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Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT) ï Nizkohitrostna storitev sporoļ anja (LRMS), vkljuļ no s storitvijo kratkih sporoļ il (SMS)

Digital Enhanced Cordless Telecommunications (DECT); Low Rate Messaging Service (LRMS) including Short Messaging Service (SMS)

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT).

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Introduction

The present document replaces the former ETS 300 757, known as the E.2 profile, and the former ETS 301 678 (never published), known as CTM FP2. It defines profiles for Digital Enhanced Cordless Telecommunications (DECT) systems conforming to EN 300 175 parts 1 [1] to 8 [8]. It is part of a family of profiles aimed at the general connection of terminals supporting non-voice services to a fixed infrastructure, private and public.

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1 Scope

The Low Rate Messaging Service (LRMS), specified in the present document, provides a means for the slow, acknowledged or unacknowledged, transfer of multimedia message objects, including the Short Message Service (SMS). It provides both point-to-point and point-to-multipoint messaging. This service may be used for private and public roaming applications.

The present document defines the requirements on the Physical (PHY), Medium Access Control (MAC), Data Link Control (DLC) and Network (NWK) layers of DECT. The standard also specifies management entity requirements and generic interworking conventions, which ensure the efficient use of the DECT spectrum.

The present document further mandates how to implement a GSM like Short Message Service (SMS), Point to Point (PTP), which uses a sub-set of the Low Rate Messaging Service (LRMS) mentioned before as a bearer service. SMS-PTP includes the following two services:

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

The Short Message Service, Cell Broadcast is outside the scope of the present document.

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

The following picture shows the protocols defined in the present document.

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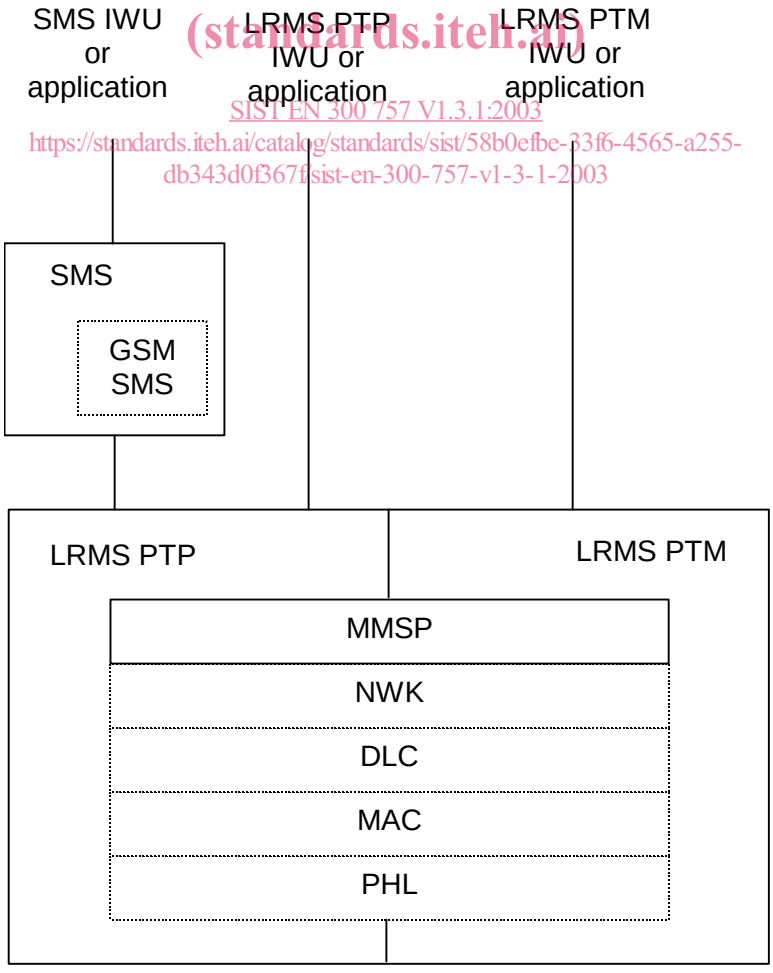

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The SMS or LRMS applications are outside the scope of the present document. So is the network behind the FP. Any information provided concerning applications or the network behind the FP is provided for informative, descriptive reasons only.

2 References

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

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] ETSI EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2] ETSI EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".

[3] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4] ETSI EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5] ETSI EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6] ETSI EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7] ETSI EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[8] ETSI EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".

[9] ETSI EN 300 444: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

[10] ETSI ETS 300 559: "European digital cellular telecommunications system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface (GSM 04.11)".

[11] ISO/IEC 8073: "Information technology - Open Systems Interconnection - Protocol for providing the connection-mode transport service".

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3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

multiframe: repeating sequence of 16 successive Time Division Multiple Access (TDMA) frames, that allows low rate or sporadic information to be multiplexed (e.g. basic system information or paging)

service class 1: local area applications, for which terminals are pre-registered off-air with one or more specific fixed parts, and establishment of service and user parameters is therefore implicit, according to a profile-defined list

service class 2: private and public roaming applications for which terminals may move between fixed parts within a given domain and for which association of service parameters is explicit at the time of service request

SMS-SC: SMS Short Message Center

NOTE: It is the logical entity able to store and forward short messages.

TDMA frame: time-division multiplex of 10 ms duration, containing 24 successive full slots

NOTE: A TDMA frame starts with the first bit period of full slot 0 and ends with the last bit period of full slot 23.

3.2 Symbols

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

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

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

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

3.3 Abbreviations

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

ACK	Acknowledgement
ADPCM	Adaptive Pulse Code Modulation
CC	Call Control
C_F	higher layer signalling Channel (Fast)
CL_F	higher layer Connectionless channel (Fast) - a logical channel to the MAC layer
CL_S	higher layer Connectionless channel (Slow) - a logical channel to the MAC layer
CLMS	Connectionless Message Service
C-plane	Control plane
CTM	Cordless Terminal Mobility
C_S	higher layer signalling Channel (Slow)
DAM	DECT Authentication Module
DLC	Data Link Control
FP	Fixed Part

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FT	Fixed radio Termination
FTP	File Transfer Protocol
GAP	Generic Access Profile
G_F	higher layer information control channel - a logical channel to the MAC layer
GSM	Global System for Mobile communication
HTTP	Hyper Text Transfer Protocol
IE	Information Element
I_P	higher layer Information channel (Protected)
IWF	Interworking Functions
IWU	Interworking Unit
LAP	Link Access Procedure
LAP-C	Link Access Procedure (Control)
LCE	Link Control Entity
LLN	Logical Link Number (DLC layer)
LRMS	Low Rate Messaging Service
M	MAC control channel
MAC	Medium Access Control
MCE	Message Control Entity
MMSP	Multimedia Messaging Service Protocol
MNCC	Mobile Network Call Control
MO	Mobile Originated
MT	Mobile Terminated
NLF	New Link Flag
NWK	Network
P	Paging channel
PDU	Protocol Data Unit
PHL	Physical Layer
PHY	Physical
PP	Portable Part
PT	Portable radio Termination
PTM	Point-To-Multipoint
PTP	Point-To-Point
Q	system information channel
RFP	Radio Fixed Part
RFPI	Radio Fixed Part Identifier
SAP	Service Access Point
SAPI	Service Access Point Identifier
SC	Service Center
SDU	Service Data Unit
SI_N	higher layer connectionless channel (Unprotected)
SIM	Subscriber Identity Module
SM	Short Message
SM-RP	Short Message Relay layer Protocol
SM-TP	Short Message Transfer layer Protocol
SMS	Short Message Service
SMS-MO	SMS Mobile Originated
SMS-MT	SMS Mobile Terminated
TDMA	Time Division Multiple Access
UI	Unnumbered Information (Frame)
U-plane	User plane
WWW	World Wide Web

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4 Description of services

4.1 General

The DECT data profile defined in the present document has been intended for message transfer or paging and is optimized for small SDUs, low PP complexity and ultra-low power consumption. Two service types are defined: Low Rate Messaging Service Point-To-Point (LRMS PTP) which may be unacknowledged or acknowledged used for point-to-point messaging and Low Rate Messaging Service Point-To-Multipoint (LRMS PTM) used for point-to-multipoint messaging. The LRMS PTM is an optional feature while LRMS PTP support is mandatory if this profile is supported.

The LRMS PTP and PTM may co-exist with other profiles and their existence should not have any effect on the functionality of the other existing profiles. That is, the LRMS functionality should have a secondary priority in respect to the profile relations.

The present document also mandates how LRMS PTP is to be used for transfer of GSM like SMS messages.

4.2 Low Rate Messaging Service (LRMS)

4.2.1 Point-To-Point (PTP)

The objectives of the LRMS PTP profile are as follows:

The LRMS PTP is a generic set of commands, information elements and functionality for file/messaging service. In most of the cases LRMS can be regarded as a DECT internal teleservice that can interwork with the similar services in external networks. In addition LRMS PTP provides means to convey transparently application specific upper layer protocol frames thus facilitating the usage of this profile as a bearer service. It provides a generic file handling/messaging services over the DECT air interface by utilizing the transportation mechanism of the DECT C-plane in the best way possible while offering a general set of functions to the applications using its services. The LRMS procedures can be accessed in a standardized way through a set of primitives. The LRMS point-to-point service may be acknowledge or unacknowledged.

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LRMS provides a compact subset of functions to messaging servers with the advantage that a single terminal with LRMS support can use a wide variety of messaging services with minimum amount of application layer complexity. If a complete set of services is needed an escape sequence has to be used or some other means such as transparent protocol transportation mechanism should be used.

The Multimedia Messaging Service Protocol (MMSP) fulfils these objectives.

MMSP that is used for the provision of LRMS services and functionality is a stateless protocol which defines a set of messages, framing rules and information elements each containing optional and mandatory information fields.

MMSP utilities the services of the DECT Call Control (CC) entity. It could be regarded as a supplementary service type of service that provides signalling/control and application specific information related to the teleservices provided by the DECT data profiles.

The MMSP layer functionality is provided by a set of specific DECT network layer CC information elements. Therefore the MMSP is not from DECT layer viewpoint a separate real protocol layer but a service provided to the application. However, from the application perspective the MMSP can be seen as a protocol layer. Therefore, the MMSP can be regarded as a virtual protocol layer.

The support of MMSP protocol in LRMS PTP is mandatory.

In general the LRMS PTP may receive or send messages during an on-going other profile based call but this requires a separate CC instance.