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# 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

## ETSI

European Telecommunications Standards Institute

**ETSI Secretariat**

**Postal address:** F-06921 Sophia Antipolis CEDEX - FRANCE
**Office address:** 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
**X.400:** c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 4 92 94 42 00 - Fax: +33 4 93 65 47 16

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## Foreword

This final draft European Telecommunication Standard (ETS) has been produced by the Digital Enhanced Cordless Telecommunications (DECT) Project and Global System for Mobile communications (GSM) joint working party of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Voting phase of the ETSI standards approval procedure.

| Proposed transposition dates | |
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## Introduction

This ETS is a part of a set of standards for the DECT/GSM Interworking Profile (IWP) concept that includes:

- general description of service requirements, functional capabilities and information flows, (ETS 300 466 [12]);

- access and mapping (protocol/procedure description for 3,1 kHz speech service), (ETS 300 370 [10]);

- GSM-Mobile Switching Centre (MSC)/DECT-FP fixed interconnection (ETS 300 499 [13]);

- GSM Phase 2 supplementary services implementation (ETS 300 703 [25]);

- implementation of short message services, point to point and cell broadcast (this ETS);

- implementation of facsimile group 3 (ETS 300 792 [28]);

- implementation of bearer services (ETS 300 756 [26]).

This ETS is based on Digital Enhanced Cordless Telecommunications (DECT) common interface specification ETS 300 175, parts 1 to 8 [1] to [8] to enable DECT terminals to interwork in the public and private environment with DECT systems which are connected to a Global System for Mobile communications (GSM) core infrastructure.

In addition, this ETS is based on the DECT Generic Access Profile (GAP), ETS 300 444 [11] to enable the same DECT/GSM terminal to interwork with a DECT Fixed Part (FP) complying to the GAP requirements, irrespective of whether this FP provides residential, business or public access services. General attachment requirements and speech attachment requirements are based on TBR 6 [36] and TBR 10 [35].

Further details on the DECT system may be found in ETSI Technical Reports (ETR), ETR 015 [29], ETR 043 [30], and ETR 056 [31], and in ETS 300 176 [9].

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# 1 Scope

This European Telecommunication Standard (ETS) is a part of the Digital Enhanced Cordless Telecommunications/Global System for Mobile communications (DECT/GSM) Interworking Profile (IWP) and specifies the Portable Part (PP) and Fixed Part (FP) interworking requirements/mappings necessary to ensure that the GSM short message services point-to-point and cell broadcast can be provided over DECT, as specified in ETS 300 466 [12]. To enable DECT terminals to interwork with DECT systems which are connected to the GSM infrastructure, from the DECT side this ETS is based on ETS 300 757 [27].

> NOTE: For information, the DECT Data service profile is based upon the GAP, ETS 300 444 [11] and on the DECT common interface specification, ETS 300 175, parts 1 to 8 [1] to [8].

Interworking functions/mappings are specified for Mobile Switching Centre (MSC) attachment for the DECT FP as the FP is using the A-interface towards the GSM MSC in the respect that the FP emulates a GSM Base Station Controller (BSC) with regards to the GSM messages which are relevant to this ETS. The complete interface used between the DECT FP and the GSM MSC is specified in ETS 300 499 [13]. Attachment via other interfaces to GSM networks is outside the scope of this ETS.

The DECT access protocols and FP and PP interworking/mappings necessary for the support of basic voice telephony service are specified in ETS 300 370 [10].

## 2 Normative references

This ETS incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1]                ETS 300 175-1: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2]                ETS 300 175-2: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer".

[3]                ETS 300 175-3: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4]                ETS 300 175-4: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5]                ETS 300 175-5: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6]                ETS 300 175-6: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7]                ETS 300 175-7: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[8]                ETS 300 175-8: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".

[9]                ETS 300 176: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Approval test specification".

[10]               ETS 300 370: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications/Global System for Mobile communications (DECT/GSM) inter-working profile; Access and mapping (Protocol/procedure description for 3,1 kHz speech service)".

[11]               ETS 300 444: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

[12]               ETS 300 466: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications/Global System for Mobile Communications (DECT/GSM) interworking profile; General description of service requirements; Functional capabilities and information flows".

[13]               ETS 300 499: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications/Global System for Mobile Communications (DECT/GSM) interworking profile; Mobile services Switching Centre (MSC) - Fixed Part (FP) interconnection".

[14]          ETS 300 522: "Digital cellular telecommunications system (Phase 2); Network architecture (GSM 03.02)".

[15]          ETS 300 536: "European digital cellular telecommunications system (Phase 2); Technical realization of the Short Message Service (SMS) Point-to-Point (PP) (GSM 03.40)".

[16]          ETS 300 537: "European digital cellular telecommunications system (Phase 2); Technical realization of Short Message Service Cell Broadcast (SMSCB) (GSM 03.41)".

[17]          ETS 300 551: "European digital cellular telecommunications system (Phase 2); GSM Public Land Mobile Network (PLMN) access reference configuration (GSM 04.02)".

[18]          ETS 300 557: "Digital cellular telecommunications system (Phase 2); Mobile radio interface layer 3 specification (GSM 04.08)".

[19]          ETS 300 559: "Digital cellular telecommunication system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface (GSM 04.11)".

[20]          ETS 300 560: "European digital cellular telecommunications system (Phase 2); Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface (GSM 04.12)".

[21]          ETS 300 585: "Digital cellular telecommunications system (Phase 2); Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS) (GSM 07.05)".

[22]          ETS 300 590: "Digital cellular telecommunications system (Phase 2); Mobile-services Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification (GSM 08.08)".

[23]          ETS 300 608: "European digital cellular telecommunications system (Phase 2); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11)".

[24]          ETS 300 628: "European digital cellular telecommunications system (Phase 2); Alphabets and language-specific information (GSM 03.38)".

[25]          ETS 300 703: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications/Global System for Mobile communications (DECT/GSM) Inter-Working Profile (IWP); GSM phase 2 supplementary services implementation".

[26]          ETS 300 756: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications/Global System for Mobile communications (DECT/GSM) interworking profile; Implementation of bearer services".

[27]          ETS 300 757: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Data services profile; Low rate messaging service; (Service type E, class 2)".

[28]          ETS 300 792: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications/Global System for Mobile communications (DECT/GSM); DECT/GSM interworking profile; Implementation of facsimile group 3".

[29]          ETR 015: "Radio Equipment and Systems; Digital European Cordless Telecommunications (DECT); Reference document".

[30]                     ETR 043: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Services and facilities requirements specification".

[31]                     ETR 056: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); System description document".

[32]                     ETR 100: "European digital cellular telecommunications system (Phase 2); Abbreviations and acronyms (GSM 01.04)".

[33]                     91/263/EEC: "Council Directive of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity" (Terminal Directive).

[34]                     ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".

[35]                     TBR 10: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements; Telephony applications".

[36]                     TBR 6: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements".

# 3 Definitions, abbreviations and symbols

## 3.1 DECT definitions

For the purposes of this ETS, the following definitions apply:

**attach:** The process whereby a PP within the coverage area of a FP to which it has access rights, notifies this FP that it is operative. The reverse process is detach, which reports the PP as inoperative.

> NOTE 1: An operative PP is assumed to be ready to receive calls.

**authentication:** The process whereby a DECT subscriber is positively verified to be a legitimate user of a particular FP.

> NOTE 2: Authentication is generally performed at call set-up, but may also be done at any other time (e.g. during a call).

**bearer service:** A type of telecommunication service that provides a defined capability for the transmission of signals between user-network interfaces.

> NOTE 3: The DECT user-network interface corresponds to the top of the network layer (layer 3).

**C-plane:** The control plane of the DECT protocol stacks, which contains all of the internal DECT protocol control, but may also include some external user information.

> NOTE 4: The C-plane stack always contains protocol entities up to and including the network layer.

**call:** All of the Network (NWK) layer processes involved in one network layer peer-to-peer association.

> NOTE 5: Call may sometimes be used to refer to processes of all layers, since lower layer processes are implicitly required.

**DECT Network (DNW):** A network that uses the DECT air interface to interconnect a local network to one or more portable applications. The logical boundaries of the DECT network are defined to be at the top of the DECT network layer.

> NOTE 6: A DNW is a logical grouping that contains one or more fixed radio termination plus their associated portable radio termination. The boundaries of the DECT network are not physical boundaries.

**Fixed Part (FP) (DECT FP):** A physical grouping that contains all of the elements in the DECT network between the local network and the DECT air interface.

> NOTE 7: A DECT FP contains the logical elements of at least one fixed radio termination, plus additional implementation specific elements.

**FP GSM PLMN Attachment (DECT FP Attached To A GSM MSC):** A definition of a functional environment where a DECT system (FP) is attached to an GSM MSC. The MSC in this case refers to a functional entity providing the required MM and Call Control (CC) functionality defined in this ETS in order to communicate with the FP.

**Fixed Radio Termination (FT):** A logical group of functions that contains all of the DECT processes and procedures on the fixed side of the DECT air interface.

> NOTE 8: A FT only includes elements that are defined in the DECT CI standard. This includes radio transmission elements together with a selection of layer 2 and layer 3 elements.

**Generic Access Profile (GAP):** A defined part of the DECT Common Interface standard (DECT CI) that ensures inter-operability between FPs and PPs for public business and residential access services.

**geographically unique identity:** This term relates to FP identities, Primary Access Rights Identities (PARIs) and Radio Fixed Part Identities (RFPIs). It indicates that two systems with the same PARI, or respectively two Radio Fixed Parts (RFPs) with the same RFPI, can not be reached or listened to at the same geographical position.

**Global Network (GNW):** A telecommunication network capable of offering a long distance telecommunication service.

> NOTE 9: The term does not include legal or regulatory aspects, nor does it indicate if the network is a public or a private network.

**globally unique identity:** The identity is unique within DECT (without geographical or other restrictions).

**handover:** The process of switching a call in progress from one physical channel to another physical channel. These processes can be internal (see internal handover) or external (see external handover).

> NOTE 10: There are two physical forms of handover, intra-cell handover and inter-cell handover. Intra-cell handover is always internal. Inter-cell handover can be internal or external.

**incoming call:** A call received at a PP.

**inter-cell handover:** The switching of a call in progress from one cell to another cell.

**internal handover:** Handover processes that are completely internal to one Fixed radio Termination (FT). Internal handover re-connects the call at the lower layers, while maintaining the call at the NWK layer.

> NOTE 11: The lower layer reconnection can either be at the Data Link Control (DLC) layer (connection handover) or at the MAC layer (bearer handover).

**inter-operability:** The capability of FPs and PPs, that enable a PP to obtain access to teleservices in more than one location area and/or from more than one operator (more than one service provider).

**inter-operator roaming:** Roaming between FP coverage areas of different operators (different service providers).

**Interworking Unit (IWU):** A unit that is used to interconnect sub-networks.

> NOTE 12: The IWU will contain the interworking functions necessary to support the required sub-network interworking.

**intra-cell handover:** The switching of a call in progress from one physical channel of one cell to another physical channel of the same cell.

**intra-operator roaming:** Roaming between different FP coverage areas of the same operator (same service provider).

**Local Network (LNW):** A telecommunication network capable of offering local telecommunication services.

> NOTE 13: The term does not include legal or regulatory aspects, nor does it indicate if the network is a public network or a private network.

**locally unique identity:** The identity is unique within one FP or location area, depending on application.

**location area:** The domain in which a PP may receive (and/or make) calls as a result of a single location registration.

**location registration:** The process whereby the position of a DECT portable termination is determined to the level of one location area, and this position is updated in one or more databases.

> NOTE 14: These databases are not included within the DECT FT.

**Medium Access Control (MAC) connection:** An association between one source MAC Multi-Bearer Control (MBC) entity and one destination MAC MBC entity. This provides a set of related MAC services (a set of logical channels), and it can involve one or more underlying MAC bearers.

**Multimedia Messaging Service (MMS):** The MMS is a generic set of commands, information elements providing a functionality for file/messaging service. MMS can be regarded as a DECT internal teleservice that can be interworked to the similar services in external networks.

**Multimedia Messaging Service Protocol (MMSP):** A protocol that is used for the provision of MMS services and functionality. It is a stateless protocol which defines a set of messages, framing rules and information elements each containing optional and mandatory information fields.

**outgoing call:** A call originating from a PP.

**Portable Application (PA):** A logical grouping that contains all the elements that lie beyond the DECT network boundary on the portable side.

> NOTE 15: The functions contained in the portable application may be physically distributed, but any such distribution is invisible to the DECT network.

**Portable Part (PP) (DECT PP):** A physical grouping that contains all elements between the user and the DECT air interface. PP is a generic term that may describe one or several physical pieces.

> NOTE 16: A DECT PP is logically divided into one portable termination plus one or more portable applications.

**Portable Radio Termination (PT):** A logical group of functions that contains all of the DECT processes and procedures on the portable side of the DECT air interface.

> NOTE 17: A PT only includes elements that are defined in the DECT Common Interface (CI) standard. This includes radio transmission elements (layer 1) together with a selection of layer 2 and layer 3 elements.

**Radio Fixed Part (RFP):** One physical sub-group of a FP that contains all the radio end points (one or more) that are connected to a single system of antennas.

**registration:** An ambiguous term, that should always be qualified. See either location registration or subscription registration.

**roaming:** The movement of a PP from one FP coverage area to another FP coverage area, where the capabilities of the FPs enable the PP to make or receive calls in both areas.

> NOTE 18: Roaming requires the relevant FPs and PP to be inter-operable.

**service type E:** A DECT short message transfer or paging service which may be unacknowledged or acknowledged, optimized for small Service Data Units (SDUs), low PP complexity and ultra-low power consumption.

**subscription registration:** The infrequent process whereby a subscriber obtains access rights to one or more FPs.

> NOTE 19: Subscription registration is usually required before a user can make or receive calls.

## 3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

| | |
|---|---|
| ADPCM | Adaptive Differential Pulse Code Modulation |
| ARI | Access Rights Identity |
| BCD | Binary Coded Decimal |
| BSC | GSM Base Station Controller |
| CBC | Cell Broadcast Centre |
| CBI | Collective Broadcast Identifier |
| CBS | Cell Broadcast Service |
| CC | Call Control |
| CI | Common Interface |
| CLMS | Connectionless Message Service |
| DECT | Digital Enhanced Cordless Telecommunications |
| DLC | Data Link Control, Layer 2b of the DECT protocol stack |
| DTE | Data Terminal Equipment |
| FP | Fixed Part |
| FT | Fixed radio Termination |
| GAP | Generic Access Profile |
| ISDN | Integrated Services Digital Network |
| ISUP | Integrated Services Digital Network User Part |
| IWU | Interworking Unit, (see definitions) |
| K | authentication Key |
| LRMS PTP | Low Rate Messaging Service Point-to-Point |
| MAC | Medium Access Control, Layer 2a of the DECT protocol stack |
| MAP | GSM Mobile Application Part |
| MCE | Message Control Entity |
| MM | Mobility Management, a NWK layer functional grouping |
| MMS | Multimedia Messaging Service |
| MMSP | Multimedia Messaging Service Protocol |
| MS | Mobile Station |
| MSC | Mobile Switching Centre |
| NWK | Network, Layer 3 of the DECT protocol stack |
| PA | Portable Application |
| PARI | Primary Access Rights Identity |
| PARK | Portable Access Rights Key |
| PE | Portable Equipment |
| PLMN | Public Land Mobile Network |
| PP | Portable Part |
| PSTN | Public Switched Telephone Network |
| PT | Portable radio Termination |
| RFP | Radio Fixed Part, (see definitions) |
| RFPI | Radio Fixed Part Identity |
| RPDU | SM-RP layer Protocol Data Unit |
| RS | A value used to establish authentication session keys |
| SDU | Service Data Unit |
| SIM | Subscriber Identity Module |
| SS | Supplementary Services |
| SMS | Short Message Service |
| SMSCB | SMS Cell Broadcast |
| SM-CP | SMS Control Layer Protocol |
| SM-RP | SMS Relay Layer Protocol |
| SM-TP | SMS Transfer Layer Protocol |
| SM MO | SMS point-to-point Mobile Originated |
| SM MT | SMS point-to-point Mobile Terminated |
| TMSI | Temporary Mobile Subscriber Identity |
| TPUI | Temporary Portable User Identity |
| TUP | Telephony User Part |
| UPI | User Personal Identification |

### 3.3 GSM abbreviations and definitions

Definition and specific GSM abbreviations may be found in ETR 100 [32].

### 3.4 Symbols for status columns

The symbols defined in this subclause are applied for procedures, features, messages, information elements, fields and field codings in this ETS if not explicitly otherwise stated. The interpretation of status columns in all tables is as follows:

- M for mandatory to map/support/use;

- O for optional to map/support/use;

- I for out-of-scope (not subject for testing);

- X for prohibited or excluded to map/support/use (the message, information element may be allowed to be used in the standard/standards but it is not allowed to be mapped/used depending on the environment/dynamic conditions, etc.);

- N/A or - (dash) for not applicable to map/support/use;

- C for conditional to map/support/use (the message, information element mapping depends on the selection of other optional or/and conditional items).

    NOTE:    The symbol "-" in the mapping section of this ETS means that there is no message, information element or coding specified in this column.

# 4 General

This ETS specifies how the GSM point to point Short Message Services (SMSs) (GSM teleservices 21 and 22) and cell broadcast service (GSM teleservice 23) are provided over the DECT air interface.

One of the main objectives is to describe how the SMSs are mapped over the DECT air interface in a formal way, so that inter-operability of different manufacturer's equipment can be achieved. This is done by describing the interworking unit procedures and mappings loosely following CCITT Recommendations Q.601 to Q.699 and by describing an air interface profile following ISO 9646-6 [34]. ISO 9646-6 [34] enables the subsequent generation of tests cases, if required.

This ETS is made up of 3 main clauses:

Clause 5: Interworking requirements - includes reference configurations and the protocol architecture models. Also describes the main service requirements. The context of the interworking profile is also required.

Clauses 6: Interworking Unit (IWU) mappings for SMSs shows the C plane mappings for the FP GSM Public Land Mobile Network (PLMN) attachment. Two IWUs are considered; the FP IWU and the PP IWU, although the FP IWU is expected to be the largest. The signalling mappings are described in terms of IWU procedures with informative data flow diagrams. Detailed descriptions follow using tables of what is mapped, what is ignored, and what is transferred transparently. These clauses also include other profile specific information.

Clause 7: Connection types - this clause identifies the main DECT connection types (C plane) at the air interface supporting optimized groups of services, from the IWU mappings for different configurations/models.

# 5 Interworking requirements

## 5.1 General

This ETS defines the mandatory requirements for the FP in terms of interworking functions between the air interface and the external network as well as minimum requirements at the DECT air interface. It also defines the mandatory requirements for the PP in terms of interworking functions between the air interface and the PA as well as the minimum requirements for the PP at the DECT air interface.

If not stated otherwise the ETS 300 370 [10] requirements are the basis for this ETS.

The interworking mappings shall be based on the Phase 2 GSM Standards.

The basis for interworking shall be the protocols defined in ETS 300 557 [18], in ETS 300 590 [22] in ETS 300 536 [15], in ETS 300 537 [16], ETS 300 559 [19], ETS 300 560 [20] and in ETS 300 628 [24].

The minimum requirement defined in ETS 300 757 [27] shall be fulfilled in the PT and FT.

> NOTE: This means that the support of Low Rate Messaging Service, Point-To-Point (LRMS PTP) service is required.

The procedures which are used depend on which Access Rights Identifier (ARI) type is chosen by the PP; either according to the minimum requirements of ETS 300 757 [27] or the procedures as described in this ETS, i.e. the PPs, which are based on this ETS shall always be capable of interworking with FP which fulfil the minimum requirements of LRMS PTP service. The FPs, which fulfil the requirements of this ETS, and which support also non-GSM ARIs (classes A, B or C) shall also support the minimum requirements of the Data service profile E, class 2.

This ETS defines interworking environments for the FP and the PP in the case when DECT FPs are functionally attached to the GSM MSC i.e. broadcast attribute a39 "SIM services available" set to '1'B in all environments (public, business and residential). The PP shall be in alignment with the requirements as defined in this ETS.

### 5.2 Reference configurations

Reference configurations describe the functional groupings of DECT and GSM and their relationships via reference points. In general, reference points may or may not correspond to a physical interface. The functional groupings and reference points for GSM access are described in ETS 300 551 [17]. The GSM network entities and physical interfaces are described in ETS 300 522 [14]. The functional (logical) groupings and reference points for DECT are described below.

### 5.2.1 FP functional attachment to the GSM PLMN

Reference point "a" in figure 1 is the interface which supports the functional structure of the GSM A-interface at the network layer reflecting the associated ISDN User Part (ISUP)/Telephony User Part (TUP) and GSM Mobile Application Part (MAP) functions.
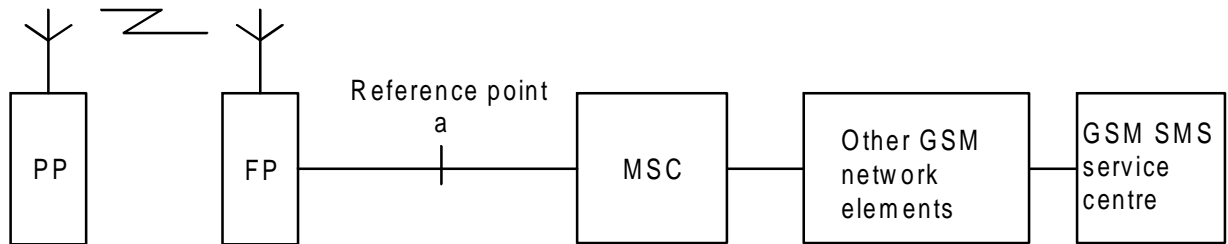


**Figure 1: Attachment to the GSM PLMN in the case of point to point SMS**

Reference point "b" in figure 2 is the interface which supports the functional structure of the respective interface defined in subclause 9.1 of ETS 300 537 [16] as a message transfer link 2 to support the SMSs cell broadcast protocols at this reference point. The management function as described in ETS 300 537 [16] clause 6 is outside of the FP interworking function. However, this specification does not limit the implementation of the GSM BSC cell broadcast related application features and functions which are outside the FP IWU and between the GSM Cell Broadcast Centre (CBC) and DECT FP IWU. This specification defines only the DECT air interface functions for the provision of the Cell Broadcast Service (CBS) information over the DECT air interface.
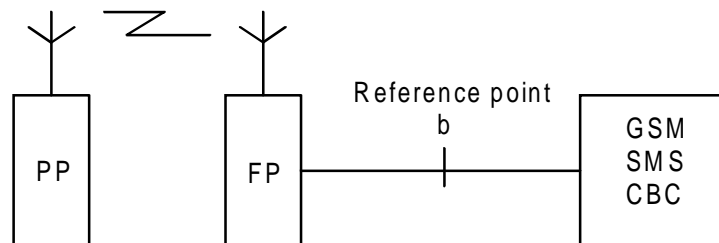


**Figure 2: Attachment to the GSM PLMN in the case of Cell broadcast SMS**

In this ETS, GSM or DECT procedures are considered only where mapping is required, i.e.:

- GSM CM sublayer is covered in this ETS as far as short message point-to-point services are concerned;

- the sublayers required by SMS Cell Broadcast (SMSCB) are concerned;

- mapping aspects for ciphering, paging and handover are covered in ETS 300 370 [10]. Further details of these procedures are described in ETS 300 499 [13]. ETS 300 499 also provides descriptions for handling of other A-interface functionality (of ETS 300 590 [22]) which are out of scope of this ETS, but which may occur during the procedures described in this ETS (e.g. channel assignment).

### 5.3 Service requirements

General description of service requirements, functional capabilities and information flows are specified in ETS 300 466 [12]. The detailed information regarding the supported service and service types is as follows. Table 1 defines the GSM SMS as described in ETS 300 501 [19] supported by this ETS.

**Table 1: The GSM Teleservices supported by this ETS**

| GSM Teleservice number | Teleservice name |
| --- | --- |
| 21 | SMS, point-to-point, Mobile Originated (SM MO) |
| 22 | SMS, point-to-point, Mobile Terminated (SM MT) |
| 23 | SMS Cell Broadcast (SMSCB) |

## 5.4 General interworking model for FP GSM PLMN attachment

The general interworking model shown in figures 3 and 4 for point-to-point and cell broadcast, respectively, describe the general profile reference configuration of the FP and PP containing the control (C) plane. The model also shows the location of the IWUs and the requirements of the air interface.
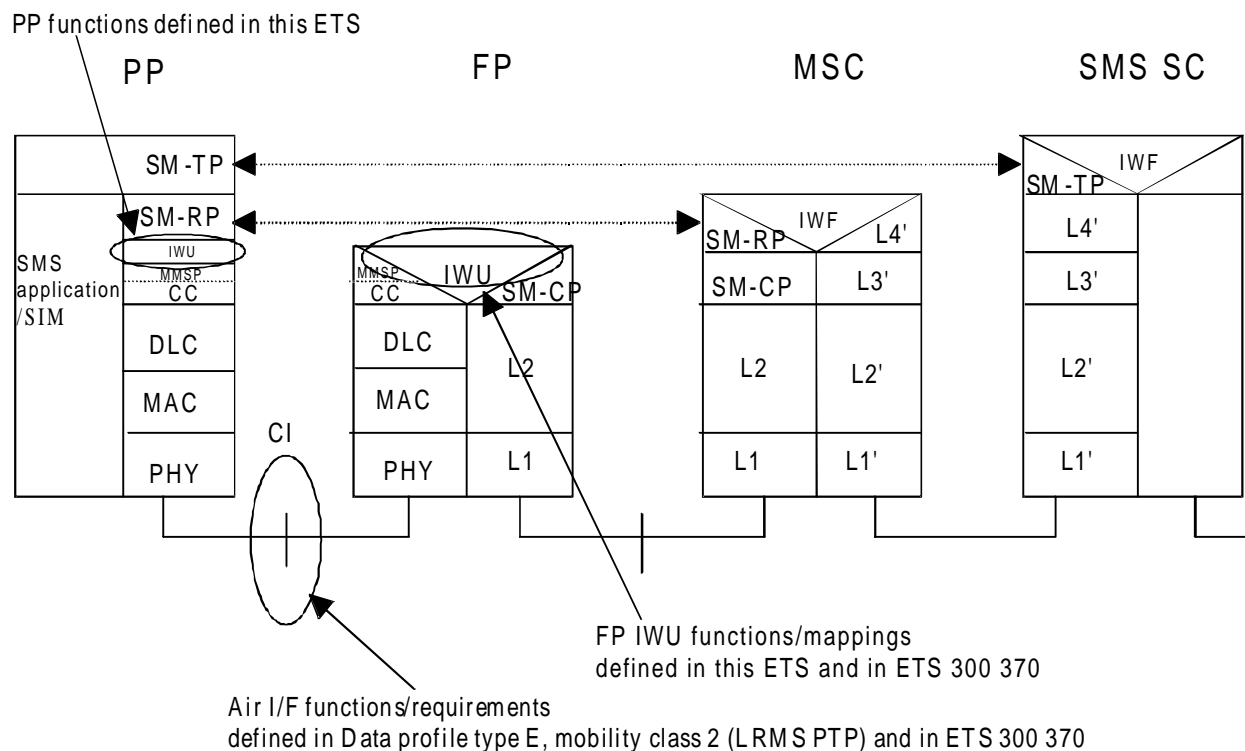


**Figure 3: Interworking model of SMS, point-to-point, mobile originated and terminated (SM MO, SM MT) for FP GSM PLMN attachment**

The C plane part of the IWU (figure 3) in the FP provides the mapping of the GSM CM (a subset of the GSM Layer 3) SMS related messages to the respective DECT layer 3 protocols (NWK/CC) and vice versa. The MM is composed of similar interworking model. The IWU in the PP provides the SMS message information transfer to the SMS application protocol layers.

PP functions defined in this ETS

FP IWU functions/mappings
defined in this ETS



Air I/F functions/requirements
defined in this ETS
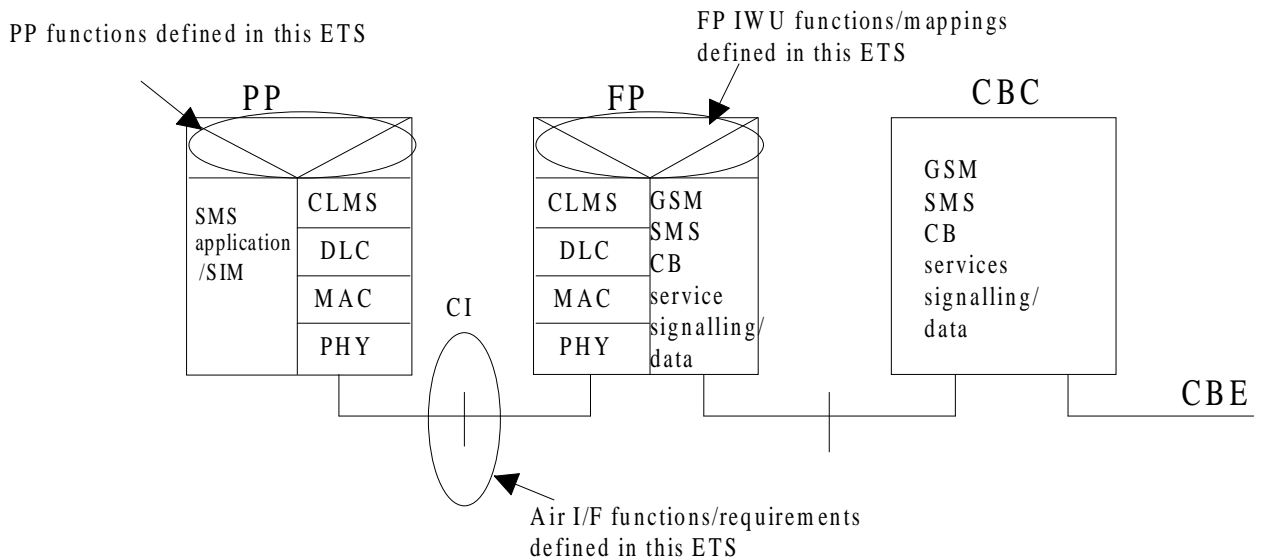
**Figure 4: Interworking model of SMS, Cell broadcast (SMSCB) for FP GSM PLMN attachment**

The C plane part of the IWU (figure 4) in the FP provides the mapping of the ETS 300 537 [16] Cell Broadcast message information to the respective DECT layer 3 protocols (Network/Connectionless Message Service (NWK/CLMS)). The IWU in the PP provides the SMS message information to the SMS application.

## 5.5 Interworking context

### 5.5.1 General

If either SM MO (GSM teleservice 21) or SM MT (GSM teleservice 22) are supported the CC entity of a PT and FT shall fulfil the requirements of ETS 300 757 [27] LRMS PTP based on full GAP CC entity and the requirements of this ETS. The MAC layer shall use the $C_S$ channel for the service provision.

> NOTE 1: The requirements of the CC and MM for this ETS are listed in ETS 300 757 [27] with conditions to "LRMS PTP supported" and "GAP call control supported" and in ETS 300 370 [10] for those requirements set in this ETS.

> NOTE 2: The additional requirements over the basic GAP CC entity is the support of the MMSP (Multimedia Messaging Service Protocol).

The data service profile E, class 2 (see ETS 300 757 [27]) MMSP protocol layer in conjunction with the DECT CC entity shall be used as a transportation mechanism for the GSM SMS SM-RP layer messages. If external handover is supported then the MMSP acknowledgements shall be used for mapping of the SMS Control Layer Protocol (SM-CP) acknowledgements. Thus the PP has GSM SM-TP and SM-RP protocol layers.

If both SM MO and SM MT are supported, they shall be supported simultaneously by independent CC instances. The SM MO and SM MT shall be supported simultaneously and independently from possible other CC instances. This implies that all simultaneously ongoing CC instances (e.g. voice, SM MO, and SM MT) use different transaction identifiers.

If the SMS cell broadcast (GSM teleservice 23) interworking is supported the requirements of the CLMS FIXED service as specified in ETS 300 175-5 [5] shall apply. This means the usage of Connectionless Message Service (CLMS) entity on the DECT network layer.

The MM entity in the FT and PT shall fulfil the requirements of the ETS 300 370 [10].

> NOTE 3: As a result this the PP profile also fulfils the minimum MM requirements of GAP, ETS 300 444 [11].

No U-plane is required by this ETS.

In all cases, SM MT, SM MO and SMSCB, the received or sent short messages shall be handled by the SMS application in the PP. It shall be the responsibility of the application to take care of the conversion between the DECT character set and GSM SMS character set, if conversion is needed.

> NOTE 4: This is since the SMS 7 bit character set contains codes which have a specific meaning in the DECT display controlling.

This ETS does not require the support of the GAP based voice services i.e. the PP may be a data only terminal with GSM access capabilities and a GSM subscription as defined in ETS 300 370 [10].

## 5.5.2 Basic interworking rules

The basic interworking rules defined in subclause 5.4.2 of ETS 300 370 [10] shall apply with following definitions:

- an FP belonging to ARI class D shall support this ETS;

- the profile as defined in this ETS may be used in association only with FPs with ARI class D;

- a PP belonging to ARI class D shall support this ETS in addition to the minimum requirements of the E.2 profile point-to-point service (LRMS PTP) (see ETS 300 757 [27]).

Table 2 defines the associated GSM and DECT procedures required in the FP and the PP.

**Table 2: Implementation/support requirements of DECT and GSM procedures in the FP and the PP**

| GSM procedure | DECT procedure | PP | FP |
|---|---|---|---|
| Authentication procedure | Authentication of PT | M | M |
| Identity procedure | Identification of PT | M | M |
| Attach procedure | Attach ( = Location registration) | M | M |
| Detach procedure | Detach | M | M |
| Location updating procedure | Location registration | M | M |
| Temporary Mobile Subscriber Identity (TMSI) re-allocation procedure | Temporary identity assignment | M | M |
| Ciphering procedure | Cipher-switching initiated by FT<br>Cipher-switching initiated by PT | M<br>note 1 | M<br>note 1 |
| MSC associated handover | External handover | O<br>note 2 | O<br>note 2 |
| CM service procedure | Outgoing call request | M | M |
| MM status procedure | - | - | I |
| - | Parameter retrieval (Location update) | M | M |
| Connection establishment for SMS MO/PP | Outgoing call request | M | M |
| Connection establishment for SMS MT/PP | Incoming call request | M | M |
| Accepted connection establishment | Accepted call establishment | M | M |
| Abnormal procedures | Abnormal call release (call reject) | M | M |
| Normal connection release | Normal call release | M | M |
| RP Data Unit transfer | External protocol information transfer note 3 | M | M |
| Paging | Paging | M | M |
| SMSCB message transfer | CLMS message transmission procedures for fixed length messages | M | M |
| NOTE 1: Cipher switching initiated by the PT may depend on the implementation of external handover procedure. | | | |
| NOTE 2: The implementation of this feature is optional in the PT and FT. Interworking requirements/mappings are process mandatory. | | | |
| NOTE 3: This procedure consists of transferring external protocol information during the active state of DECT Call Control by using the IWU-INFO message | | | |
| TMSI: Temporary Mobile Subscriber Identity. | | | |

### 5.5.3    Interpretation of broadcast attributes

This subclause refers to Annex F of ETS 300 175-5 [5] (Broadcast attributes coding). The codings of ETS 300 370 [10] shall apply with the exceptions and additions listed here.

Standard capabilities:

**a32 Adaptive Differential Pulse Code Modulation (ADPCM)/G.721 Voice service:** may be set to value '1' (note);

**a33 PAP/GAP voice supported:** may be set to value '1' (note);

**a42 CLMS service available:** if the Cell Broadcast service is supported, shall be set to value '1'.

Extended fixed part capabilities:

**a43 E data profile:** shall be set to value '1'.

> NOTE:       This ETS does not require the support of the voice service.

### 5.5.4 Interpretation of terminal capability

The <<TERMINAL CAPABILITY>> information element shall be used with the following codings to indicate the support of this ETS.

**Profile Indicator_2 Coding (Octet 4a) of TERMINAL CAPABILITY information element:**

```
Bits   7 6 5 4 3 2 1      Meaning
       x x 1 x x x x       DECT/GSM interworking -GSM SMS profile service
```

Values of the other fields in <<Terminal Capability>> information element shall depend on the terminal implementation.

# 6 Interworking mappings, FP attached to the GSM PLMN

## 6.1 FP C-plane IWU procedures

The procedure descriptions have been given with Call Control primitives since the MMSP protocol features are not directly used. That is, the MMSP is used in conjunction with CC for SMS message transmissions. If external handover is supported then some specific features of the MMSP shall be used to guarantee safe transmissions. If the MMSP primitives defined in ETS 300 757 [27] are used the mappings between the call control primitives and MMSP primitives can be found in the E data profile.

### 6.1.1 Call handling SM MO IWU procedures

A general example of SM MO call setup, message transfer and connection release has been illustrated in annex C of this document.

#### 6.1.1.1 Call setup procedure
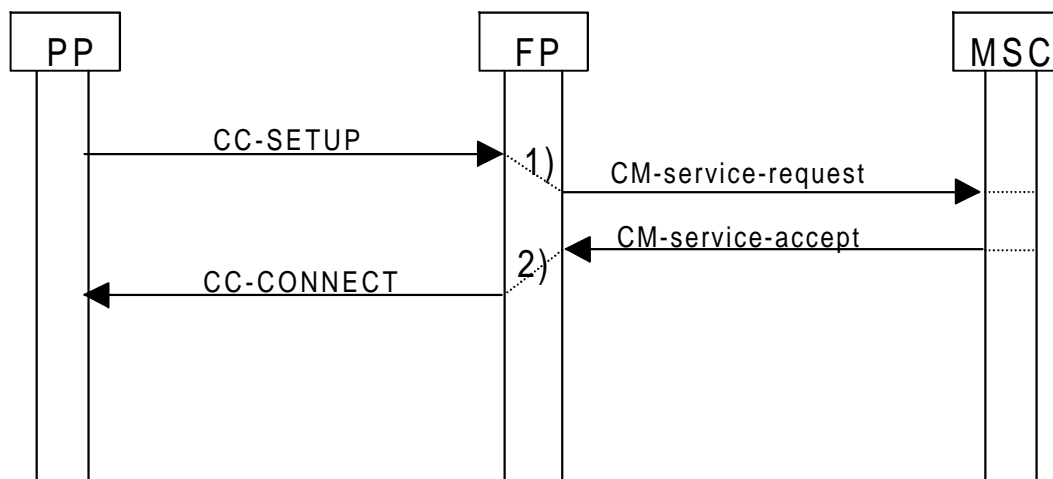


**Figure 5: SM MO CM service procedure, no authentication nor ciphering procedure**
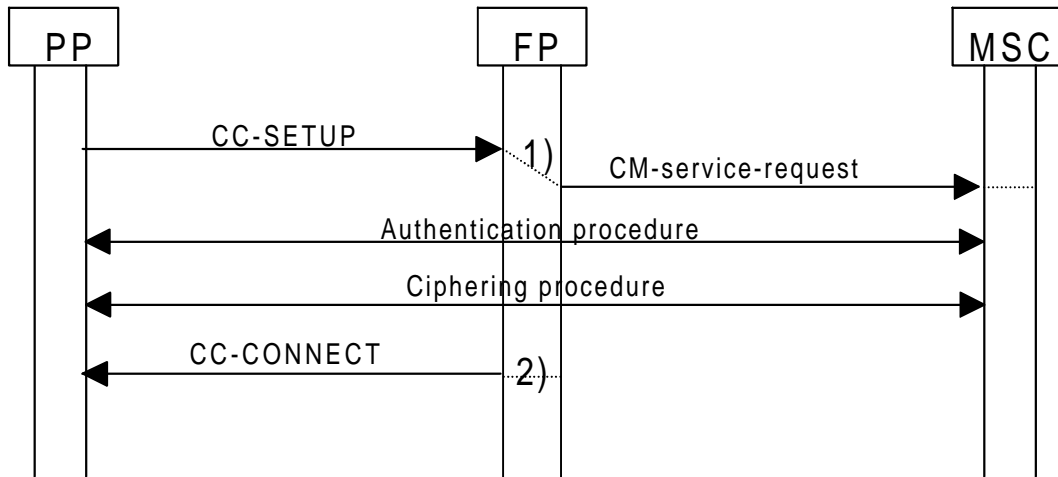
**Figure 6: SM MO CM service procedure, with authentication and ciphering procedure**

1)      Upon receipt of {CC-SETUP} from the PP (figures 5 and 6) reflected by MNCC-SETUP-ind primitive the FP IWU shall initiate a GSM CM service procedure by sending a {CM-service-request} to the MSC. The mapping of the DECT {CC-SETUP} message information elements to the GSM {CM-service-request} message is illustrated in subclause 6.1.9.2.1.

The <<call attributes>>, <<Connection attributes>> and <<iwu attributes>> element usage in {CC-SETUP} message is not required. The default values have been listed in clause 7.

The <<basic service>> element in {CC-SETUP} message shall contain the coding as defined in clause 7.

If the FP does not support the SMS procedures the FP IWU shall reject the call by issuing MNCC-REJECT-req primitive with cause code "Service not supported".

2)      Upon receipt of {CM-service-accept} (figure 5) or after a successful completion of the ciphering procedure (figure 6) the FP IWU shall send to the PP {CC-CONNECT} message by issuing MNCC-CONNECT-req primitive. The mapping of {CM-service-accept} to the {CC-CONNECT} message is illustrated in subclause 6.1.9.1.1. The {CC-CONNECT} message (figure 6) triggered by MNCC-CONNECT-req primitive if authentication and ciphering procedure has taken place shall contain the values and elements as defined in GAP, ETS 300 444 [11].

   NOTE 1:   The authentication and ciphering procedures are done as specified in ETS 300 370 [10].

The FP shall always reply with {CC-CONNECT} message to the received {CC-SETUP}.

   NOTE 2:   This implies that FP CC moves from "call initiated" directly to the "active" state and does not send any messages related to "call proceeding" or "overlap sending" states.

**6.1.1.2          CM service procedure abnormal cases**

CM service procedure abnormal cases shall be handled as described in ETS 300 370 [10], in subclause 6.1.2.8. The mappings between the messages shall be done as specified in ETS 300 370 [10] with the exception of <Protocol discriminator> field which is mapped as specified in subclauses 6.1.11.2.1 and 6.1.11.1.1 of this ETS.

### 6.1.1.3    Short message transfer procedure
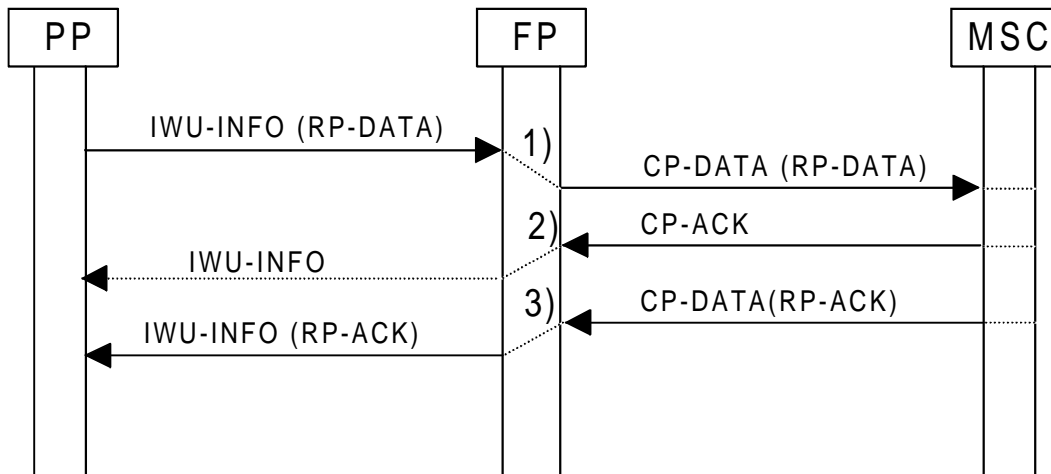


**Figure 7: SM MO data transfer procedure**

1)    Upon receipt of one or more {IWU-INFO} (figure 7) message coded as {MMS-SEND} message from the PP the FP CC reassembles the possibly segmented frame and issues MNCC-IWU-INFO-ind primitive to the FP IWU. The FP IWU shall map the complete message carried in <<iwu-to-iwu>> information element to the <<CP-User data>> information element of the GSM {CP-DATA} message. to be submitted towards the MSC. The mapping between the messages is defined in subclause 6.1.9.2.2.

2)    Should the <Reply requested> field of the <<MMS-Generic Header>> information element have value '11' or '10' in the previously received {IWU-INFO} message, upon receipt of the {CP-ACK} (figure 7) message from the MSC the FP IWU shall send {IWU-INFO} message coded as {MMS-SEND-RPY} message to the PP by issuing MNCC-IWU-INFO-req primitive. The mapping between the messages is defined in subclause 6.1.9.1.3.

3)    Upon receipt of the {CP-DATA} (figure 7) message from the MSC the FP IWU shall submit the <<CP-User data>> information element contents (SM-RP layer Protocol Data Unit (RPDU)) to the FP CC entity using MNCC-IWU-INFO-req primitive. The <<CP-User data>> information element shall be mapped into the {IWU-INFO} message <<iwu-to-iwu>> information element. The <<segmented info>> information element has to be used as specified ETS 300 757 [27] if the {IWU-INFO} message length exceeds the E profile segmentation length. The {IWU-INFO} message that is sent to the PP by the FP IWU shall be coded as {MMS-SEND} message. The mapping of the {CP-DATA} message information elements to the {IWU-INFO} is shown in subclause 6.1.9.1.2.

### 6.1.1.4    Connection release procedure

The CC connection is released by the PP, unless an abnormal situation occurs or the MSC requests it by using BSSMAP message {CLEAR-CMD} as specified in ETS 300 370 [10]. The normal connection release shall be done using {CC-RELEASE} and {CC-RELEASE-COM} messages by issuing MNCC-RELEASE-req primitive. The PP IWU shall request CC connection release upon receipt of MNSMS-REL-req from the application layers. Partial release shall be used as specified in ETS 300 370 [10].
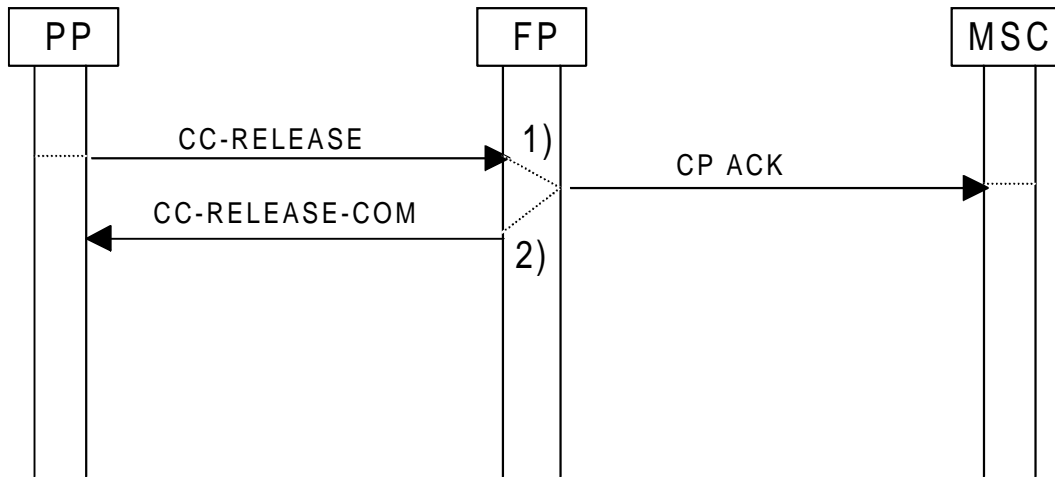
**Figure 8: SM MO normal connection release procedure**

1) Upon receipt of the {CC-RELEASE} message (figure 8) from the PP reflected by CC-RELEASE-Ind and indicating a partial release the FP IWU shall issue {CP-ACK} towards the MSC if the previously received {CP-DATA} message has not yet been acknowledged. The mapping between the messages has been given in subclause 6.1.9.2.4.

2) The FP IWU shall then confirm the connection release by issuing the MNCC-RELEASE-res primitive.

### 6.1.1.5 Error procedures
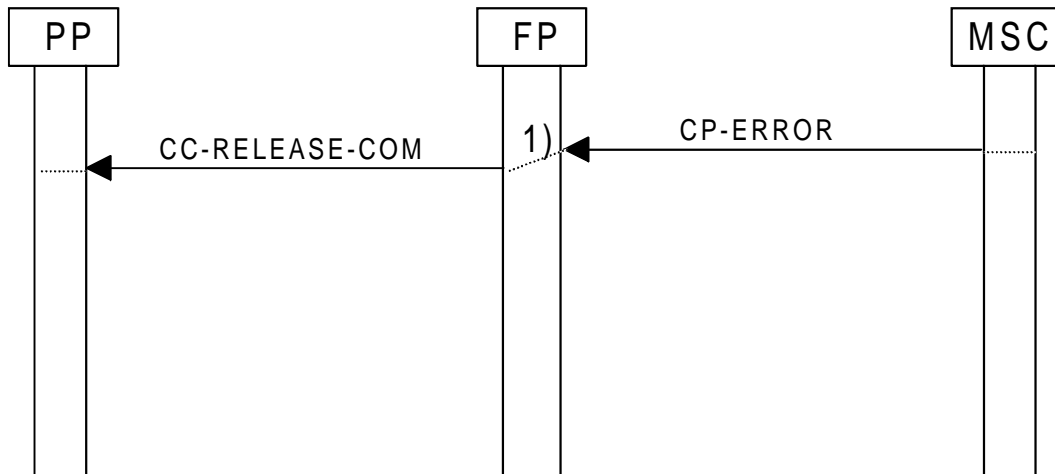


**Figure 9: SMS-MO CP error procedure**

1) Upon receipt of {CP-ERROR} (figure 9) message from the MSC the FP IWU shall issue MNCC-REJECT-req primitive whereupon the FP CC sends the {CC-RELEASE-COM} message indicating abnormal release. The <<cause code>> information element in the {CP-ERROR} message may be mapped into the {CC-RELEASE-COM} message <<Release reason>> information element. The message mapping between {CP-ERROR} and {CC-RELEASE-COM} message is illustrated in subclause 6.1.9.1.5.
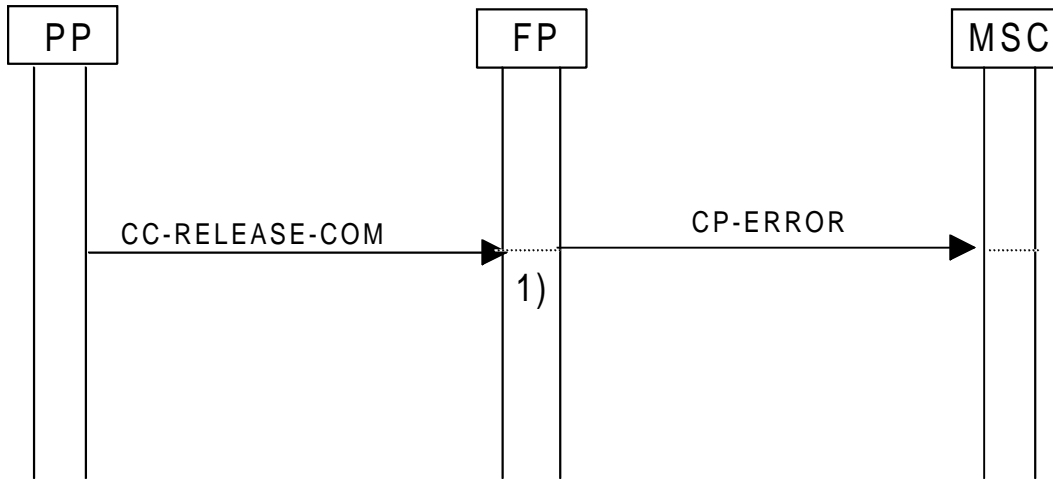
**Figure 10: SM MO connection released due to unsuccessful CC data transfer**

An abnormal connection release due to unsuccessful CC transfer towards the PP is illustrated in figure 10.

1)      Upon receipt MNCC-REJECT-cfm primitive as a result of {CC-RELEASE-COM} message indicating abnormal release (figure 10) the FP IWU shall send {CP-ERROR} message to the MSC if the previous {CP-DATA} message has not been acknowledged. The information element mapping of {CC-RELEASE-COM} message into the {CP-ERROR} is illustrated in subclause 6.1.9.2.5. The mapping between {CC-RELEASE-COM} <<Release reason>> information element and {CP-ERROR} <<cause code>> is optional. If mapping is not done the {CP-ERROR} shall have CP-Cause #111 "Protocol error".

### 6.1.2   Other IWU procedures

Other IWU procedures shall be done according to ETS 300 370 [10].

### 6.1.3       Call handling IWU SM MT procedures

A general example of SM MT call setup, message transfer and connection release has been illustrated in annex C of this document.

### 6.1.3.1       Call setup procedure

After the paging procedure (figure 11) which complies with ETS 300 370 [10] subclause 6.1.3 the authentication and ciphering procedures complying with ETS 300 370 [10] subclauses 6.1.2.1 and 6.1.2.6, respectively, may take place (figure 12).
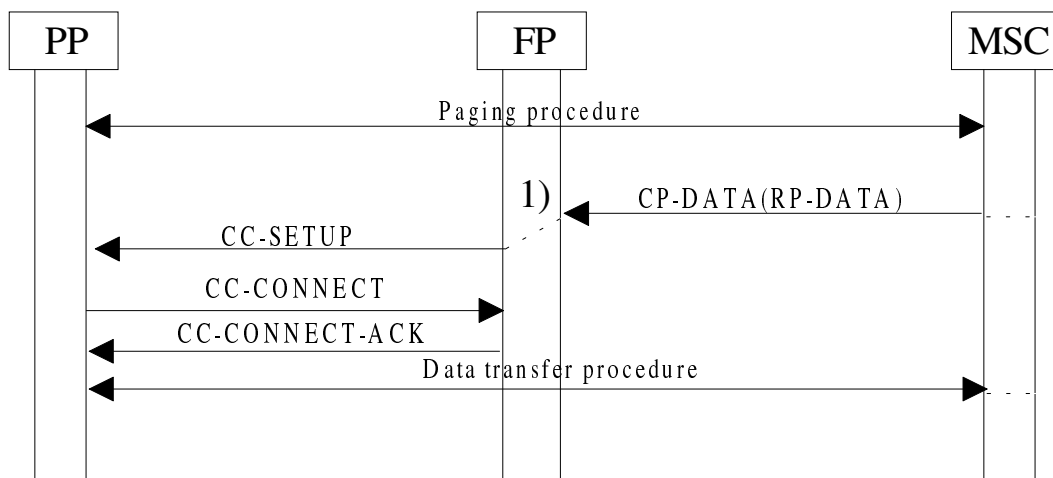


**Figure 11: SM MT setup procedure, no authentication nor ciphering procedure**
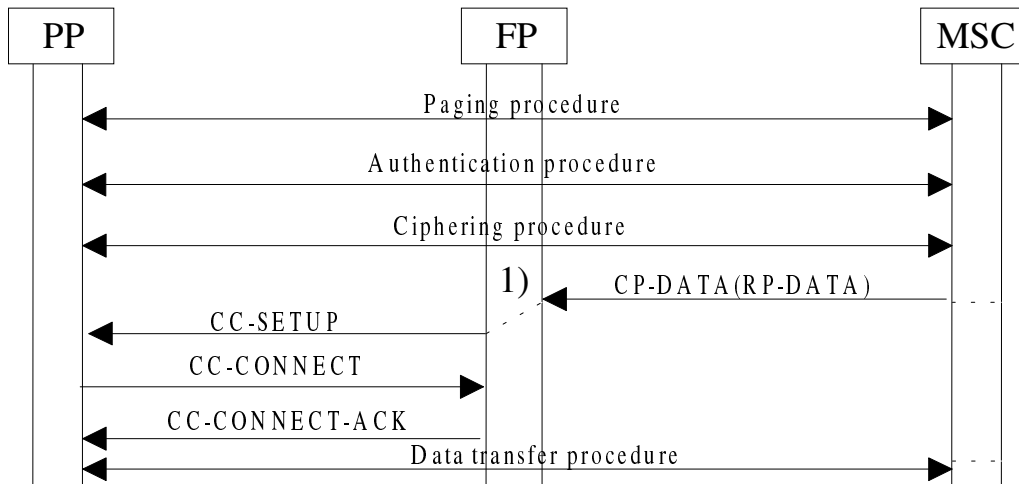
**Figure 12: SM MT connection setup procedure**

The reception of {CP-DATA} to the FP IWU shall initiate the CC connection setup procedure. When the connection has been established the short message shall be sent over in {IWU-INFO} messages.

1)    Upon receipt of the {CP-DATA} message from the MSC (figures 11 and 12) the FP IWU shall initiate the connection setup procedure if no connection is available by issuing MNCC-SETUP-req primitive to the FP CC which sends the {CC-SETUP} message to the PP. The mapping between {CP-DATA} and {CC-SETUP} messages has been given in subclause 6.1.9.1.4.

If the connection establishment is successful the PP shall reply with {CC-CONNECT} message to the FP CC indicated by MNCC-CONNECT-ind primitive to the FP IWU. Upon this the FP shall send {CC-CONNECT-ACK} message triggered by MNCC-CONNECT-ACK-req primitive.

NOTE 1:    The {CC-CONNECT-ACK} is sent due to GAP compatibility requirements. The messages have no meaning for the SMS service.

NOTE 2:    For the messaging call set-ups (as indicated in the <call class> field) the receive path for this specific CC instance should be muted when the U-plane is connected according to ETS 300 175 - 5 [5], clause 9.3.2.8.

The <<call attributes>>, <<Connection attributes>> and <<iwu attributes>> element usage is not required. The default values have been listed in clause 7.

The <<basic service>> element in the {CC-SETUP} message shall contain the coding as defined in clause 7.

After the call setup procedure the information carried in the {CP-DATA} message shall be conveyed as described in subclause 6.1.3.3.

### 6.1.3.2    Call setup abnormal situations

The received {CC-RELEASE-COM} message, indicated by MNCC-REJECT-ind, in the case of PP reject, shall be mapped into {CP-ERROR} message by FP IWU as defined in subclause 6.1.1.5.

In the case of FP connection setup failure indicated by MNCC-RELEASE-ind reflected by {CC-RELEASE} message or MNCC-REJECT-ind primitive reflected by {CC-RELEASE-COM} message or due to FP CC timer expiry the FP IWU shall issue {CP-ERROR} message towards the MSC. The message mappings between the by {CC-RELEASE} message and {CP-ERROR} has been given in subclause 6.1.9.2.3 and between the {CC-RELEASE-COM} message and {CP-ERROR} in subclause 6.1.9.2.5.

**6.1.3.3        Short message transfer procedure**
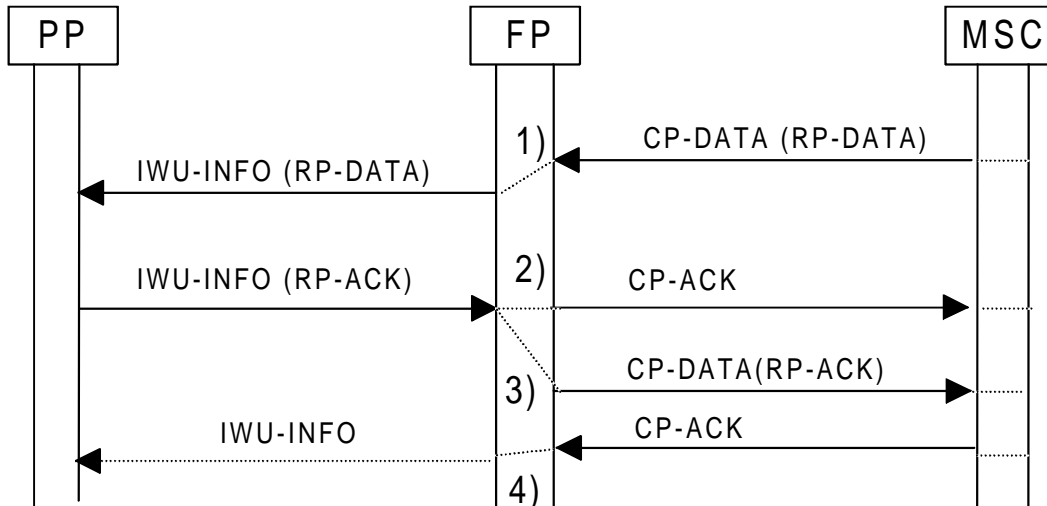


**Figure 13: SMS data transfer procedure in SM MT case**

1)      After the connection establishment has been confirmed by the receipt of the {CC-CONNECT} message, reflected by the MNCC-CONNECT-ind primitive, the FP IWU shall send the <<CP-User data>> (RPDU) of the {CP-DATA} in {IWU-INFO} (figure 13) message coded as {MMS-SEND} to the PP by issuing a MNCC-IWU-INFO-Req to the CC. The <<segmented info>> information element has to be used as specified in ETS 300 757 [27] if the {IWU-INFO} message length exceeds the E profile segmentation length. The {CP-DATA} is the same as illustrated in figure 12. The mapping between {CP-DATA} and {IWU-INFO} has been defined in subclause 6.1.9.1.2.

2)      Upon receipt of the next {IWU-INFO} message, indicated by MNCC-IWU-INFO-ind primitive, coded as {MMS-SEND} and carrying the {RP-ACK} message from the PP, the FP IWU shall send the {CP-ACK} reply to the MSC as a response to the previously received {CP-DATA}. No message mapping shall take place.

3)      The FP IWU shall map the complete message carried in <<iwu-to-iwu>> information element (RPDU) of the previously received {IWU-INFO} message to the <<CP-User data>> information element of the GSM {CP-DATA} message. The mapping between the messages is defined in subclause 6.1.9.2.2. The {CP-DATA} message shall then be submitted towards the MSC.

4)      Should the <Reply requested> field of the <<MMS-Generic Header>> information element have value '11' or '10' in the previously received {IWU-INFO} message, upon receipt of the {CP-ACK} (figure 13) message from the MSC the FP IWU shall send {IWU-INFO} message coded as {MMS-SEND-RPY} message to the PP by issuing MNCC-IWU-INFO-req primitive. The mapping between the messages is defined in subclause 6.1.9.1.3.

**6.1.3.4        Connection release procedure**

The CC connection is released by the PP, unless an abnormal situation occurs or the MSC requests it by using BSSMAP message {CLEAR-CMD} as specified in ETS 300 370 [10]. The normal connection release shall be done using {CC-RELEASE} and {CC-RELEASE-COM} messages by issuing MNCC-RELEASE-req primitive. The PP IWU shall request CC connection release upon receipt of MNSMS-REL-req from the application layers. Partial release shall be used as specified in ETS 300 370 [10].
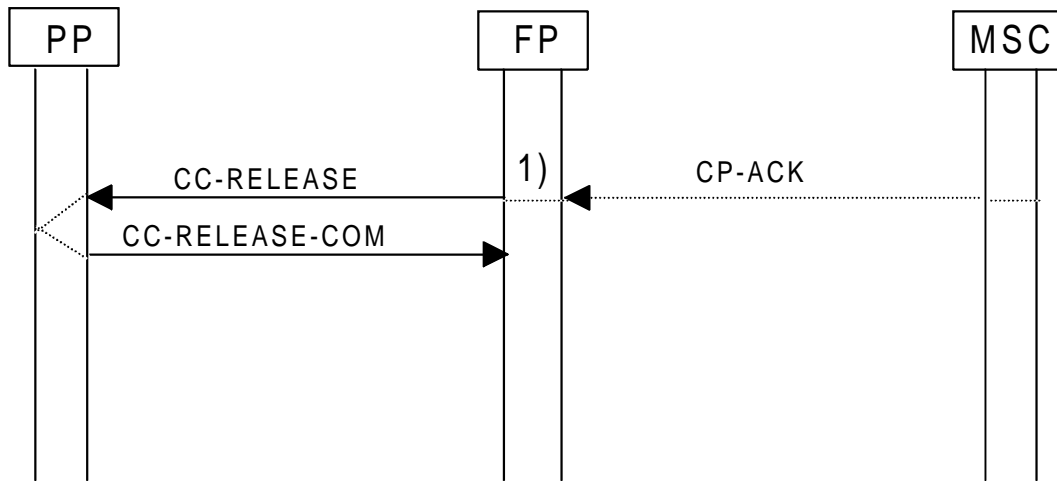
**Figure 14: SM MT normal connection release procedure**

1)      Upon receipt of the {CP-ACK} message from the MSC (figure 14) the FP IWU may initiate the normal connection release procedure with release reason "partial release" as defined in ETS 300 370 [10] by issuing MNCC-RELEASE-Req primitive to the FP CC. The mapping between messages has been given in subclause 6.1.9.1.6.

No action shall be taken by the FP IWU towards the MSC upon receipt of partial release from the PP.

### 6.1.3.5        Error procedures

The rules in subclause 6.1.1.5 shall apply.

### 6.1.4        External handover procedures

The external handover support is as specified in ETS 300 370 [10].

The procedures required if external handover is supported are defined in subclause 6.1.1.3, bullet 2), subclause 6.1.3.3 bullet 4) and annex B.

### 6.1.5        Other call handling procedures

Other CC mappings and procedures shall be done according to ETS 300 370 [10].

### 6.1.6        CLMS IWU SMSCB procedures

The CLMS FIXED service as specified in subclause 8.3 of ETS 300 175-5 [5] shall be used for the GSM SMS Cell Broadcast provision. Multisection CLMS FIXED messages shall be used.

Since GSM SMSCB message length is 88 octets whereas the CLMS-FIXED can carry only 20 octets of user data a segmentation function for delivering 88 octets over CLMS-FIXED service shall be used. The six sections of a CLMS-FIXED consisting of one address section and five data section form a (multisection) group to be used as a basis for this segmentation.
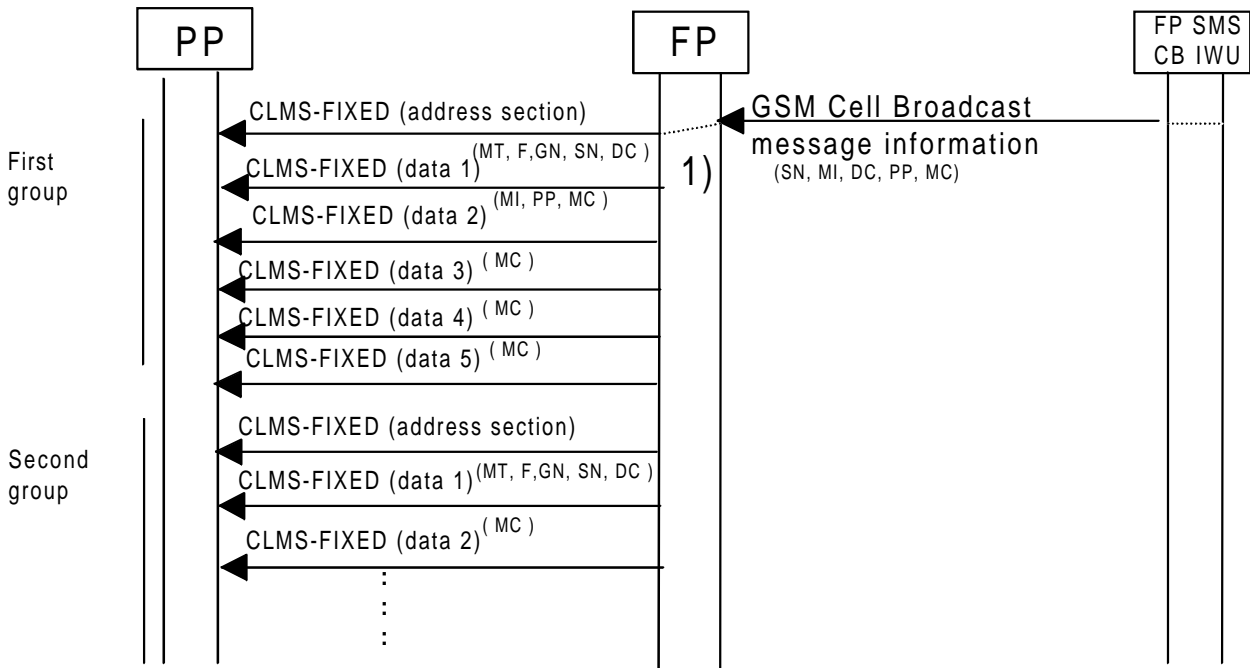
**Figure 15. Cell Broadcast message transfer procedure**

1) The FP IWU shall map the received SMS Cell Broadcast information (figure 15) to the DECT {CLMS-FIXED} message as defined in subclause 6.1.12 of this ETS. The transmission of the {CLMS-FIXED} message(s) shall be initiated by MNCL-UNITDATA-req primitive.

The CLMS-FIXED message shall be coded as defined in subclause 8.3 of ETS 300 175-5 [5].

The <CLMS header> field of the address section shall have value '110'B indicating "Alphanumeric multisection". The <Address> field carrying the Temporary Portable User Identity (TPUI) that shall be the CBI as defined in ETS 300 175-6 [6] subclause 6.3.1. The <character type> field of the <<Protocol Discriminator>> shall have value '000'B indicating "User Specific". The <character set> field of the <<Protocol Discriminator>> shall have value '001'B. Other fields of the <<Protocol Discriminator>> field shall be ignored. The <Length indicator> shall have the length as defined in subclause 8.3.2 of ETS 300 175-5 [5].

The <CLMS header> field of the data section shall have the data section numbering as defined in subclause 8.3 of ETS 300 175-5 [5]. The octet 2 of the first data section shall be coded as specified below.

**First data section octet 2 coding:**

| Bit | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|-----|---|---|---|---|---|---|---|---|
| | Message type | | | F | Group number | | | |

Message type:
 Bits   8 7 6        Meaning (octet 2):
      0 0 1       GSM SMSCB message
All other values reserved

F bit coding:
Bits   5        Meaning (octet 2):
     1       First group section follows
     0       Subsequent group section follows

Group number:
Bits   4 3 2 1        Meaning (octet 2):
     n n n n       Group number

The group sections shall be numbered in descending order and it carries the amount of remaining group parts.

The <message type> shall have value '001'B indicating "GSM SMSCB message". The first group shall have value '1'B in the F bit coding field and the following group parts shall use value '0'B. The <Group number> shall contain the value of the remaining group parts.

> NOTE 1: Thus if there is only one group to be sent the <F> field has value '1'B and <Group number> value '0000'B.

The octets 3 and 4 of the first data section shall contain the SMSCB Serial Number (SN) and octet 5 the Data Coding scheme (DC) in the first data section. The Message Identifier (MI) shall be carried in the second data section in octets 2 and 3 and the Page Parameter (PP) in octet 4. The octet 5 shall carry the first octet of Message Contents (MC) The remaining data sections (3-5) shall be filled with SMSCB Message Contents (MC).

If the GSM SMSCB message contents length exceeds 19 octets the message shall be sent in multiple CLMS FIXED message groups by first segmenting the SMSCB message into 19 octet segment and then issuing MNCL-UNTIDATA-req primitives subsequently to the CLMS entity. In all groups the address section and first data section shall be repeated with the same coding as defined for above. The remaining data sections (3-5) shall be filled with SMSCB Message Contents (MC). Should a CLMS-FIXED not be filled with Message Contents the remaining message part shall be filled with fill characters as defined in ETS 300 175-5 [5] subclause 8.3.2.

> NOTE 2: Since first CLMS-FIXED message group can carry 19 octets of SMSCB information and subsequent groups 16 octets of new data, 34 CLMS-FIXED messages in 6 groups are needed to carry the whole SMSCB message of 88 octets.

### 6.1.7 MM IWU procedures

The MM procedures of ETS 300 370 [10] shall apply.

### 6.1.8 Other IWU procedures

Other IWU procedures shall be done according to ETS 300 370 [10].

### 6.1.9 Message mappings SM MO and SM MT services

### 6.1.9.1 GSM to DECT

**Table 3: List of mapped messages**

| Item No. | GSM message | Status in GSM | DECT message | Status in E.2 | Ref. | Map status | Note |
|---|---|---|---|---|---|---|---|
| 1 | CM-service-accept | M | CC-CONNECT | M | 6.1.9.1.1 | C.1 | |
| 2 | CP-DATA | M | IWU-INFO | M | 6.1.9.1.2 | M | |
| 3 | CP-ACK | M | IWU-INFO | M | 6.1.9.1.3 | C.3 | |
| 4 | CP-DATA | M | CC-SETUP | M | 6.1.9.1.4 | C.2 | note 1 |
| 5 | CP-ERROR | M | CC-RELEASE-COM | M | 6.1.9.1.5 | M | |
| 6 | CP-ACK | M | CC-RELEASE | M | 6.1.9.1.6 | C.4 | |
| C.1: If SM MO supported then M else N/A | | | | | | | |
| C.2: If SM MT supported then M else N/A | | | | | | | |
| C.3: If External Handover supported then M else O | | | | | | | |
| C.4: If SM MT supported then O else N/A | | | | | | | |
| NOTE 1: The reception of CP-DATA to the FP IWU initiates the CC connection setup procedure. When the connection has been established the short message is sent over in the IWU-INFO messages. | | | | | | | |

All other message mappings shall be done according to ETS 300 370 [10].

**6.1.9.1.1**          **CM-service-accept - CC-CONNECT**

**Table 4**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CM-service-accept | CC-CONNECT | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.1.1 | M | |
| 2 | Skip Indicator | Transaction identifier | ETS 300 370 [10], 6.1.8.1.24 | M | |
| 3 | Message type | Message Type | ETS 300 370 [10], 6.1.8.1.3 | M | |
| 4 | - | IWU-attributes | | - | |
| 5 | - | Call attributes | | - | |
| 6 | - | Connection attributes | | - | |
| 7 | - | Repeat indicator | | - | |
| 8 | - | Facility | | - | |
| 9 | - | Repeat indicator | | - | |
| 10 | - | Progress indicator | | - | |
| 11 | - | "Display" | | - | |
| 12 | - | Signal | | - | |
| 13 | - | Feature indicator | | - | |
| 14 | - | Network parameter | | - | |
| 15 | - | Ext h/o indicator | | - | |
| 16 | - | Terminal capability | | - | |
| 17 | - | Transit delay | | - | |
| 18 | - | Window size | | - | |
| 19 | - | Repeat Indicator | | - | |
| 20 | - | IWU-TO-IWU | | - | |
| 21 | - | IWU-Packet | | - | |
| 22 | - | Escape to proprietary | | - | |

### 6.1.9.1.2 CP-DATA - IWU-INFO

**Table 5**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CP-DATA | IWU-INFO | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.1.1 | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.1.2 | M | |
| 3 | Message type | Message Type | ETS 300 370 [10], 6.1.8.1.3 | M | |
| 4 | | Portable Identity | | - | |
| 5 | - | MMS-Generic-Header | 7.1.6 | X | note 1 |
| 6 | - | MMS-Object-Header | 7.1.7 | X | |
| 7 | - | Repeat Indicator | | - | |
| 8 | - | MMS-Extended-Header | | - | |
| 9 | - | Repeat Indicator | | - | |
| 10 | - | Time-Date | | - | |
| 11 | - | Calling Party Number | | - | |
| 12 | - | Repeat Indicator | | - | |
| 13 | - | Called Party Number | | - | |
| 14 | - | Called Part Subaddress | | - | |
| 15 | - | Segmented Info | | X | note 2 |
| 16 | - | Repeat Indicator | | - | |
| 17 | - | Alphanumeric | | - | |
| 18 | - | Repeat Indicator | | - | |
| 19 | CP-User data | IWU-TO-IWU | 6.1.10.1.2 | M | |
| 20 | - | IWU-PACKET | | - | |
| 21 | - | Escape to proprietary | | - | |
| NOTE 1: | The <MMS Command type> field shall have value '00000'B "MMS-SEND". | | | | |
| NOTE 2: | If the upper level message to be transmitted in between FP and PP is larger than the segmenting requirements the FP IWU shall segment the message to necessary segments. In this case the <<Segmented Info>> information element is used. | | | | |

### 6.1.9.1.3 CP-ACK - IWU-INFO

**Table 6**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CP-ACK | IWU-INFO | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.1.1 | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.1.2 | M | |
| 3 | Message type | Message Type | ETS 300 370 [10], 6.1.8.1.3 | M | |
| 4 | | Portable Identity | | - | |
| 5 | - | MMS-Generic-Header | 7.1.6 | X | note 1 |
| 6 | - | MMS-Object-Header | 7.1.7 | X | |
| 7 | - | Repeat Indicator | | - | |
| 8 | - | MMS-Extended-Header | | - | |
| 9 | - | Repeat Indicator | | - | |
| 10 | - | Time-Date | | - | |
| 11 | - | Calling Party Number | | - | |
| 12 | - | Repeat Indicator | | - | |
| 13 | - | Called Party Number | | - | |
| 14 | - | Called Part Subaddress | | - | |
| 15 | - | Segmented Info | | - | |
| 16 | - | Repeat Indicator | | - | |
| 17 | - | Alphanumeric | | - | |
| 18 | - | Repeat Indicator | | - | |
| 19 | - | IWU-TO-IWU | | - | |
| 20 | - | IWU-PACKET | | - | |
| 21 | - | Escape to proprietary | | - | |
| NOTE 1: | The <MMS Command type> field shall have value '00011'B "MMS-SEND-RPY". | | | | |

### 6.1.9.1.4 CP-DATA - CC-SETUP

**Table 7**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CP-DATA | CC-SETUP | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.1.1 | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.1.2 | M | |
| 3 | Message type | Message Type | ETS 300 370 [10], 6.1.8.1.3 | M | |
| 4 | - | Portable identity | | X | note 2 |
| 5 | - | Fixed Identity | | X | note 3 |
| 6 | - | Basic service | 7.1.2 | X | |
| 7 | - | Cipher info | | X | |
| 8 | - | Iwu attributes | 7.1.3 | X | note 4 |
| 9 | - | call attributes | 7.1.4 | X | note 4 |
| 10 | - | Connection attributes | 7.1.5 | X | note 4 |
| 11 | - | Terminal capability | 5.5.4 | X | note 4 |
| 12 | CP User Data | - | | I | note 1 |
| NOTE 1: | The field is mapped into the {IWU-INFO} message in subclause 6.1.9.1.2. | | | | |
| NOTE 2: | The portable identity is the one which was used in the paging procedure as ETS 300 370 [10]. | | | | |
| NOTE 3: | The fixed identity is generated locally in FP. | | | | |
| NOTE 4: | The presence of these information elements in the DECT message is not required although the default values have been given. | | | | |

### 6.1.9.1.5 CP-ERROR - CC-RELEASE-COM

**Table 8**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CP-ERROR | CC-RELEASE-COM | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.1.1 | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.1.2 | M | |
| 3 | Message type | Message Type | ETS 300 370 [10], 6.1.8.1.3 | M | |
| 4 | CP-Cause | Release Reason | 6.1.11.1.1 | O | |
| 5 | - | Display | | - | |
| 6 | - | IWU-TO-IWU | | - | |
| 7 | - | IWU-PACKET | | - | |

### 6.1.9.1.6 CP-ACK - CC-RELEASE

**Table 9**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CP-ACK | CC-RELEASE | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.1.1 | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.1.2 | M | |
| 3 | Message type | Message Type | ETS 300 370 [10], 6.1.8.1.3 | M | |
| 4 | - | Release Reason | | X | note 1 |
| 5 | - | Display | | - | |
| 6 | - | IWU-TO-IWU | | - | |
| 7 | - | IWU-PACKET | | - | |
| NOTE 1: The Release Reason used is '0E'(hex), "partial release" | | | | | |

### 6.1.9.2 DECT to GSM

**Table 10: List of mapped messages**

| Item No. | DECT message | Status in E.2 | GSM message | Status in GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|---|---|
| 1 | CC-SETUP | M | CM-service request | M | 6.1.9.2.1 | C.1 | |
| 2 | IWU-INFO | M | CP-DATA | M | 6.1.9.2.2 | M | |
| 3 | CC-RELEASE | M | CP-ERROR | M | 6.1.9.2.3 | C.2 | |
| 3 | CC-RELEASE | M | CP-ACK | M | 6.1.9.2.4 | C.3 | |
| 4 | CC-RELEASE-COM | M | CP-ERROR | M | 6.1.9.2.5 | M | |
| C.1: If SM MO supported then M else N/A | | | | | | | |
| C.2: If SM MT supported then M else N/A | | | | | | | |
| C.3: If SM MO supported and CP-ACK transmission pending then M else N/A (see subclause 6.1.1.4) | | | | | | | |

All other message mappings are done according to ETS 300 370 [10].

**6.1.9.2.1          CC-SETUP - CM-service request**

**Table 11**

| Item No. | Message coding DECT | Message coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CC-SETUP | CM service request | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.2.1 | M | |
| 2 | Transaction identifier | Skip Indicator | ETS 300 370 [10], 6.1.8.2.21 | M | |
| 3 | Message Type | Message type | ETS 300 370 [10], 6.1.8.2.3 | M | |
| 4 | Portable identity | Mobile Identity | ETS 300 370 [10], 6.1.7.2.6 | M | |
| 5 | Fixed identity | - | | - | |
| 6 | Basic service | CM service type | 6.1.10.2.1 | M | |
| 7 | Basic service | Mobile station classmark 2 | - | M | note 2 |
| 8 | Iwu attributes | - | 7.1.3 | X | note 1 |
| 9 | repeat indicator | - | | - | |
| 10 | call attributes | - | 7.1.4 | X | note 1 |
| 11 | repeat indicator | - | | - | |
| 12 | Connection attributes | - | 7.1.5 | X | note 1 |
| 13 | Cipher info | Cipher key sequence number | ETS 300 370 [10], 6.1.7.2.4 | M | |
| 14 | Network assigned identity | Mobile identity | ETS 300 370 [10], 6.1.7.2.2 | M | |
| 15 | Terminal capability | - | 5.5.4 | X | note 1 |
| NOTE 1: | The presence of these information elements in the DECT message is not required although the default values have been given. | | | | |
| NOTE 2: | Generated locally, see ETS 300 370 [10] subclause 6.1.2.3. | | | | |

### 6.1.9.2.2 IWU-INFO - CP-DATA

**Table 12**

| Item No. | Message coding DECT | Message coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | IWU-INFO | CP-DATA | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.2.1. | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.2.2 | M | |
| 3 | Message Type | Message type | ETS 300 370 [10], 6.1.8.2.3 | M | |
| 4 | Portable Identity | - | | - | |
| 5 | MMS-Generic-Header | - | 7.1.6 | X | note 1 |
| 6 | MMS-Object-Header | - | 7.1.7 | X | |
| 7 | Repeat indicator | - | | - | |
| 8 | MMS-Extended-Header | - | | - | |
| 9 | Repeat indicator | - | | - | |
| 10 | Time/Date | - | | - | |
| 11 | Repeat indicator | - | | - | |
| 12 | Calling Party number | - | | - | |
| 13 | Repeat indicator | - | | - | |
| 14 | Called party Number | - | | - | |
| 15 | Called Party Subaddress | - | | - | |
| 16 | Segmented Info | - | | X | note 2 |
| 17 | Alphanumeric | - | | - | |
| 18 | Repeat indicator | - | | - | |
| 19 | IWU-TO-IWU | CP-User data | 6.1.10.2.3 | M | |
| 20 | IWU-PACKET | - | | - | |
| 21 | Escape to proprietary | - | | - | |
| NOTE 1: | The <MMS Command type> field shall have value '0000'B "MMS-SEND". | | | | |
| NOTE 2: | If the upper level message to be transmitted in between FP and PP is larger than the segmenting requirements the FP IWU shall segment the message to necessary segments. In this case the <<Segmented Info>> information element is required. | | | | |

### 6.1.9.2.3 CC-RELEASE - CP-ERROR

**Table 13**

| Item No. | Message coding DECT | Message coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CC-RELEASE | CP-ERROR | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.2.1 | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.2.2 | M | |
| 3 | Message Type | Message type | ETS 300 370 [10], 6.1.8.2.3 | M | |
| 4 | Release Reason | CP-Cause | 6.1.10.2.2 | C.1 | note 1 |
| 5 | Display | - | | - | |
| 6 | IWU-TO-IWU | - | | - | |
| 7 | IWU-PACKET | - | | - | |
| C.1: If Release reason is partial release then X else O | | | | | |
| NOTE 1: | If not mapped CP-Cause #111 "Protocol error" is used. | | | | |

**6.1.9.2.4        CC-RELEASE - CP-ACK**

**Table 14**

| Item No. | Message coding DECT | Message coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CC-RELEASE | CP-ACK | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.2.1 | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.2.2 | M | |
| 3 | Message Type | Message type | ETS 300 370 [10], 6.1.8.2.3 | M | |
| 4 | Release Reason | - | | - | |
| 5 | Display | - | | - | |
| 6 | IWU-TO-IWU | - | | - | |
| 7 | IWU-PACKET | - | | - | |

**6.1.9.2.5        CC-RELEASE-COM - CP-ERROR**

**Table 15**

| Item No. | Message coding DECT | Message coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CC-RELEASE-COM | CP-ERROR | | | |
| 1 | Protocol Discriminator | Protocol Discriminator | 6.1.11.2.1. | M | |
| 2 | Transaction identifier | Transaction identifier | 6.1.11.2.2 | M | |
| 3 | Message Type | Message type | ETS 300 370 [10], 6.1.8.2.3 | M | |
| 4 | Release Reason | CP-Cause | 6.1.10.2.2 | C.1 | note 1 |
| 5 | Display | - | | - | |
| 6 | IWU-TO-IWU | | | - | |
| 7 | IWU-PACKET | - | | - | |
| C.1: If Release reason is partial release then X else O | | | | | |
| NOTE 1:      If not mapped CP-Cause #111 "Protocol error" is used. | | | | | |

**6.1.10        Information elements mappings, SM MO and SM MT services**

**6.1.10.1        GSM to DECT**

**6.1.10.1.1        CP-Cause - Release Reason**

**Table 16**

| Item No. | Information element coding GSM | Information element coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | CP-Cause | Release Reason | | | |
| 1 | CP-Cause IEI | ID for Release Reason | ETS 300 370 [10], 6.1.8.2.4 | M | |
| 2 | Cause code | Release reason code | 6.1.11.1.3 | M | |

**6.1.10.1.2        CP-User data- IWU-TO-IWU**

See subclause 6.1.10.2.3.

### 6.1.10.2 DECT to GSM

#### 6.1.10.2.1 Basic service - CM-Service type

**Table 17**

| Item No. | Information element coding DECT | Information element coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
|  | Basic Service | CM-Service type |  |  |  |
| 1 | ID for basic service | CM-Service type IEI | ETS 300 370 [10], 6.1.8.2.4 | M |  |
| 2 | Call class | Service type | 6.1.11.2.3 | M |  |

#### 6.1.10.2.2 Release Reason - CP-Cause

**Table 18**

| Item No. | Information element coding DECT | Information element coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
|  | Release Reason | CP-Cause |  |  |  |
| 1 | ID for Release Reason | CP-Cause IEI | ETS 300 370 [10], 6.1.8.2.4 | M |  |
| 2 | Release reason code | Cause code | 6.1.11.2.4 | M |  |

#### 6.1.10.2.3 IWU-TO-IWU - CP-User data

**Table 19**

| Item No. | Information element coding DECT | Information element coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
|  | IWU-TO-IWU | CP-User data |  |  |  |
| 1 | Element identifier | Information element identifier | ETS 300 370 [10], 6.1.8.2.4 | M |  |
| 2 | Length of contents | - |  | - | note 3 |
| 3 | - | Length indicator |  | - | note 3 |
| 4 | S/R | - |  | - | note 1 |
| 5 | protocol discriminator | - |  | - | note 2 |
| 6 | IWU-TO-IWU information | RPDU |  | M | note 4 |

NOTE 1:   Field uses default value '1'B; "Transmission of Message".
NOTE 2:   The Field uses default value '010100'B; "MMS User Data".
NOTE 3:   The length mapping cannot be done since the GSM length is the CP frame length whereas the DECT length may be the IWU-TO-IWU segment length. The RPDU length information can be found in the RPDU header or derived from the CP user data length indicator if needed by the interworking function.
NOTE 4:   The complete GSM SM-RP layer RPDU received from the CP User data element as defined in ETS 300 559 [19] shall be transparently mapped to the IWU-TO-IWU information element in the FP and PP IWU beginning with the first octet of the RPDU carried in the first octet of the IWU-TO-IWU information field. No segmentation is done in the interworking unit if the RPDU message length exceeds the supported length limitation of the DECT C-plane messages. This is the task of DECT network layer as defined in ETS 300 757 [27].

## 6.1.11 Fields in information element coding, SM MO and SM MT services

### 6.1.11.1 GSM to DECT

#### 6.1.11.1.1 Protocol discriminator - protocol discriminator

**Table 20**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | protocol discriminator | protocol discriminator | | | |
| 1 | '1001'B | '0011'B | | M | "SMS" to "CC" |

#### 6.1.11.1.2 Transaction ID - Transaction Identifier

The SMS Transaction Flag shall be mapped transparently to the DECT Transaction Flag.

The DECT transaction value shall have value '111'B and GSM SMS transaction ID shall be mapped transparently into the first three bits (bits 3, 2 and 1) of the DECT extended transaction value. Bit 4 of the transaction ID shall have the value of the Transaction Flag. Bits 8, 7, 6 and 5 shall have value '0010'B.

#### 6.1.11.1.3 Cause value - Release reason code

**Table 21**

| Item No. | Message coding GSM | Message coding DECT | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | Cause value (#) | Release reason code (hex) | | | |
| 1 | 17 Network failure | 0F Unknown | | M | |
| 2 | 22 Congestion | 31 Overload | | M | |
| 3 | 81 Invalid transaction identifier value | 02 Unknown transaction identifier | | M | |
| 4 | 95 Semantically incorrect message | 04 Invalid information element contents | | M | |
| 5 | 96 Invalid mandatory information | 03 Mandatory information element missing | | M | |
| 6 | 97 Message type non-existent or not implemented | 01 Unexpected message | | M | |
| 7 | 98 Message not compatible with the short message protocol state | 01 Unexpected message | | M | |
| 8 | 99 Information element non-existent or not implemented | 04 Invalid information element contents | | M | |
| 9 | 111 Protocol error, unspecified | 0F Unknown | | M | |

### 6.1.11.2 DECT to GSM

#### 6.1.11.2.1 protocol discriminator - protocol discriminator

See subclause 6.1.11.1.1.

#### 6.1.11.2.2 Transaction ID - Transaction ID

See subclause 6.1.11.1.2.

### 6.1.11.2.3    Call class - service type

**Table 22**

| Item No. | Message coding DECT | Message coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | Call class | Service type | | | |
| 1 | '0100'B | '0100'B | | M | "Messaging call setup" to "SMS" |

### 6.1.11.2.4    Cause value-Cause - Release reason code

**Table 23**

| Item No. | Message coding DECT | Message coding GSM | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | Release reason code (hex) | Cause value (#) | | | |
| 1 | 31 Overload | 22 Congestion | | M | |
| 2 | 02 Unknown transaction identifier | 81 Invalid transaction identifier value | | M | |
| 3 | 04 Invalid information element contents | 95 Semantically incorrect message | | M | |
| 4 | 03 Mandatory information element missing | 96 Invalid mandatory information | | M | |
| 5 | 01 Unexpected message | 97 Message type non-existent or not implemented | | M | |
| 6 | 04 Invalid information element contents | 99 Information element non-existent or not implemented | | M | |
| 7 | 0F Unknown | 111 Protocol error, unspecified | | M | |

Other DECT release reason values shall be mapped into CP-Cause #111 Protocol error unspecified.

### 6.1.12    Information mapping, SMSCB service

### 6.1.12.1    GSM to DECT

**Table 24: List of mapped messages**

| Item No. | GSM SMSCB message | DECT message | Ref. | Map status | Note |
|---|---|---|---|---|---|
| 1 | - | CLMS-FIXED address section | | - | note 1 |
| 2 | SMSCB message | CLMS-FIXED data section 1 | 6.1.13.1 | M | note 3 |
| 3 | SMSCB message (cont.) | CLMS-FIXED data section 2 | 6.1.13.2 | C.1 | note 2 note 3 |
| 4 | SMSCB message (cont.) | CLMS-FIXED other data sections | 6.1.13.3 | M | note 3 |
| C.1: | If this CLMS-FIXED message is the second segment of the first group then M else X (see note 2) | | | | |
| NOTE 1: | Default values are given in subclause 6.1.6. | | | | |
| NOTE 2: | If this CLMS-FIXED message is not the second segment of the first multisegment group then mapping shall be done as specified in subclause 6.1.13.3. | | | | |
| NOTE 3: | The information carried in the same SMSCB message. | | | | |

### 6.1.13 Information elements mappings SMSCB service

#### 6.1.13.1 SMSCB message - CLMS-FIXED data section 1

**Table 25**

| Item No. | GSM Message | DECT message | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | SMSCB message | CLMS-FIXED data section 1 | | | |
| 1 | - | Data (Octet 2) | 6.1.6 | X | |
| 2 | Serial Number (Octets 1 -2) | Data (Octet 3-4) | 6.1.14.1 | M | |
| 3 | Data Coding Scheme (Octet 5) | Data (Octet 5) | 6.1.14.1 | M | |

#### 6.1.13.2 SMSCB message - CLMS-FIXED data section 2

**Table 26**

| Item No. | GSM Message | DECT message | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | SMSCB message | CLMS-FIXED data section 2 | | | |
| 1 | Message Identifier (Octets 3-4) | Data (Octet 2-3) | 6.1.14.1 | M | |
| 2 | Page Parameter (Octet 6) | Data (Octet 4) | 6.1.14.1 | M | |
| 3 | Message Content (Octets 7) | Data (Octet 5) | 6.1.14.1 | M | |

#### 6.1.13.3 SMSCB message - CLMS-FIXED other data sections

**Table 27**

| Item No. | GSM Message | DECT message | Ref. | Map status | Note |
|---|---|---|---|---|---|
| | SMSCB message | CLMS-FIXED data sections | | | |
| 1 | Message content (4 octet data blocks) | Data | 6.1.14.1 | M | note 1 |
| NOTE 1: | The Message Contents is segmented to 4 octet blocks beginning from octet 8 for each CLMS-FIXED message. If the number of blocks in first group exceeds 3 see subclause 6.1.6. | | | | |

### 6.1.14 Fields mappings SMSCB service

#### 6.1.14.1 General field mapping rule

The field shall be carried transparently inside the data part of the DECT message.

## 6.2 PP C-plane SM MO IWU procedures

This subclause describes the IWU functionality between SM-RP protocol entity and CC entity. A general example of message and primitive flows is illustrated in annex D.

If external handover is supported the requirements regarding the MMSP state machine as defined in the Annex B shall be supported.

NOTE: The FP informs about the external handover support via Broadcast attributes bit a45.

### 6.2.1 Connection establishment and data transfer

Upon receipt of MNSMS-EST-req from SM-RP layer the PP IWU shall issue MNCC-SETUP-req containing <<Basic service>> information element with values described in clause 7. The IWU shall wait for MNCC-CONNECT-ind primitive before it proceeds with data transmission.

Upon receipt of the MNCC-CONNECT-ind primitive the PP IWU shall proceed with submitting MNCC-IWU-INFO-req containing the RPDU received previously in the MNSMS-EST-req primitive. The RPDU shall be submitted in the <<iwu-to-iwu>> parameter containing the necessary coding suggested in subclause 6.1.10.2.3. The <<MMS-Generic-Header>> shall contain value "MMS-SEND" in the <MMS Command type> field.

The PP may request for MMSP layer acknowledgements by having value '11' or '10' in the <Reply requested> field of the <<MMS-Generic Header>> information element in the {IWU-INFO} message if External handover is supported.

Upon receipt of MNCC-IWU-INFO-ind with value "MMS-SEND-RPY" in the <MMS Command type> field of the <<MMS-Generic-Header>> field no action shall be taken towards SM-RP. The information shall be used as defined in annex B.

Upon receipt of {IWU-INFO} message coded as {MMS-SEND} and reflected by MNCC-IWU-INFO-ind the PP IWU shall issue the contents of the <<iwu-to-iwu>> (the SM-RP frame) parameter with the MNSMS-DATA-ind to the SM-RP layer.

### 6.2.2        Connection release and abnormal situations

Upon receipt of MNSMS-REL-req from the SM-RP layer the PP IWU shall issue MNCC-RELEASE-req to the CC layer if the CC connection is still present. If connection has already been released no action is take upon receipt of MNSMS-REL-req. The cause code may be mapped to the CC release reason code as described in subclause 6.1.11.1.3. The release should be timed such that the previous {IWU-INFO} message transfer has been successfully finished.

Upon receipt of MNCC-REJECT-ind from CC the PP IWU shall issue MNSMS-ERROR-ind to the SM-RP layer. The CC release reason code may be mapped to the cause code.

Upon receipt of MNSMS-ABORT-req from the SM-RP layer the PP IWU shall issue MNCC-REJECT-req to the CC layer. The cause code may be mapped to the CC release reason code as illustrated in subclause 6.1.11.1.3.

If the PP CC entity releases the connection without SM-RP layer issuing a primitive issuing either MNCC-RELEASE-req or MNCC-REJECT-req the PP IWU shall issue a MNSMS-ERROR-Ind to the SM-RP layer.

## 6.3      PP C-plane SM MT IWU procedures

This subclause describes the IWU functionality between SM-RP protocol entity and CC entity. A general example of message and primitive flows is illustrated in annex D.

### 6.3.1        Connection establishment and data transfer

Upon receipt of MNCC-SETUP-ind from CC containing <<Basic service>> information with values described in clause 7 the PP IWU shall:

-       if no SM-RP layer functionality is present the IWU shall issue MNCC-REJECT-req with release reason "Service not implemented";

-       or if SM-RP functionality is present the IWU shall issue MNCC-CONNECT-req primitives.

No action shall be taken upon receipt of MNCC-CONNECT-ACK-ind primitive.

Upon receipt of MNCC-IWU-INFO-ind the PP IWU shall issue the contents of the <<iwu-to-iwu>> (RPDU) parameter with the MNSMS-EST-ind to the SM-RP layer.

Upon receipt of MNSMS-DATA-req containing a RP frame (RPDU) the PP IWU shall issue MNCC-IWU-INFO-req with value "MMS-SEND" in the <MMS Command type> field of the <<MMS-Generic-Header>> with the RPDU in the <<iwu-to-iwu>> parameter with the coding suggested in subclause 6.1.10.2.3.

The PP may request for MMSP layer acknowledgements by having value '11' or '10' in the <Reply requested> field of the <<MMS-Generic Header>> information element in the {IWU-INFO} message if External handover is supported.

### 6.3.2 Connection release and abnormal situations

Upon receipt of MNSMS-REL-req from the SM-RP layer the PP IWU shall issue MNCC-RELEASE-req to the CC layer if the CC connection is still present. If connection has already been released no action shall taken upon receipt of MNSMS-REL-req. The cause code may be mapped to the CC release reason code as described in subclause 6.1.11.1.3. The release should be timed such that the previous {IWU-INFO} message transfer has been successfully finished.

Upon receipt of MNSMS-ABORT-Req from the SM-RP layer the PP IWU shall submit MNCC-REJECT-req primitive to the PP CC.

Upon receipt of MNCC-REJECT-ind the PP IWU shall issue MNSMS-ERROR-ind to the SM-RP layer with a cause code optionally mapped from the MNCC-REJECT-ind primitive.

No action shall be taken upon receipt of MNCC-RELEASE-cfm primitive.

Upon receipt of MNCC-RELEASE-ind primitive the PP IWU shall response with MNCC-RELEASE-res to the PP CC to indicate the acceptance of the release.

## 6.4 Summary of primitive mappings in SM MO and SM MT cases

The following table illustrates the primitive mappings between the SM-RP and PP CC. The detailed information about the procedures can be found in subclauses 6.3 and 6.2.

**Table 28**

| Item No. | The direction of the primitives in PP IWU | MO/MT-SMS primitives | DECT PP CC primitives | Note |
|---|---|---|---|---|
| 1 | SM-RP => PP IWU => CC | MNSMS-ABORT-Req (Cause) | MNCC-REJECT-Req (Release Reason) | note 2 |
| 3 | SM-RP => PP IWU => CC | MNSMS-DATA-Req (MT RPDU) | MNCC-IWU-INFO-Req (MT RPDU) | note 3 |
| 4 | SM-RP <= PP IWU <= CC | MNSMS-DATA-Ind (MO RPDU) | MNCC-IWU-INFO-Ind (MO RPDU) | note 3 |
| 5 | SM-RP => PP IWU => CC | MNSMS-EST-Req (MO RPDU) | MNCC -SETUP-Req MN-CC-IWU-INFO-Req(MO RPDU) | note 1 note 3 |
| 6 | SM-RP <= PP IWU <= CC | MNSMS-EST-Ind (MT RPDU) | MNCC -SETUP-Ind MNCC-IWU-INFO-Ind (MT RPDU) | note 1 note 3 |
| 7 | SM-RP <= PP IWU <= CC | MNSMS-ERROR-Ind (Cause) | MNCC- REJECT-Ind (Release Reason) | note 2 |
| 8 | SM-RP => PP IWU => CC | MNSMS-REL-Req (Cause) | MNCC-RELEASE-Req (Release Reason) | note 2 |

NOTE 1: Two primitives are triggered by or from one upper layer primitive.
NOTE 2: mapping between release reason and Cause code may take place.
NOTE 3: The RPDU is carried intact inside the IWU-INFO with MMS-SEND message coding user field. The MMS SEND message shall contain the necessary coding to indicate this.

**6.5     PP C-plane SMSCB IWU procedures**

Upon receipt of the MNDL-UNITDATA-ind from the CLMS entity the PP IWU shall first check the value of the octet 1 of the received message for first group indicated by the <F> field and group numbering indicated by the <group numbering> field. The first group of the multisection group is recognized by <F bit> field value '1'B: If the multisection group number is larger than 0 then the PP IWU shall wait for additional groups. The SMSCB Serial Number carried in the octets 2 and 3 of the groups shall be used to guarantee that the CLMS-FIXED groups are belonging to the same SMSCB message. When all sections have been received the PP IWU shall combine the group sections into one SMSCB message. The octet 1 of the first group and octets 1 - 4 of the subsequent groups shall be ignored. When the complete message has been assembled it shall be forwarded to the SMSCB application.

If a section is missing the PP IWU shall discard the received information and shall start the message reception again by waiting for a message having value '1'B in the <F> field.

# 7     Interworking connection types

## 7.1     Connection type definitions

### 7.1.1     General

The following coding are default codings for the connection establishment of the SM MO and SM MT services.

### 7.1.2     <<BASIC SERVICE>> coding

**Table 29: <<Basic service>> default coding**

| Octet | Information element field | Field value | Note |
|---|---|---|---|
| 2 | <Call Class> | '0100'B | "Message Call Setup" |
|  | <Basic Service> | '0110'B | "GSM IWP SMS" |

### 7.1.3     <<IWU-ATTRIBUTES>> default coding

The profile defined <<IWU ATTRIBUTES>> coding shall be used. The structure is as described in the ETS 300 175-5 [5] subclause 7.7.21 with coding value '01' in the <Coding standard> field. Only first four octets are used. The Profile subtype shall have the following codings:

**Profile subtype (octet 4):**

Bits   4 3 2 1        Meaning
       0 0 0 1        SMS SM MO
       0 0 1 0        SMS SM MT
All other values reserved.

**Table 30: <<iwu attributes>> default coding**

| Octet | Information element field | Field value | Note |
|---|---|---|---|
| 3 | <Coding standard> | '01'B | "Profile defined coding" |
|  | <Profile> | '01011'B | "GSM messaging" |
| 4 | Negotiation indicator | '000'B | "Negotiation not possible" |
|  | Profile Subtype | '0001'B or | "SMS SM MT or |
|  |  | '0010'B | SMS SM MO" note 1 |
| NOTE 1:       The coding shall be selected according to the service, either MT or MO. | | | |

### 7.1.4    <<CALL ATTRIBUTES>> default coding

**Table 31: <<Call attributes>> default coding**

| Octet | Information element field | Field value | Note |
|---|---|---|---|
| 3 | <Coding standard><br><Network layer attributes> | '00'B<br>'01000'B | "DECT standard coding"<br>"DECT/GSM IWP" |
| 4 | <C-plane class><br><C-plane routing> | '010'B<br>'0000'B | Class A link; shared<br>Cs only |

### 7.1.5    <<CONNECTION ATTRIBUTES>> default coding

**Table 32: <<Connection attributes>> default coding**

| Octet | Information element field | Field value | Note |
|---|---|---|---|
| 3 | <Symmetry><br><Connection identity coding> | '001'B<br>'0000'B | "Symmetric connection"<br>"Unknown" |
| 4 | <Target bearers> | '00000'B | "NO U-plane" |
| 5 | <Mac slot size><br><Mac service> | -<br>- | note 1<br>note 1 |
| 6 | <Cf channel attributes> | '000'B | "Cf never (Cs only)" |
| NOTE 1:     These values have no meaning to the profile. | | | |

### 7.1.6    <<MMS Gen Hdr>> coding

**Table 33: <<MMS Generic Header>> default coding**

| Octet | Information element field | Field value | Note |
|---|---|---|---|
| 3 | <MMS Command type> | '00000'B or<br>'00001'B | "MMS-SEND" or<br>"MMS-SEND-RPY" |
| 3 | <Reply requested> | '11'B or<br><br>'10'B | "Reply requested from the End entity and MCE" or<br>"Reply not requested form the End entity and not from MCE" |
| 4 | <MMS message identifier> | - | note 1 |
| NOTE 1:     The value is ignored. | | | |

### 7.1.7    <<MMS Obj Hdr>> coding

**Table 34: <<MMS Object Header>> default coding**

| Octet | Information element field | Field value | Note |
|---|---|---|---|
| 3 | <Length Description> | '01'B | "No user data length specified" |
| 3 | <Number of length octets> | - | note 1 |
| 4 | <Source user data category> | '11'B | "Other user data" |
| 4 | <Source user data transfer encoding> | '00000'B | "No transfer encoding" |
| 5 | <Source user data type> | '0100010'B | "Encapsulated: GSM SMS" |
| NOTE 1:     The value is ignored. | | | |

## Annex A (normative): Interworking with Subscriber Identity Module (SIM) application

The interworking between the SIM card and the SMS application in terms of the storing of the SMS message and SMS related information shall be done as defined in ETS 300 608 [23]. Other SIM related procedures shall be done as specified in the ETS 300 370 [10].

The interface between a Data Terminal Equipment (DTE) and DECT PP shall fulfil the requirements of ETS 300 585 [21] if a DTE is used for SMS control.

## Annex B (normative): MMSP requirements for SM MO external handover support

### B.1    Introduction

This annex describes the procedures for the SM MO SMS transfer used by the MMSP entity over the CC entity link if external handover is supported in both PP and FP. These procedures as well as the MMSP application structure is required to guarantee the transmission of the SMS message by provision of acknowledgements and retransmissions on the MMSP layer. The state machine as described here shall be a function of the PP.

### B.2    General rules

The procedures may be activated only if the CC entity is in a active state.

If the CC connection is released in the middle of the SMS message transfer procedure either with normal or abnormal release the procedure are interrupted, the idle state is returned, buffered messages are discarded and the application shall be informed about the situation as defined in subclause B.3.5.

If the connection is released due to external handover the procedures shall be continued over the new CC connection.

The field <Reply requested> in <<MMS GENERIC HEADER>> information element of a {MMS-SEND} message shall have value '10'B; "Reply requested from the End entity" or '11'B; "Reply requested from the Message Control Entity (MCE) and end entity".

### B.3    MMSP state machine

For the provision of retransmissions the following state machine shall be required.
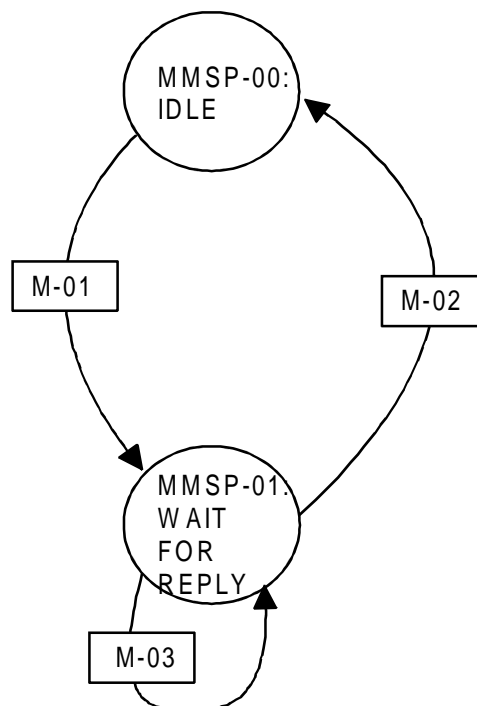


**Figure B.1: The MMSP state machine**

### B.3.1    MMSP states

### B.3.1.1        MMSP state MMSP-00: "IDLE"

This state exists when the MMSP entity is in a idle mode or when the MMSP message transfer end in a normal way.

### B.3.1.2        MMSP state MMSP-01: "WAIT FOR REPLY"

This state exists when the MMSP entity has initiated a transfer of a MMSP message and is waiting a reply message.

### B.3.2    MMSP timers

<TMMSP.01> timer shall contain the retransmission timer value. This timer shall have the same value as the GSM SM-CP layer TC1N [37]. If the timer expires the MMSP message is retransmitted and the state MMSP-01 "WAIT FOR REPLY" is re-entered.

### B.3.3    MMSP retransmission counter

The maximum number of {MMS-SEND} message retransmissions is an implementation option as defined in the GSM SM-CP layer definitions, ETS 300 559 [19]. However, the number of retransmission should be the same as in the GSM SM-CP layer.

### B.3.4    MMSP state transitions

M-01: The {MMS-SEND} message was sent. The timer <TMMSP.01> is set. Next state is MMSP-01.
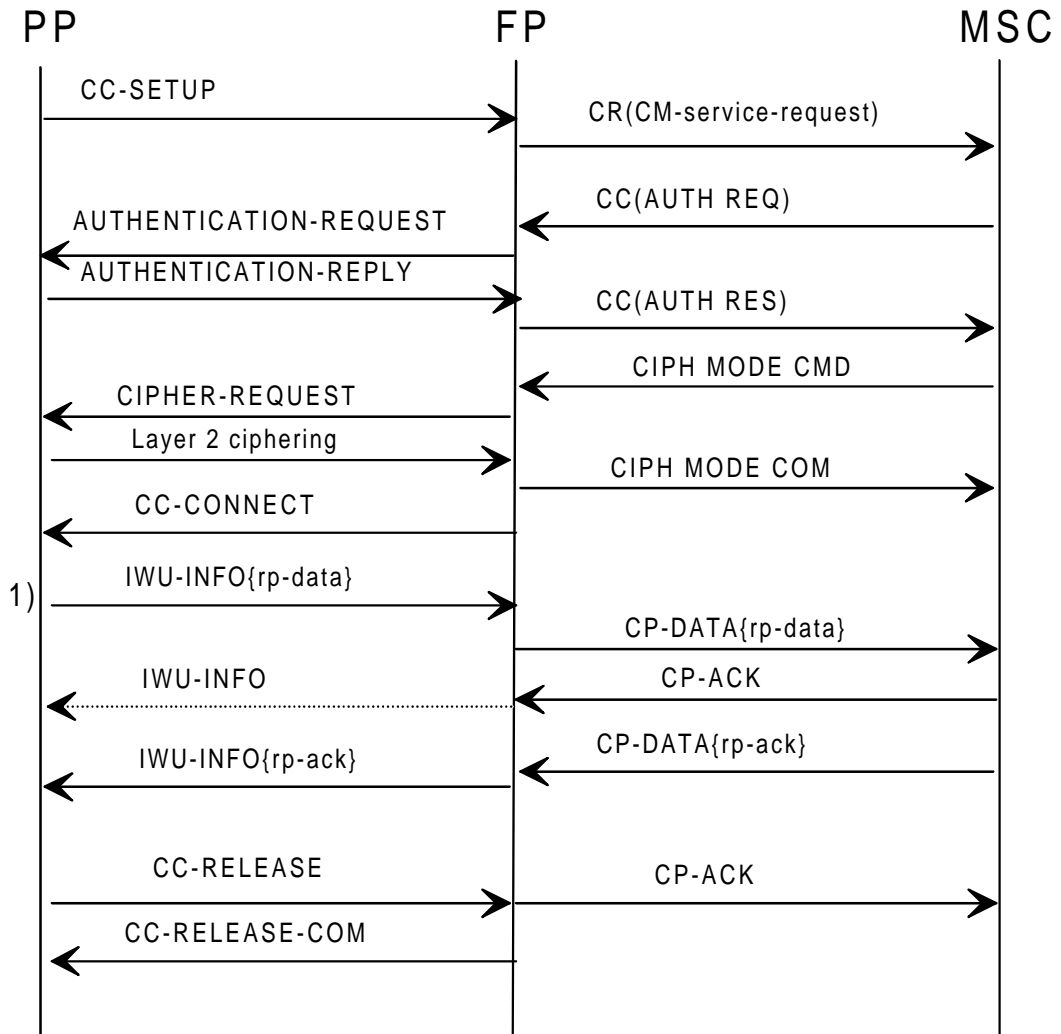
M-02: The {MMS-SEND-RPY} message was received. The timer <TMMSP.01> is stopped. Next state is MMSP-00.

M-03: If the {MMS-SEND-RPY} message was not received before the timer expiry of the <TMMSP.01> timer the {MMS-SEND} message shall be resent. The MMSP-01 state is re-entered. If the maximum amount of the retransmissions is reached as indicated by retransmission counter the application shall be informed about the situation as defined in subclause B.3.5 and MMSP-00 state shall be entered.

### B.3.5    Abnormal situations

Upon transmission errors the MMSP layer shall release the CC connection, if it has not yet been released, by issuing a MNCC-REJECT-req primitive and issues a MNSMS-ERROR-ind to the SM-RP layer.

## Annex C (informative):    Signalling charts

PP                               FP                               MSC

CC-SETUP →
                                 CR(CM-service-request) →

                                 ← CC(AUTH REQ)
← AUTHENTICATION-REQUEST
AUTHENTICATION-REPLY →
                                 CC(AUTH RES) →

                                 ← CIPH MODE CMD
← CIPHER-REQUEST
Layer 2 ciphering →
                                 CIPH MODE COM →
← CC-CONNECT

1)   IWU-INFO{rp-data} →
                                 CP-DATA{rp-data} →
← IWU-INFO                       ← CP-ACK

← IWU-INFO{rp-ack}               ← CP-DATA{rp-ack}

CC-RELEASE →                     CP-ACK →
← CC-RELEASE-COM

Mobile Originated SMS (DECT/GSM interworking mobile)
1)  The GSM short message has to be segmented into multiple IWU-INFO messages.
CP layer IW

**Figure C.1**
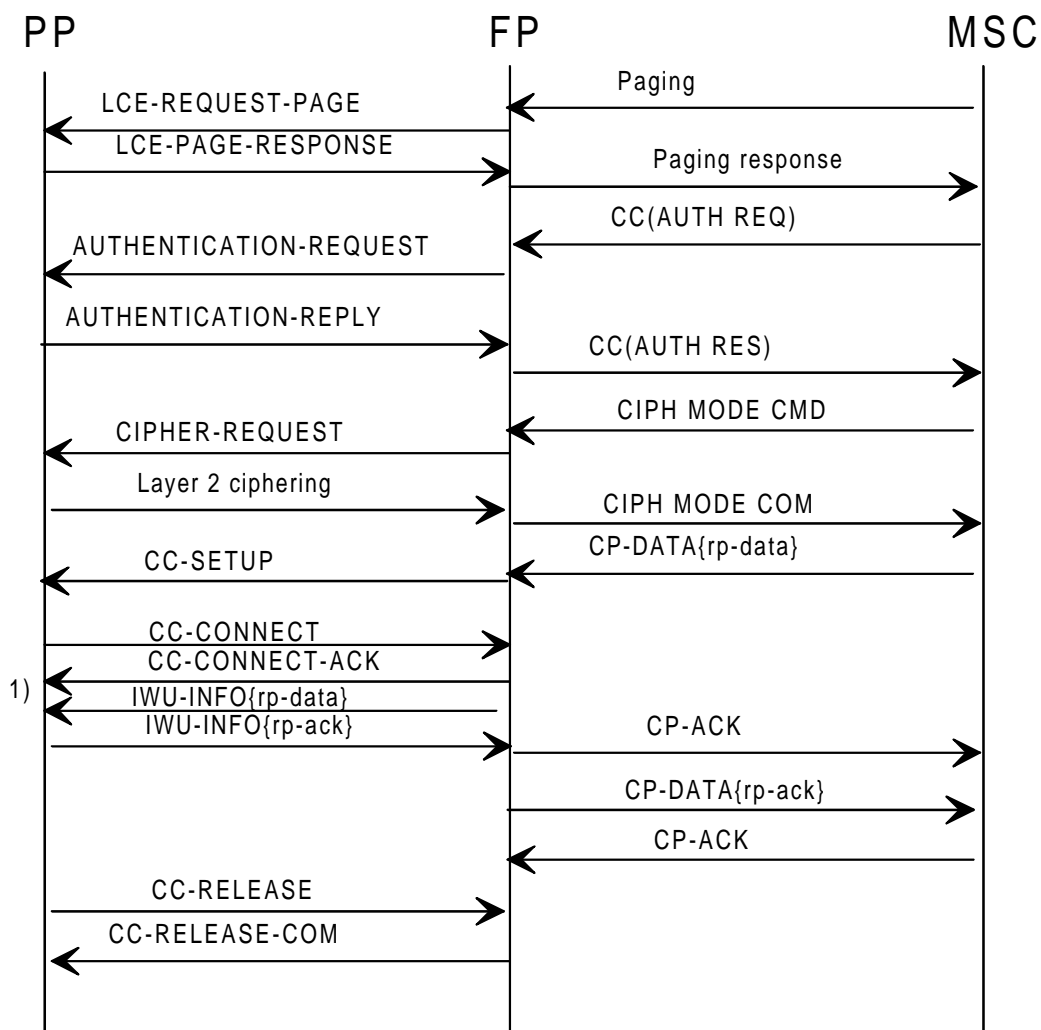
Mobile Terminated SMS (DECT/GSM interworking)
1) The GSM short message has to be segmented into multiple IWU-INFO messages.
CP layer IW

**Figure C.2**

## Annex D (informative):    An example of primitives and message flows
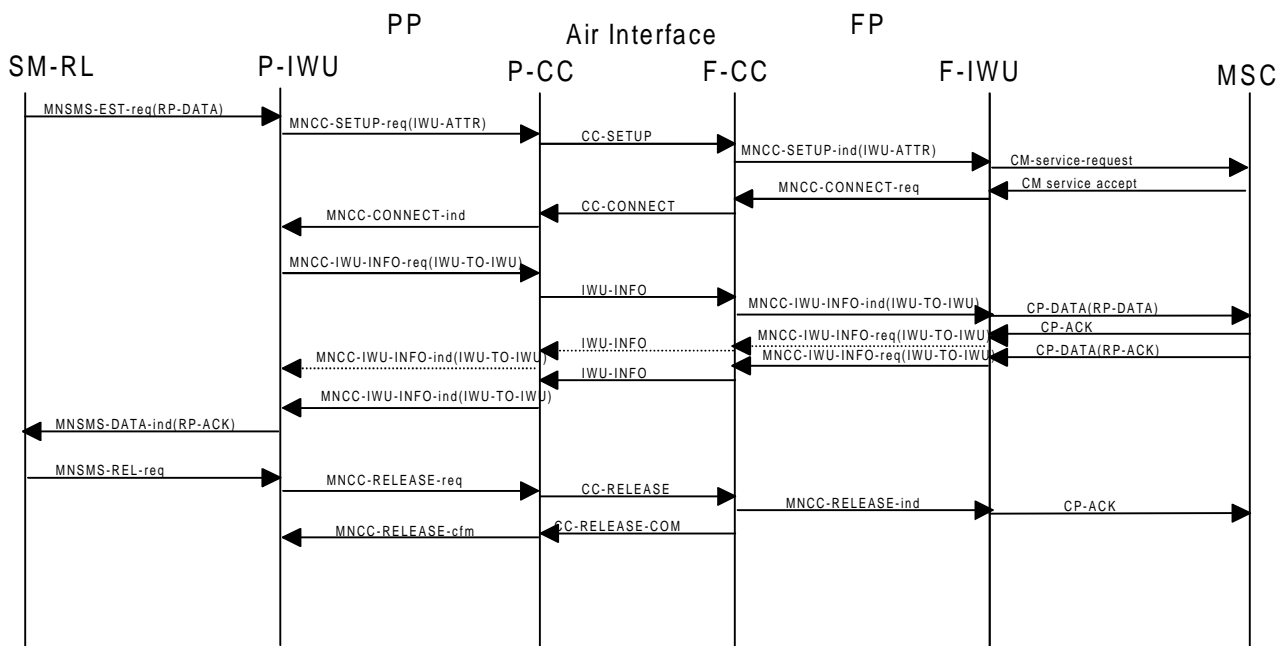
Mobile originated SMS



**Figure D.1**
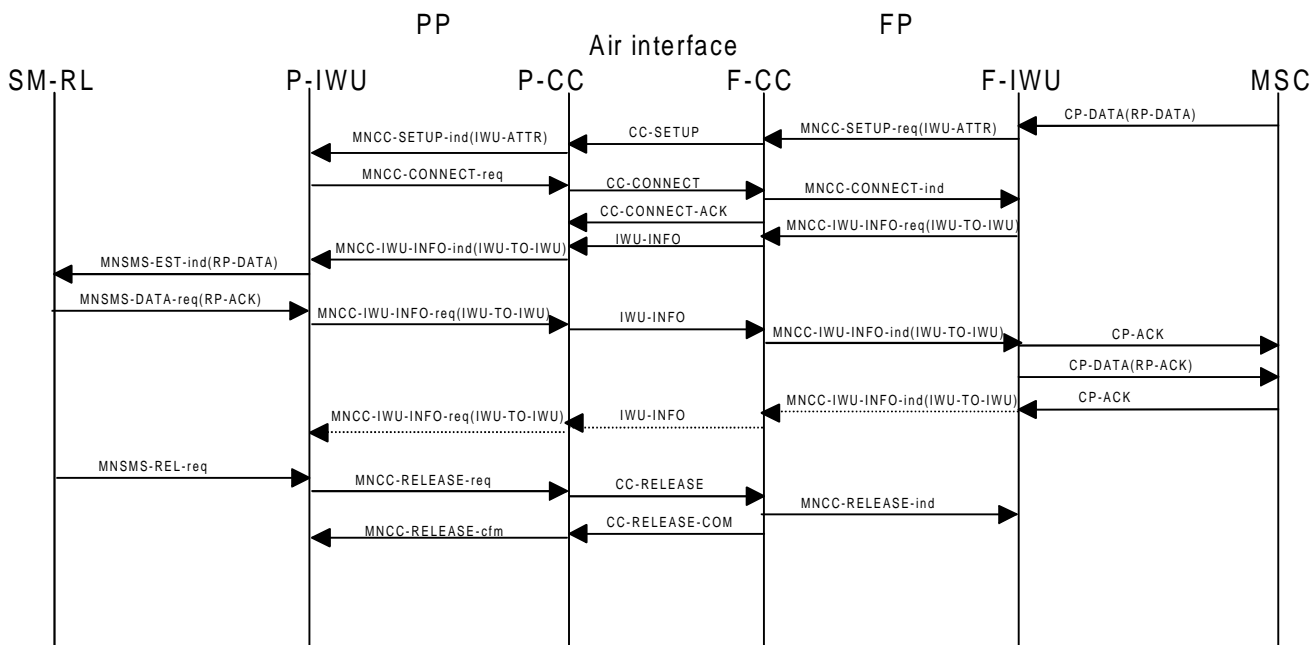
Mobile terminated SMS



**Figure D.2**

# Annex E (informative): Bibliography

- CCITT Recommendations Q.6XX series: "Interworking of signalling systems".

**History**

| Document history | | | |
|---|---|---|---|
| June 1996 | Public Enquiry | PE 108: | 1996-06-24 to 1996-10-18 |
| February 1997 | Vote | V 9715: | 1997-02-11 to 1997-04-11 |
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