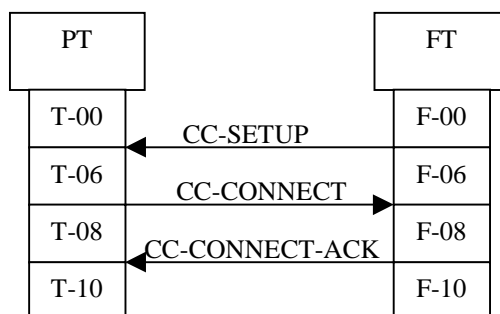


Figure 5 Incoming messaging call scenario

9.5 Incoming messaging call request

The procedure shall be performed as defined in subclause 9.3.2.1 of EN 300 175-5 [5]. The minimum requirements with regard to the present document are as defined in subclause 8.12 of EN 300 444 [13], with the additions/modifications as specified in this subclause.

The FP shall only initiate the outgoing messaging call request procedure towards a PP that has indicated support of an E.2 based low rate messaging service by means of the terminal capability indication procedure.

Table 13: Values used within the {CC-SETUP} message

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------------|--------------------------------------|-------------------------------------|--------------------------|
| <<Basic service>> | | | |
| | <Call class> | 4 | Message call setup |
| | <Basic service> | 15 | Other |
| <<IWU attributes>> | <Coding standard> | 1 | Profile defined |
| | <Profile> | 3 | E data profile |
| | <Negotiation indicator> | 0 | Negotiation not possible |
| | <Profile subtype> | 0 | CTM FP2 |
| <<Connection attributes>> | <Symmetry> | 1 | Symmetric connection |
| | <Connection identity> | 0 | Unknown/not applicable |
| | <Target bearers> | 0 | None |

In case the PP receives a request for a not supported messaging service, indicated by a <Profile subtype> value other than CTM FP-2, it shall reject the messaging call request using the procedure defined in EN 300 444 [13], subclause 8.12.2.2 with the additions/modifications as specified in the following.

Table 14: Values used within the {CC-RELEASE-COM} message

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------|--------------------------------------|-------------------------------------|--------------------------|
| <<Release reason>> | | | |
| | <Reason reason code> | 6 | Service not implemented |

9.6 Incoming messaging call connect

The procedure shall be performed as defined in subclause 9.3.2.8 of EN 300 175-5 [5]. The minimum requirements with regard to the present document are as defined in subclause 8.12 of EN 300 444 [13], with the additions/modifications as specified in this subclause.

The call connection procedure shall be supported in state T-06/F-06. Moreover, since messaging calls do not apply a U-plane, U-plane connection shall not be performed.

NOTE This differs from GAP, which requires support of call connection in T-07/F-07 only.

9.7 Message transfer

The procedure shall be performed as defined in subclause 9.4 of EN 300 175-5 [5]. The minimum requirements with regard to the present document are as specified in this subclause.

If required, the sending CC shall apply segmentation using the <<segmented info>> as specified in ETS 300 757 [10]. The receiving CC shall reassemble the segmented frames.

NOTE Segmentation is required for messages exceeding 50 characters (63 – 2 [message header] - 3[iwu to iwu] - 3[mms-gen-hdr]- 5[mms-obj-hdr]). Each segmented message can contain upto 54 octets, except for the first segment which can only contain upto 46 octets.

Figure 6 shows the sequence of message transfer call related messages.

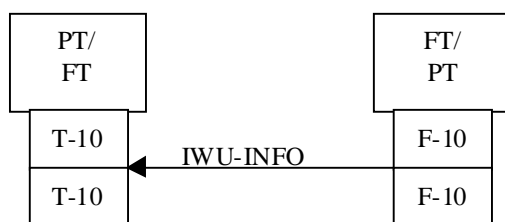


Figure 6: Message transfer scenario

Table 15: Values used within the {IWU-INFO} message, send

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------|--------------------------------------|-------------------------------------|--|
| <<MMS-Generic-Hdr>> | | | As defined for MMS-SEND in subclause 8.1 |
| <<MMS-Obj-Hdr>> | | | As defined for MMS-SEND in subclause 8.1 |
| <<IWU - to IWU>> | | | As defined for MMS-SEND in subclause 8.1 |
| <<Segmented info>> | <F> | 0/1 | Subsequent/First segment |
| | <Number of segments remaining> | 0-127 | Bit 8 is used for the F-bit |
| | <Segmented element type> | 1110111B | <<IWU to IWU>> |

NOTE: The assumption is that the F- bit within <<segmented info>>, which seems to have disappeared in the 3rd edition, possibly due to a general check on the use of octet extension is re- allocated to bit 8. This leaves way for a 7 bit <Number of segments remaining>, which is required to support the desired message lengths.

Table 16: Values used within the {IWU-INFO} message, reply

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|---------------------|--------------------------------------|-------------------------------------|--|
| <<MMS-Generic-Hdr>> | | | As defined for MMS-SEND-RPY in subclause 8.1 |

NOTE: Please note that the reply message does not contain user data. As illustrated in the annex, the SMS RP-ACK message is transferred within a separate send message in the reverse direction.

9.8 Terminal capability indication

The procedure shall be performed as defined in subclauses 13.4.1 and 13.5.1 of EN 300 175-5 [5]. The minimum requirements with regard to the present document are as defined in subclause 8.17 of EN 300 444 [13], with the additions/modifications as specified in this subclause.

Table 17: Values used within the <<TERMINAL CAPABILITY>> information element

| Information element | Field within the information element | Standard values within the field/IE | Normative action/comment |
|-------------------------|--------------------------------------|-------------------------------------|--|
| <<Terminal capability>> | | | |
| | <Profile indicator > | xx1xx11 | Indicates that an E.2 profile based low rate messaging service is supported. Further details about the supported service are exchanged during messaging call setup |

10 DLC layer procedures

10.1 Class B link establishment

The procedure shall be performed as defined in subclause 9.2.3.1 of EN 300 175-4 [4]. The following text together with the associated subclauses define the mandatory requirements with regard to the present document.

10.2 Class B acknowledged information transfer

The procedure shall be performed as defined in subclauses 9.2.3.2, 9.2.3.3, 9.2.3.4, 9.2.3.5, 9.2.3.6 of EN 300 175-4 [4]. The following text together with the associated subclauses define the mandatory requirements with regard to the present document.

10.3 Class B link release

The procedure shall be performed as defined in subclauses 9.2.3.7, 9.2.7.1.2, 10.2.2, 10.4.1 of EN 300 175-4 [4], subclause 8.1.6 of EN 300 175-3 [3] and subclause 17.9 of EN 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to the present document.

10.4 Class B link re- establishment

The procedure shall be performed as defined in subclause 9.2.3.8 of EN 300 175-4 [4] and subclause 17.8 of EN 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to the present document.

11 MAC layer procedures

Not applicable.

12 PHL layer requirements

Not applicable.

13 Management procedures

13.1 Broadcast attribute management

The PP and FP shall support the extended higher layer broadcast attributes as defined in the following:

Table 18: Broadcast attributes interpretation by the IUT PP

| BIT Number | Attribute | Value | Note |
|-------------------|------------------------|--------------|---|
| a43 | E Data profile support | 1B | Indicates that a E.2 profile based low rate messaging service is supported. Further details about the supported service are exchanged during messaging call setup |

Annex A (normative): Profile specific default codings of <<CONNECTION-ATTRIBUTES>> information elements

The following table specifies the default call attribute and connection attribute values that apply for a call for which the CC-SETUP containing:

- value 4 (message call setup) within the <Message call setup> inside a <<Basic service>>;
- value 3 (E data profile) within the <Profile> inside a <<IWU attributes>>;
- value 0 (CTM FP-2) within the <Profile subtype> inside a <<IWU attributes>>.

Table A.1: Default coding for <<CALL-ATTRIBUTES>> information element

| Octet | Information element field | Field Value |
|-------|---------------------------|--------------------|
| 3 | Coding standard | DECT standard |
| | Network layer attributes | Message call setup |
| 4 | C-plane class | Class A; shared |
| | C-plane transfer rate | CS only |

Other octets e.g. octet 5 and 6 which define the U-plane default values, are not applicable.

Table A.2: Default coding for <<CONNECTION-ATTRIBUTES>> information element

| Octet | Information element field | Field Value |
|-------|---------------------------|------------------------|
| 3 | Symmetry | Symmetric connection |
| | Connection identity | Unknown/not applicable |
| 4 | Target bearers | No U-plane |

Other octets e.g. octet 5 and 6 which define the U-plane default values, are not applicable.

Annex B (informative): Typical message mapping sequences

B.1 Summary of SMS-RP requirements

Although requirements concerning SMS-RP are outside the scope of the present document, the present document assumes that all SMS-RP messages as defined in ETS 300 559 [16] need to be supported. This concerns the following messages:

- RP-DATA Transfer of message or notification;
- RP-ACK Acknowledgement of RP-DATA;
- RP-SMMA Indication that memory is again available for storing SMS messages;
- RP-ERROR Indication that an error has occurred.

The scenario's provided in the following only show a number of typical sequences; it is no intended to describe all possible RP-message sequences.

B.2 Message sequences

This annex extends the description of the interworking functions related to the encapsulation of GSM- SMS RP messages by showing typical examples of possible mappings of SMS-RP messages onto MMSP and NWK-CC messages.

The following figure provides an example of message sequences. Please note that certain messages may be triggered by local primitives. There are no requirements concerning the use of these primitives; they are local and hence they do not affect interoperability. Therefore, they are not described in the MSC's.

To be completed e.g. provide typical examples of SMS-RP sequences, possibly with less detail on MMSP & NWK level e.g. only show active phase.

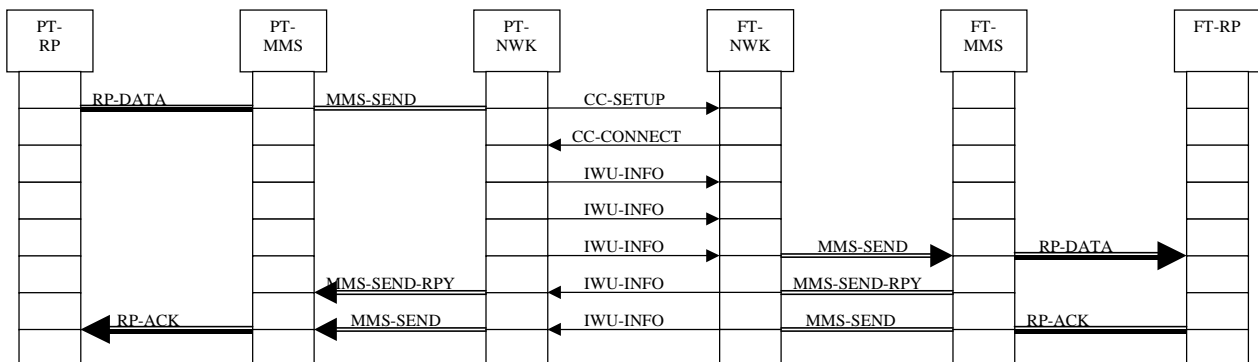


Figure B.1: Message mapping, PT- initiated message transfer

The above figure shows an example of a typical PT- initiated SMS sequence, in this case with acknowledgement at MMSP layer. Please note that besides MMSP, confirmation is provided by the SMS-RP layer. This implies that the added value of the MMSP layer confirmation is negligible.

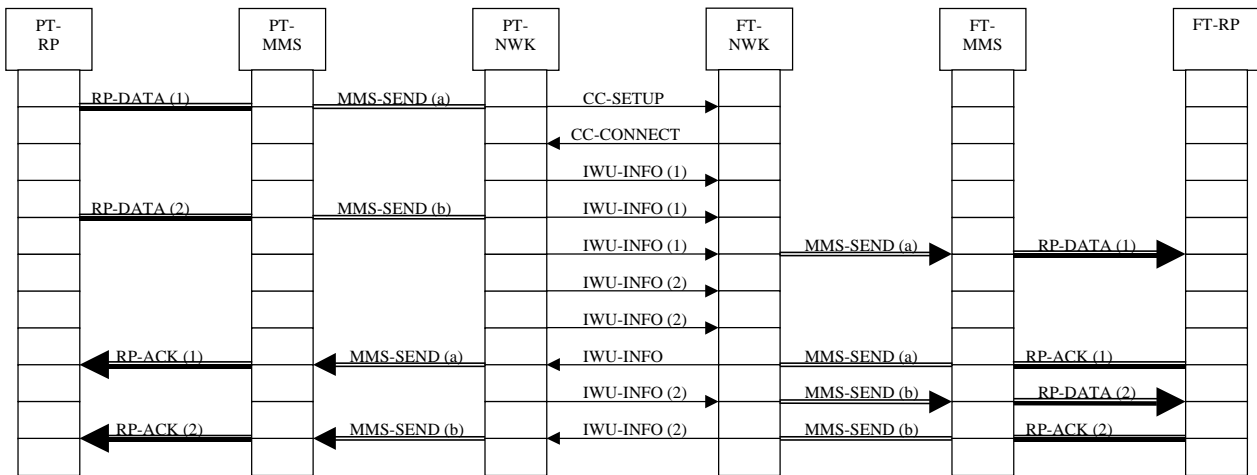


Figure B.2: Message mapping, two simultaneous PT- initiated message transfers

NOTE 1: In this case no reply at MMSP level is performed and that in the example (1) is linked to (a) and (2) to (b).

The above figure shows an example in which SMS-RP transfers a second message prior to receiving the acknowledgement of the first SMS-RP messages. The figure illustrates that segmentation at NWK-CC can only handle one SMS message, transferred within one <<IWU-TO-IWU>>, at a time.

NOTE 2: The PP is not required to store more than one message.

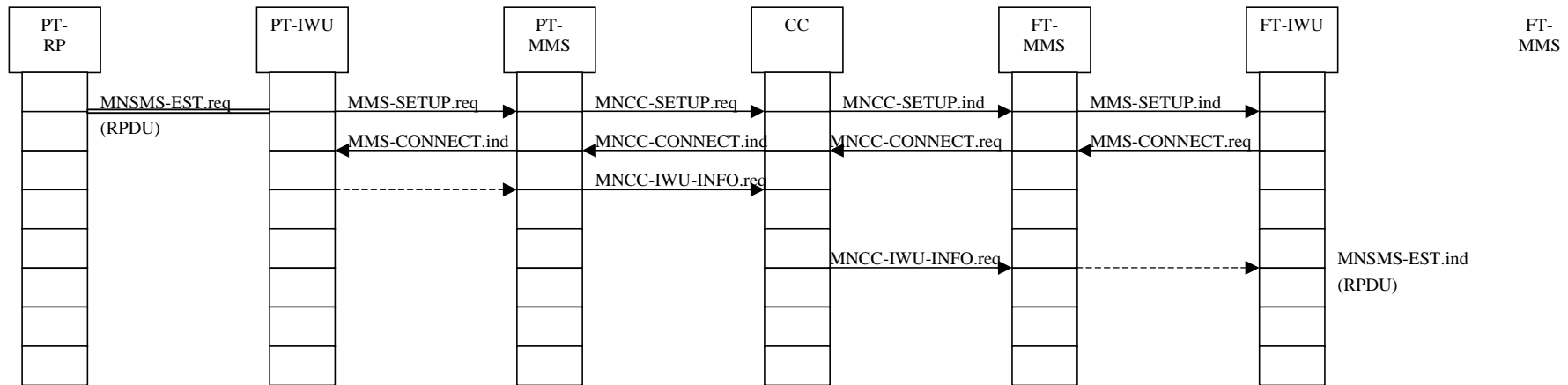


Figure B.3: Inter layer interaction, PT initiated messaging connection establishment example

NOTE 1: The FT initiated message transfer is similar to the PT-initiated case. The only difference is that there is an additional MNCC-CONNECT-ACK.req/ind primitive

NOTE 2: The above figure illustrates the need for a MMS-DATA.req/ind primitive, which has been (yet) been defined in the data standards.

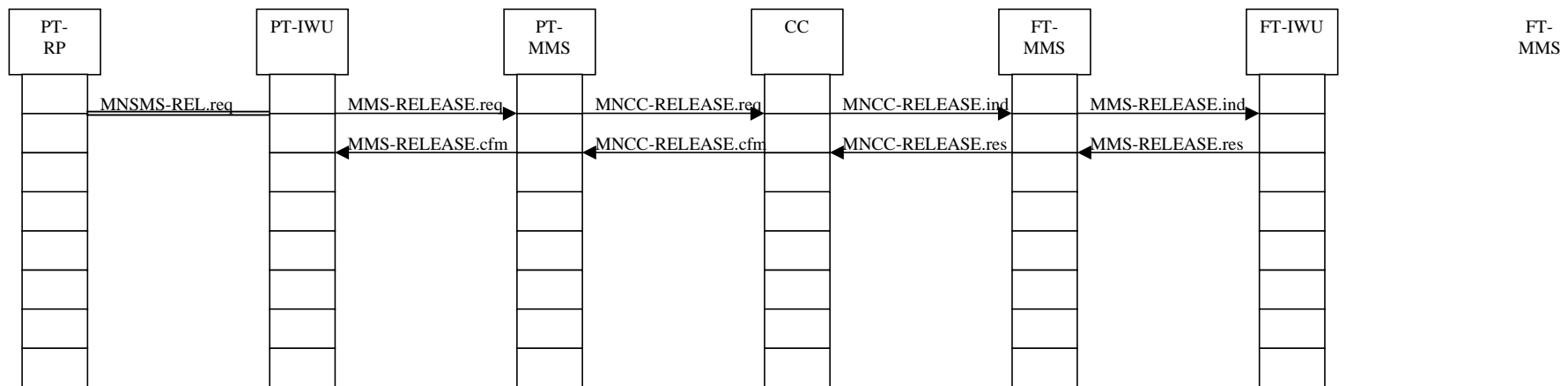


Figure B.4: Inter layer interaction, PT initiated messaging connection release example

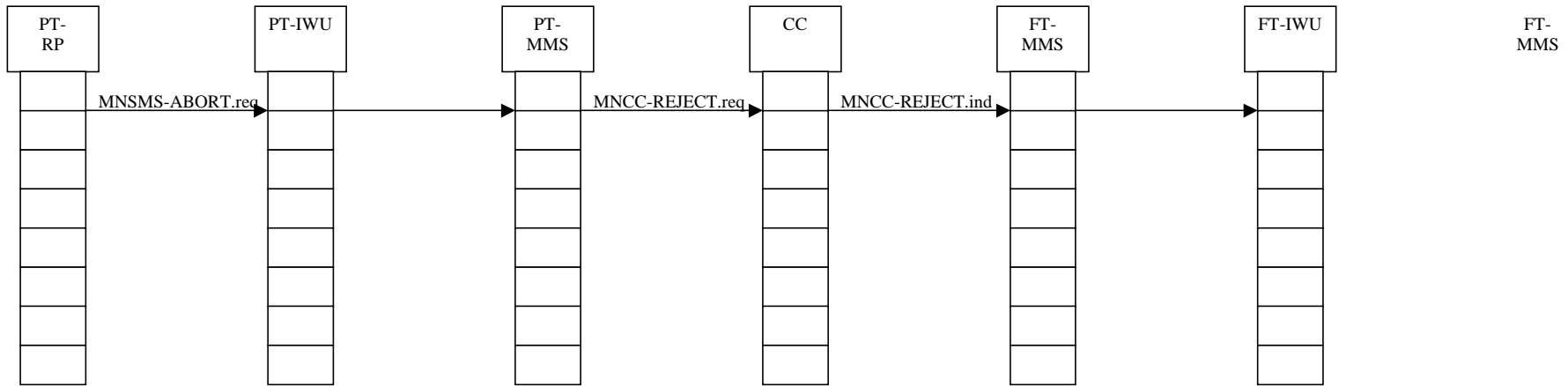


Figure B.5: Inter layer interaction, PT initiated messaging abortion

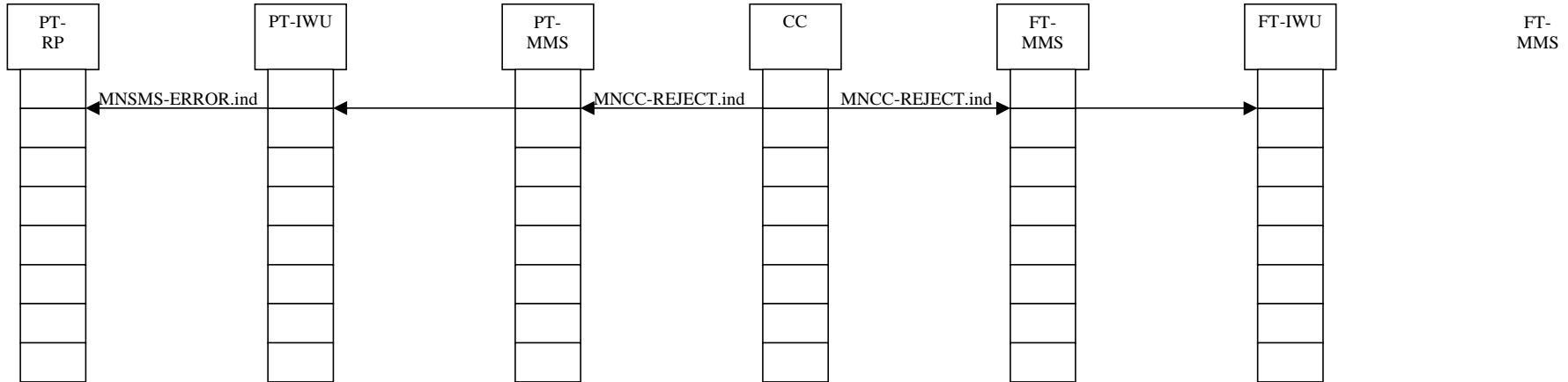


Figure B.6: Inter layer interaction, lower layer failure

Annex C (normative): Required changes to related standards

C.1 Changes to data profile E.2

C.1.1 IWU attributes

For IWU attributes, the E.2 profile specific coding variant is used. However in the E.2 profile no profile subtype codings have been specified.

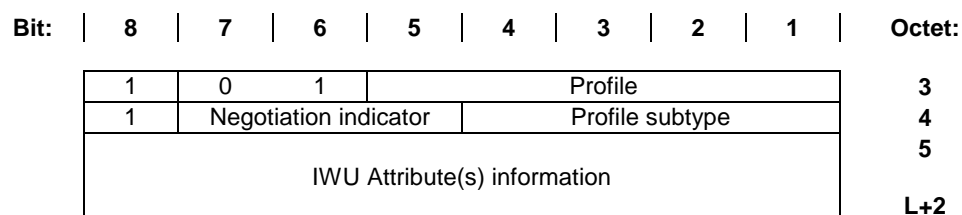


Figure C.1: IWU-ATTRIBUTES information element for Profile defined coding standard

Profile subtype (octet 4):

| Bits | 4 | 3 | 2 | 1 | Meaning |
|------|---|---|---|---|------------------|
| | 0 | 0 | 0 | 0 | CTM FP-2 profile |

All other values reserved.

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- EN 300 176: "Digital Enhanced Cordless Telecommunications (DECT); Approval test specification".
- TBR 6: "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements".
- TBR 10: "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements: Telephony applications".
- TBR 22: "Radio Equipment and Systems (RES); Attachment requirements for terminal equipment for Digital Enhanced Cordless Telecommunications (DECT) Generic Access Profile (GAP) applications".
- EN 301 273: "Cordless Terminal Mobility (CTM); Phase 2; Service description".
- ETS 300 536: "Digital cellular telecommunications system (Phase 2); Technical realization of Short Message Service (SMS) Point-to-Point (PP) (GSM 03.40)".
- DEN/NA-020067: "Cordless Terminal Mobility (CTM); Phase 2+ Feature Package 2; Point-to-point Short Message Service (SMS)".

History

| Document history | | |
|-------------------------|-----------|--|
| V1.0.5 | June 1999 | Public Enquiry PE 9945: 1999-06-09 to 1999-11-05 |
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