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Foreword

This draft European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Public Enquiry phase of the ETSI standards approval procedure.

Every ETS prepared by ETSI is a voluntary standard. This ETS may contain text concerning conformance testing of the equipment to which it relates. This text should be considered as guidance only and does not make this ETS mandatory.

This ETS is based on ETS 300 175, parts 1 to 8 [1] to [8] and ETS 300 444 [12].

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

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1 Scope

This European Telecommunication Standard (ETS) specifies that set of technical requirements for Digital Enhanced Cordless Telecommunications (DECT) Fixed Part (FP) and DECT Portable Part (PP) necessary for the support of the Cordless Terminal Mobility (CTM) Access Profile (CAP).

The objective of the ETS is to ensure the air interface interoperability of DECT CAP PPs and DECT CAP FPs if applied.

The CTM service allows users of cordless terminals to be mobile within and between networks. Where radio coverage is provided and the cordless terminal has appropriate access rights the user shall be able to make calls from, and to receive calls at, any location within the fixed public and/or private networks, and may move without interruption of a call in progress.

This ETS covers the DECT access requirements for CTM phase 2 as defined in the CTM phase 2 service description, DE/NA-010061 [14].

The main objectives of the CAP are:

- maintain compatibility with the DECT Generic Access Profile (GAP), identifying only components not mandatory in the GAP to be added to obtain capabilities needed in the CTM context;

- maintain compatibility with ETS 300 175 [1] to [8], second edition, for procedures not defined in the GAP.

The CTM access profile is seen as an extension of the GAP mandatory base covering the requirements for CTM phase 2.

CAP supports telephony teleservice and provides 32 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM) speech bearer service.

CTM supplementary services with no impact on the air interface are not considered in the CAP.

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

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

[12] ETS 300 444 (1995): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

[13] TBR 22: "Radio Equipment and Systems (RES); Attachment requirements for terminal equipment for Digital Enhanced Cordless Telecommunications (DECT) Generic Access Profile (GAP) applications".

[14] DE/NA-010061: "Cordless Terminal Mobility (CTM); Phase 2; Service Description".

[15] ETS 300 650: "Integrated Services Digital Network (ISDN); Message Waiting Indication (MWI) supplementary service; Service description".

[16] ETS 300 745-1: "Integrated Services Digital Network (ISDN); Message Waiting Indication (MWI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[17] ISO/IEC 9646-7 (1995): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

3 Definitions, abbreviations and symbols

3.1 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 CTM subscriber is positively verified to be a legitimate user of the CTM service.

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: 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 DECT Network is a logical grouping that contains one or more fixed radio terminations plus their associated portable radio termination. The boundaries of the DECT network are not physical boundaries.

external handover: The process of switching a call in progress from one fixed part to another fixed part.

Fixed Part (DECT Fixed Part) (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 FT, plus additional implementation specific elements.

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 Common Interface (CI) standard. This includes radio transmission elements together with a selection of layer 2 and layer 3 elements.

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.

NOTE 9: for PARI and RFPI see abbreviations.

global network: A telecommunication network capable of offering a long distance telecommunication service.

NOTE 10: 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.

NOTE 11: There are two physical forms of handover, intra-cell handover and inter-cell handover.

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 FT. Internal handover reconnects the call at the lower layers, while maintaining the call at the NWK layer.

NOTE 12: The lower layer reconnection can either be at the Data Link Control (DLC) layer (connection handover) or at the MAC layer (bearer handover).

interoperability: 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).

interoperator 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 13: 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.

intraoperator 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 14: 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: A unique identity 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 PT is determined to the level of one location area, and this position is updated in one or more databases.

NOTE 15: These databases are not included within a DECT FT.

MAC Connection (CONNECTION): An association between one source MAC Multi-Bearer Control (MBC) entity and one destination Medium Access Control (MAC) Multi-Bearer Control (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.

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 16: The functions contained in the PA may be physically distributed, but any such distribution is invisible to the DECT network.

Portable Part (DECT Portable Part) (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 17: A DECT PP is logically divided into one PT plus one or more PAs.

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 18: A PT only includes elements that are defined in the DECT 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.

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 19: Roaming requires the relevant FPs and PP to be interoperable.

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

NOTE 20: Subscription registration is usually required before a user can make or receive calls.

supplementary service: a service that modifies or supplements a basic telecommunications service.

teleservice: a type of telecommunications service that provides the complete capability, including terminal equipment functions, for communication between users, according to protocols that are established by agreement.

3.2 Abbreviations

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

AC	Authentication Code
ADPCM	Adaptive Differential Pulse Code Modulation
ARC	Access Rights Class
ARD	Access Rights Details
ARI	Access Rights Identity
B	Business environment
BCD	Binary Coded Decimal
CAP	CTM Access Profile
CC	Call Control
CI	Common Interface
CLIP	Calling Line Identification Presentation
D	DECT reference point
DECT	Digital European Cordless Telecommunications
DLC	Data Link Control
DSAA	DECT Standard Authentication Algorithm
DSCA	DECT Standard Cipher Algorithm
DTMF	Dual Tone Multi-Frequency
EMC	Equipment Manufacturer Code
FLEN	Frame Length
FP	Fixed Part, (see definitions)
FT	Fixed radio Termination
IE	Information Element
IPEI	International Portable Equipment Identity
IPUI	International Portable User Identity
ISDN	Integrated Services Digital Network
IWU	Interworking Unit
KS'	FP authentication Session Key
KS	PP authentication Session Key
LA	Location Area
LAI	Location Area Identification
LAL	Location Area Level
LCE	Link Control Entity
LNW	Local Network

MAC	Medium Access Control
MBC	Multi-Bearer Control
MM	Mobility Management, a NWK layer functional grouping
MWI	Message Waiting Indication
NWK	Network, Layer 3 of the DECT protocol stack
P	Public (environment)
PA	Portable Application
PAP	Public Access Profile
PARI	Primary Access Rights Identity
PARK	Portable Access Rights Key
PHL	Physical Layer
PLI	Park Length Indicator
PMID	Portable part MAC Identity
PP	Portable Part
PSN	Portable equipment Serial Number
PT	Portable radio Termination
PUN	Portable User Number
PUT	Portable User Type
R	Residential environment
RES	A Response calculated by a PP
RFP	Radio Fixed Part
RFPI	Radio Fixed Part Identity
RS	A value used to establish authentication session keys
SAP	Service Access Point
SAPI	Service Access Point Identifier
SARI	Secondary Access Rights Identity
SS	Supplementary Services
TARI	Tertiary Access Rights Identity
TI	Transaction Identifier
TPUI	Temporary Portable User Identity
UAK	User Authentication Key
UPI	User Personal Identification

3.3 Symbols

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

M for mandatory to support (provision mandatory, process mandatory);

O for optional to support (provision optional, process mandatory);

I for out-of-scope (provision optional, process optional) not subject for testing;

C for conditional to support (process mandatory);

N/A for not-applicable (in the given context the specification makes it impossible to use this capability).

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

NOTE: The used notation is based on the notation proposed in ISO/IEC 9646-7 [17].

4 Introduction

This profile is an extension of ETS 300 444 [12] covering the requirements for CTM phase 2.

In the following clauses only differences with respect to ETS 300 444 [12] are explicitly mentioned.

5 Feature definitions

For the purposes of this ETS, the feature definitions in the following subclauses apply.

The number given in parentheses after the name of a feature is the item number used in the tables of this ETS.

5.1 Network (NWK) features

The following differences from the GAP are applicable.

DECT external handover (CAP-N.1): External handover is the process of switching a call in progress from one Fixed Part (FP-1) to another Fixed Part (FP-2). This means the handover occurs between two independent systems, where each system has its own lower layers of protocol and has an independent set of network layer Service Access Points (SAPs). To make external handover possible, a common management entity above the two fixed terminations is necessary.

Emergency call (CAP-N.2): This service feature enables a user to make an emergency call even without a valid subscription, i.e. a fast and easy means of giving information about an emergency situation to the appropriate emergency organization (e.g. fire service, police and ambulance).

Display management (CAP-N.3): This features enables a user to receive short alphanumeric indications displayed on the screen terminal. These indications could be associated with supplementary or value added services.

Message waiting indication (CAP-N.4): This feature enables a user to receive an indication of the status of a voice mailbox to which the user has access to.

Detach (CAP-N.5): This feature enables a PT to report to the FT that the PT is not ready to receive calls.

Enhanced location registration (CAP-N.6): This features enables automatic location registration of PT at expected intervals of time.

On-air modification of user parameters (CAP-N.7): This feature enables the CAP PT to accept FP initiated changes of subscription data.

5.1.1 Application features

See ETS 300 444 [12].

6 Service definitions

For the purposes of this ETS, the following service definitions apply.

6.1 DLC service definitions

See ETS 300 444 [12].

6.2 Medium Access Control(MAC) service definitions

The following differences from the GAP are applicable.

Tertiary Access Rights Identity (TARI) support (CAP-M.1): The ability to support in addition to the primary Access Rights Identity (ARI) and secondary ARIs tertiary ARIs that the FT does not broadcast and are only available to PT as a Yes/No answer upon a request including the wanted ARI. These may be used to reflect an inter-operators agreement allowing a portable to access more than one operator or services through FT.

7 Interoperability requirements

7.1 General

The tables listed in this subclause define all the protocol elements i.e. features, services, and procedures which are mandatory, optional, and conditional under the provision of another protocol element, or out of the scope of this ETS, or in some context not-applicable according to the definition of the status column as defined in subclause 3.3 for the CAP FP and PP. All optional elements shall be process mandatory according to the procedures described in this ETS.

Protocol elements defined as mandatory, optional or conditional in this subclause shall further be defined in clauses 8, 9, 10, 11, 12, 13 and 14 in detail either explicitly and/or as references to the DECT base standard, ETS 300 175, parts 2 to 8 [2] to [8] and ETS 300 176 [9].

The requirements of TBR 6 [10] , TBR 10 [11] and TBR 22 [13] shall be met by all equipment conforming to this ETS.

7.2 NWK features

Table 1: NWK features status

Feature supported							
				Status			
Item no.	**Name of feature**	**CAP Ref.**	**GAP Ref.**	**PT**	**FT**		
					R	**B**	**P**
N.30	Calling Line Identification Presentation (CLIP)		4.1	M	O	O	M
CAP-N.1	DECT External handover	5.1		M	O	O	M
CAP-N.2	Emergency call	5.1		M	O	O	M
CAP-N.3	Display Management (note)	5.1		M	O	O	M
CAP-N.4	Message Waiting Indication	5.1		M	O	O	M
CAP-N.5	Detach	5.1		M	O	O	M
CAP-N.6	Periodic location registration	5.1		M	O	O	M
CAP-N.7	On-air modification of user parameters	5.1		O	O	O	O
NOTE:	The PT is not mandated to support a physical display. A PT not supporting a physical display is requested to send the <<TERMINAL CAPABILITY>> information element containing <Display capability> which indicates no display.						

7.3 DLC services

See subclause 6.3 of ETS 300 444 [12].

7.4 MAC services

Table 2: MAC services status

Service supported							
				Status			
Item no.	**Name of service**	**CAP Ref.**	**GAP Ref.**	**PT**	**FT**		
					R	**B**	**P**
CAP-M.1	TARI support	6.2		O	O	O	O
NOTE:	Handsets not supporting these extra frequencies need only adapt scanning to allow continued use of the standard DECT frequencies.						

7.5 Physical Layer (PHL) services

See subclause 6.5 of ETS 300 444 [12].

7.6 Application features

See subclause 6.6 of ETS 300 444 [12].

7.7 NWK feature to procedure mapping

Table 3: NWK feature to procedure mapping

Feature/Procedure mapping							
				Status			
Feature	**Procedure**	**CAP Ref.**	**GAP Ref.**	**PT**	**FT**		
					R	**B**	**P**
N.30, Calling Line Identification Presentation (CLIP)			4.1	M	O	O	M
	Incoming call request		8.12	M	M	M	M
CAP-N.1, DECT External handover		5.1		M	O	O	M
	Handover candidate indication	9.1.1.1		M	O	M	M
	Handover candidate retrieval	9.1.1.2		M	O	O	O
	Target FP selection	9.1.2		M	N/A	N/A	N/A
	Handover reference indication	9.1.3.1		M	C1	C1	C1
	Handover reference retrieval	9.1.3.2		M	C2	C2	C2
	Handover candidate call setup	9.1.4		M	O	M	M
	Ciphering procedure PT initiated	9.1.5.1		O	C3	C3	C3
	Ciphering procedure FT initiated	9.1.5.2		M	C4	C4	C4
	U-plane handling	9.1.6		M	O	M	M
CAP-N.2, Emergency call		5.1		M	O	O	M
	Emergency call setup	9.2		M	M	M	M
CAP-N.3, Display Management		5.1		M	O	O	M
	Display	9.3		M	M	M	M
	Terminal capability indication	9.4		M	M	M	M
CAP-N.4, Message Waiting Indication		5.1		M	O	O	M
	Message waiting indication	9.7		M	O	O	M
CAP-N.5, Detach		5.1		M	O	O	M
	Detach	9.5		M	M	M	M
CAP-N.6, Periodic location registration		5.1		M	O	O	M
	Enhanced location registration	9.6		M	M	M	M
CAP-N.7, On-air modification of user parameters		5.1		O	O	O	O
	On-air modification of user parameters	9.8		M	M	M	M
C301 IF procedure 9.1.3.2 supported THEN O ELSE M. C302 IF procedure 9.1.3.1 supported THEN O ELSE M. C303 IF feature N.27 of ETS 300 444 [12] THEN M ELSE O. C304 IF feature N.17 of ETS 300 444 [12] THEN M ELSE O.							

7.8 Service to procedure mapping

7.8.1 DLC service to procedure mapping

See subclause 6.8.1 of ETS 300 444 [12].

7.8.2 MAC service to procedure mapping

Table 4: MAC service to procedure mapping

Service/Procedure mapping							
				Status			
Service	**Procedure**	**CAP Ref.**	**GAP Ref.**	**PT**	**FT**		
					R	**B**	**P**
CAP-M.1 TARI support		6.2		O	O	O	O
	TARI Message	11.3		M	M	M	M
	Downlink broadcast	11.2	10.2	M	M	M	M

7.8.3 Application feature to procedure mapping

Table 5: Application feature to procedure mapping

Feature/Procedure mapping							
				Status			
Feature	**Procedure**	**CAP Ref.**	**GAP Ref.**	**PT**	**FT**		
					R	**B**	**P**
A.2 Multiple subscription registration			4.2	M	N/A	N/A	N/A
	Subscription control	15.2	14.1	M	N/A	N/A	N/A

7.9 General requirements

See subclauses 6.9.1 to 6.9.7 of ETS 300 444 [12].

8 Procedure description

Clauses 9 to 15 define the process mandatory procedures which are in the scope of the CAP. Each procedure (if appropriate) is divided into three parts:

a) normal (i.e. successful case). This part defines the functions and respective protocol element values in normal operation;

b) associated procedure(s). This is an integral part of the actual procedure (if defined in this ETS) i.e. if a procedure is being declared to be supported, the respective entity shall also support the associated procedures, e.g. timer management, in the subclause following the description of the normal case;

c) exceptional case(s). This is an integral part of the actual procedure (if defined in this ETS) i.e. if a procedure is being declared to be supported, the respective entity shall also support the exception handling defined in the subclause following the description of the normal case.

All protocol elements listed in the following clauses are process mandatory i.e. the FT and PT depending on their role in the procedure shall send or shall be capable of receiving and processing the relevant protocol elements as listed in the respective tables if not explicitly stated as being optional.

The primitives used in procedure descriptions are defined only for the purpose of describing layer-to-layer interactions. The primitives are defined as an abstract list of parameters, and their concrete realization may vary between implementations. No formal testing of primitives is intended. The primitive definitions have no normative significance.

9 NWK layer procedures

This clause specifies the NWK layer procedures, messages and information elements required in the CAP.

This profile does not prevent any PT or FT transmitting or receiving and processing any other NWK layer message or information element not specified in the profile. A PT or FT receiving an unsupported NWK layer message or information element which it does not recognize shall ignore it, as specified in clause 17 of ETS 300 175-5 [5].

9.1 External handover procedures

9.1.1 Handover candidate procedure

9.1.1.1 Handover candidate indication

The procedure shall be performed as defined in subclause 15.7.1.2 of ETS 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

The FP shall only apply CC- messages for the handover candidate indication. The indicated handover candidates are valid until the release of the call or until the successful completion of an external handover.

In case of external handover, FP-2 shall send the <<EXTERNAL_H/O_INDICATOR>> i.e. within a CC-INFO message after successful completion of the external handover procedure. Only one value is requested to be stored in the PP.

The PP shall be able to perform external handover between FPs which indicate 2 or 3 in the <SYNC> field of the <<EXTERNAL_H/O_INDICATOR>>.

FP-1 shall only indicate handover candidates to which the PP has access using its active subscription.

NOTE: The above implies that the PP does not need to analyse the Secondary Access Rights Identities (SARIs) and/or TARIs supported by FP-2 prior to attempting external handover. Likewise, the PP need not analyse the external handover bit broadcasted by FP-2 prior to attempting external handover.

Table 6: Coding of <<Ext h/o indicator>> in call establishment CC messages

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Ext h/o indicator>>			
	<OID>	0	Other fixed part IDs not available using parameter retrieval procedure
		1	Other fixed part IDs available using parameter retrieval procedure
	<SYNC>	All	
	<Length indicator>	All	

9.1.1.2 Handover candidate retrieval

The procedure shall be performed as defined in subclause 15.7.1.3 of ETS 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

The PP shall not invoke this procedure if the <<ext h/o indicator>> has not yet received or if the <<ext h/o indicator>> has been received with the OID value set to "0".

If the PP sends a {MM-INFO-REQUEST} message with an <<info-type>> Information Element (IE) indicating "external handover parameters", the FP shall also include a handover reference in a <<network parameter>> IE unless the handover reference is not required. In this case the FP shall inform the PP including in the response a <<network parameter>> IE with the value "handover reference not required".

9.1.2 Target FP selection

The procedure shall be performed as defined in subclause 15.7.1.4 of ETS 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

If the handover candidate retrieval procedure is not allowed (OID = 0) or the PP has already detected some candidates for handover, the PP determines which FPs it may attempt external handover to by comparing the PARI of the FP in use with the PARIs of candidate FPs and determining if they match in the bits indicated by the "ext h/o length indicator" derived from the <<ext h/o indicator>> information element.

9.1.3 Handover reference procedure

9.1.3.1 Handover reference indication

The procedure shall be performed as defined in subclause 15.7.2.2 of ETS 300 175-5 [5].

9.1.3.2 Handover reference retrieval

The procedure shall be performed as defined in subclause 15.7.2.3 of ETS 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

If the PP has not received the <<network parameter>> indicating "handover reference not required" and has not received the <<network parameter>> in a CC message it shall perform the handover reference retrieval procedure as soon as the call enters in the active state to give the time to the current FP to send the answer before the connection is lost.

The <<info type>> value used by the PP to request the procedure may be both "handover reference" or "external handover parameters". When a FP that has sent the "OID" bit set to 0 receives the {MM-INFO-REQUEST} with the <<info type>> value set to "external handover parameters" it responds sending to the PP the <<network parameter value>>.

When the FP has set the OID-bit to "1" and receives a {MM-INFO-REQUEST} message with an <<info-type>> IE indicating "external handover parameters", the FP shall also include one or more <<fixed-identity>> IEs to identify to which FP the external handover may be attempted.

If the "handover reference" is not required by the FP, the FP shall inform the PP by including in the response a <<network parameter>> IE with the value "handover reference not required".

Regardless of whether the indication or the retrieval procedure is used, the provided handover reference value is valid until the release of the call.

By default, the handover value remains valid after the successful completion of an external handover. In case updating of the handover reference value is desired upon external handover, FP-2 should indicate a new value within a CC-INFO message following the CC-CONNECT-ACK message.

Table 7: Values used within the {MM-INFO-REQUEST} message

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Info type>>			
	<Parameter type>	8	External handover parameters
		10	Handover reference

9.1.4 External handover call setup

The procedure shall be performed as defined in subclause 15.7.4 of ETS 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

The PP shall only initiate the external handover call setup procedure towards FP-2 if the associated call is in active phase; meaning that the CC- transaction to FP-1 is in state T-10: "ACTIVE".

For the initiation of this procedure the outgoing call request procedure shall be used, see subclause 8.2 of ETS 300 444 [12] with the following replacement to the {CC-SETUP} message:

Table 8: Values used within the {CC-SETUP} message for external handover call

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Basic service>>			
	<Call class>	12	External handover call setup
	<Basic service>	0	
<<Network parameter>>			Optional
	<Discriminator>	All	
	<Data>	All	Allowed length if present 1-10

9.1.5 Ciphering procedure

9.1.5.1 Ciphering procedure PT initiated

The procedure shall be performed as defined in the relevant parts of subclause 15.7.6 of ETS 300 175-5 [5].

The PP shall only initiate ciphering prior to the release of the old connection in case it supports ciphering on two connections.

9.1.5.2 Ciphering procedure FT initiated

The procedure shall be performed as defined in the relevant parts of subclause 15.7.6 of ETS 300 175-5 [5].

9.1.6 U-plane handling

The procedure shall be performed as defined in subclause 15.7.5 of ETS 300 175-5 [5].

9.2 Emergency call setup

The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

For the initiation of this procedure the outgoing call request procedure shall be used, see subclause 8.2 of ETS 300 444 [12] with the following replacement to the {CC-SETUP} message:

Table 9: Values used within the {CC-SETUP} message for emergency call

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Portable identity>>			
	<Type>	16	International Portable Equipment Identity (IPEI)
	<EMC>	All	Equipment manufacturer dependent
	<PSN>	All	Equipment manufacturer dependent
<<Fixed Identity>>			
	<Length of contents>	0	
<<Basic service>>			
	<Call class>	10	Emergency call
PSN Portable equipment Serial Number.			

The FP shall accept the {CC-SETUP} message without checking the <<Fixed Identity>> and <<Portable identity>> information elements and proceed with the network layer procedures according to ETS 300 444 [12] subclause 8.2, 8.6 and optionally 8.4 and 8.5. The FP-CC shall not enter the overlap sending state (F-02), moreover the FP shall not authenticate the PP. After establishment, the call should be routed to an emergency line of the local emergency centre. This may be carried out even by a residential or business FP by automatically dialling an emergency call number.

If the emergency call setup procedure leads into an abnormal call release according to ETS 300 444 [12] subclause 8.8 or if the FP rejects the outgoing call request according to subclause 8.2.2.3, the handset may search for another FP supporting emergency calls.

9.3 Display

The procedure shall be performed as defined in subclauses 10.2 and D.2.2 of ETS 300 175-5 [5]. The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

A <<DISPLAY>> information element may be included in any CC messages in the FT $\rightarrow$ PT direction except in {CC-NOTIFY} and {IWU-INFO} see ETS 300 175-5 [5], subclause 6.3.2.

Table 10: Values used within the <<DISPLAY>> IE in any message that include it

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Multi display>>			
	<Display information>	0CH, 20H, 23H, 2AH, 30H - 7FH	DECT standard characters = standard IA5 characters. For the actual supported values see <<Terminal capability>> I.E.
		02H, 03H, 08H - 0FH, 19H, 1AH	DECT control characters. For the actual supported values see <<Terminal capability>> I.E.

9.4 Terminal capability indication

The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

For the initiation of this procedure the GAP Terminal capability indication procedure shall be used, see subclause 8.17 of ETS 300 444 [12] with the following modifications.

Table 11: Values used within the <<TERMINAL CAPABILITY>> IE

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Terminal capability>>			
	<Tone capability>	All	
	<Display capability>	All	
	<Profile indicator_1>	"xxxxxx1"B	CTM Access Profile (CAP) supported
	<Control codes>	All	

9.5 Detach

The procedure shall be performed as defined in subclause 13.4.2 of ETS 300 175-5 [5]. The following text defines the mandatory requirements with regard to this ETS.

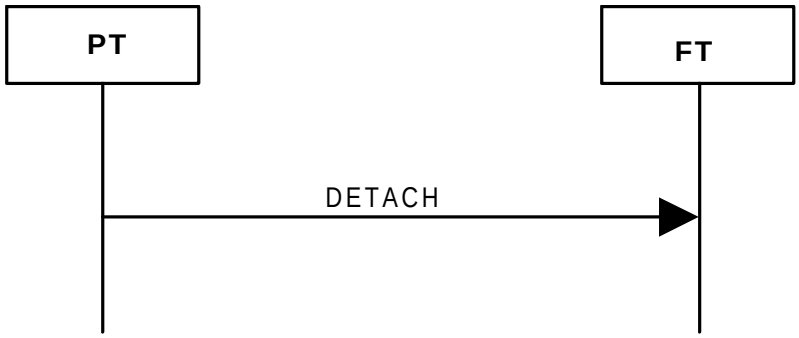

Figure 1: Detach

Table 12: Values used within the {DETACH} message

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Portable-identity>>			
	<Type>	0	IPUI
	<PUT>	All	
	<PUN>	All	
PUN: Portable User Number PUT: Portable User Type			

9.6 Enhanced location registration

The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

To allow periodic location registration, the PT shall evaluate the <<Duration>> i.e. in {LOCATE-ACCEPT} messages.

For the initiation of this procedure the location registration procedure shall be used, see subclause 8.28 of ETS 300 444 [12] with the following addition to the {LOCATE-ACCEPT} message and subsequent modifications:

Table 13: Values used within {LOCATE-ACCEPT} message for enhanced location registration

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Duration>>			
	<Lock limits>	111 (binary)	No limits
		101 (binary)	Temporary user limit 1
		110 (binary)	Temporary user limit 2
	<Time limits>	1	Defined time limit 1
		2	Defined time limit 2
		15	Infinite
	<Time duration>	All	

9.6.1 Exceptional case(s)

9.6.1.1 Failure of location registration procedure

Upon expire of <MM_locate.1> or indication for link released is received from the DLC layer, PT shall consider the procedure as failed. The PP shall maintain the existing LAL value. PT shall not re-transmit the {LOCATE-REQUEST} message. and shall not restart the timer <MM_locate.1> as part of the same procedure.

To avoid unfinished location registration due to exceptional cases like link failure or bad radio quality the P-IWU shall either repeat an unresponded location registration procedure until it receives a {LOCATE-ACCEPT} or {LOCATE-REJECT} message or attempt location registration in a different location area.

If the PT receives no response to {LOCATE-REQUEST}, it shall wait at least N700 seconds but no longer than N700 + N800 seconds, starting upon expiry of <MM_locate.1>, before re-attempting location registration in the same location area.

9.7 Message waiting indication

The procedure relates to the feature (**CAP-**N.4, see subclause 5.1) Message Waiting Indication and shall be performed as defined in subclause 10.4.2.3 of ETS 300 175-5 [5].

The following text defines the mandatory requirements with regard to this ETS.

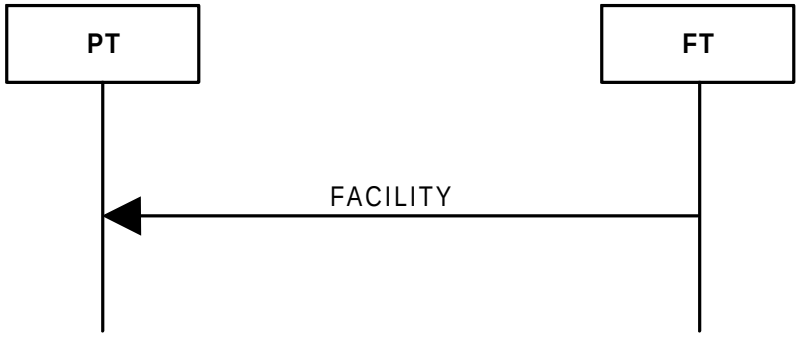

Figure 2: Facility message used for Message waiting indication

Table 14: Values used within {FACILITY} message for Message waiting indication

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Facility>>			
	<Service discriminator>	17	Discriminator for supplementary service applications
	<Components>	All	Defined according to ETS 300 650 [15] and ETS 300 745-1 [16]. Only the MWIIndicate operation is allowed.

9.8 On-air modification of user parameters

The procedure relates to the feature (**CAP-**N.7, see subclause 5.1) On-air modification of user parameters and shall be performed as defined in subclause 13.5.3 of ETS 300 175-5 [5].

The following text together with the associated subclauses define the mandatory requirement with regard to this ETS.

The procedure consists of two consecutive MM transactions: consists of two consecutive MM transactions: one access rights modify suggest and other obtaining access rights with its own independent transaction identifier.

The following text defines the mandatory requirements with regard to this ETS.

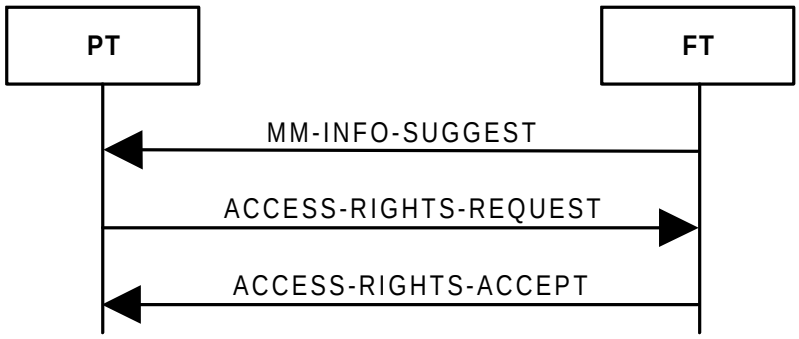

Figure 3: On air modification of user parameters

Table 15: Values used within the {MM-INFO-SUGGEST} message

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Info-type>>			
	<ext>	0	
	<Parameter type>	1	Access rights modify suggest

The PT shall initiate the on-air-modification of user parameter procedure after the receipt of the {MM-INFO-SUGGEST} message.

The values used within the {ACCESS-RIGHTS-REQUEST} and {ACCESS-RIGHTS-ACCEPT} messages shall be compatible with subclause 8.30 of ETS 300 444 [12].

10 DLC layer procedures

10.1 General (reference to GAP)

The complete clause 9 of ETS 300 44 [12] is part of the description of the DLC layer procedures for the CAP.

11 MAC layer procedures

11.1 General

The FT and PT shall support In_minimum_delay service as defined in subclause 10.8.3.1 of ETS 300 175-3 [3].

The FT and PT shall support frame format as follows:

- full slot mode defined subclause 4.2.2 of ETS 300 175-3 [3];

- D-field mapping shall support the D-00 and D32 as defined in subclause 6.2.1.1 of ETS 300 175-3 [3].

The FT and PT shall support A-field mapping A-MAP.

The FT and PT shall understand all A field tail identifications (a0, a1 and a2) in the header field as defined in subclauses 6.2.1.2 and 7.1.2 of ETS 300 175-3 [3].

The FT and PT shall support the following B-field field identifications (a4, a5 and a6) as defined in subclause 7.1.4 of ETS 300 175-3 [3]:

- U-type: In, "000"B;
- no B-field, "111"B (shall only be used for dummy bearers).

The FT and PT shall support T-MUX as defined in subclause 6.2.2.1 of ETS 300 175-3 [3].

The FT and PT shall support B-field multiplex E/U MUX type U32a.

The FT and PT shall support scrambling as defined in subclause 6.2.4 of ETS 300 175-3 [3].

The FT and PT shall provide R-CRC generation and checking as defined in subclause 6.2.5.2 of ETS 300 175-3 [3]. The FT and PT shall provide X-CRC generation and checking as defined in subclauses 6.2.5.3 and 6.2.5.4 of ETS 300 175-3 [3].

The PT shall support the normal duty cycle idle_locked mode as defined in subclauses 11.3 and 4.3.1 of ETS 300 175-3 [3].

The FT and PT shall support primary scan procedure as defined in subclause 11.8 of ETS 300 175-3 [3].

11.2 Downlink broadcast

The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

For the initiation of this procedure the downlink broadcast service shall be used, see subclause 10.2 of ETS 300 444 [12] with the following replacement of table 92 of subclause 10.2.4.

Table 92: Values used within SARI list contents

MAC message	Field within the message	Standard values within the MAC message	Normative action/comment
<<SARI list contents>>			
	<Qh>	5	
	<SARI list length>	All	
	<TARIs yes/no>	All	Relate to service TARI support (CAP-M.1, see subclause 5.1).
	<Black yes/no>	All	
	<ARI or black-ARI>	All	

11.3 TARI message

The procedure shall be performed as defined in subclause 7.2.5 of ETS 300 175-3 [3] and subclause 5.6.6 of ETS 300 175-6 [6].

The following text together with the associated subclauses define the mandatory requirements with regard to this ETS.

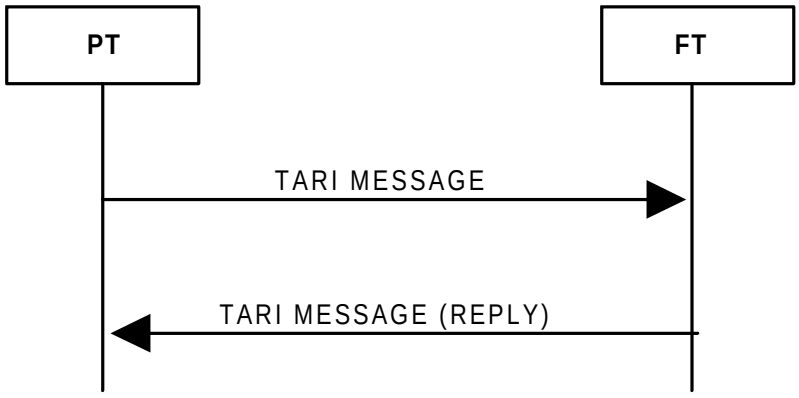

Figure 4: TARI Message

11.4 M_t message

The following fields as defined in subclause 7.2.5.10 of ETS 300 175-3 [3] in the MAC control (M_t) message shall be supported by the PT and the FT.

Table 16: Values used within M_t message for TARI message

MAC message	Field within the message	Standard values within the MAC message	Normative action/comment
<<M_t message>>			
	<M_t header>	8	TARI message
	<TARI field>		
	<PLI>	All	
	<PARK>	All	ARC + ARD
ARC Access Rights Class ARD Access Rights Details PLI Park Length Indicator PARK Portable Access Rights Key			

Table 17: Values used within M_t message for TARI message reply

MAC message	Field within the message	Standard values within the MAC message	Normative action/comment
<<M_t message>>			
	<M_t header>	8	TARI message
	<TARI field>		
	<CMD>	1	Valid ARI exists in TARI list
		0	No valid ARI exists in TARI list
	<ARCs>	All	For each ARC, except for class A and class E, a separate bit indicates if the TARI list contains entries of this class
	<Identity field>	All	For CMD = 1, the identity field contains the valid ARI

12 Physical layer requirements

12.1 General

The complete subclause 11 of ETS 300 444 [12] is part of the description of the PHL procedures for the CAP with the following modifications.

12.2 External handover

A PT supporting external handover shall be capable of performing external handover between two FTs which are multiframe synchronized to an accuracy of ±P100 µsec (see figure 5).

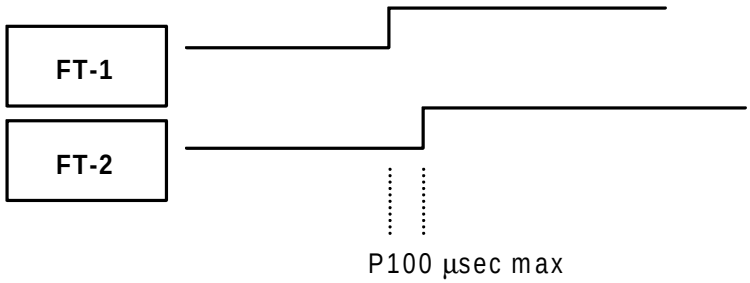

Figure 5: FT synchronization

A PT may be capable of supporting external handover between less accurately synchronized or not synchronized FTs.

The synchronization requirements for the FT/network are not specifically defined. To ensure handover between all PTs supporting external handover, requirements may be derived from the PT requirements.

13 Requirements regarding the speech transmission

13.1 General

The applicable requirements specified in ETS 300 175-8 [8] second edition and TBR10 [11] second edition shall be applied.

13.2 Reference to GAP

The complete clause 12 of ETS 300 444 [12] is part of the description of the Requirements regarding the speech transmission for the CAP.

14 Management procedures

14.1 General

The complete clause 13 of ETS 300 444 [12] is part of the description of the Management procedures for the CAP with the following modifications.

14.2 Location registration initiation

The initiation of the location registration procedure (PT initiated) is dependent on the value of call attribute a_{38} broadcasted by the FT i.e. if set to "1" the PT initiates the location registration procedure in the following cases:

- immediately after a successful access rights procedure;
- upon change of location area; latest immediately after entering the CC null state (T-00);
- upon power-up and after the first lock to a system which the PT has access rights to;
- upon expire of the time limit indicated in the <<DURATION>> i.e. received during the last successful location registration on the same system;
- after losing synchronization (leaving the locked state) for the time defined by the <Lock limits> parameter indicated in the <<DURATION>> i.e. (see subclause 9.6) received during the last successful location registration on the same system.

If the <<DURATION>> element cannot be understood, the PT shall ignore the <<DURATION>> information element.

Location registration shall be performed regardless if the system has been accessed via a PARI, SARI or TARI.

If call attribute a_{38} set to "0", the PT does not initiate the location registration procedure except upon receipt of "Locate suggest" in the parameter retrieval procedure initiated by the FT.

The FT may initiate and the PT may receive incoming calls without a location registration procedure. The initiation of the location registration procedure as defined in subclause 8.28 of ETS 300 444 [12] is always mandatory in the PT except when bit a38 in the broadcast attributes, see subclause 13.6 table 102 of ETS 300 444 [12], is set to 0.

14.3 Assigned individual Temporary Portable User Identity (TPUI) management

Only one individual assigned TPUI shall be stored per subscription i.e. any new assignments of an individual assigned TPUI overwrites an existing individual assigned TPUI.

The PT shall always delete the old individual assigned TPUI immediately when entering a new location area prior the initiation of location registration procedure. The PT shall always delete the old individual assigned TPUI immediately when entering a new location area even if the location registration is not being performed i.e. the broadcast attribute a38 is set to value "0", see subclause 13.6 table 102 of ETS 300 444 [12].

Upon detach TPUI shall be deleted in PT.

The default TPUI shall be derived from the allocated International Portable User Identity (IPUI). If no IPUI has been allocated, the TPUI shall be derived from IPUI N i.e. the IPEI.

The LCE-PAGE-REJECT message shall not be used to delete an assigned TPUI.

NOTE: To avoid ambiguities of assigned TPUIs/Portable part MAC Identities (PMIDs), assigned TPUIs should be unique within the entire FP rather then within location areas. See also note 2 in subclause 6.3.1 of ETS 300 175-6 [6].

14.4 Detach

Detach shall be performed immediately upon deactivation of PT if the PT is still in range of the active subscription.

Detach shall be performed to an active subscription before location registration to a new subscription if the PT is still in range of the previously active subscription.

14.5 External handover

The PT shall not initiate location registration during external handover.

The PT shall not perform an external handover within N500 seconds after the last successfully performed external handover.

The PT shall not initiate external handover procedure after N501 unsuccessful attempts within N500 seconds.

14.6 Emergency call management

Emergency call is initiated by a special manual interworking at the MMI of a DECT PP. This may be the dialling of "112", pressing of a special "emergency call button", or selecting a menu-item.

After recognition of this manual interworking the PP may decide whether:

a) to initiate the emergency call procedure; or
b) to initiate a normal outgoing call (according to ETS 300 444 [12]) and dial automatically a (preconfigured) emergency call number.

Case b) is allowed only, when the PP is locked to a DECT FP where it has access-rights to;

Case a) if the PP is not synchronized to a FP which supports emergency calls, the PP starts to search for an FP which supports emergency calls. The PP recognizes this by reading the extended higher layer capabilities of the FP which are broadcasted via the RFPs dummy-bearer. Because it is most likely that a public DECT FP supports emergency calls, the PP tries first to synchronize to a public FP. The PP identifies a system being "public" using the identity ARC which is broadcasted more often than the "emergency call supported" message by the RFPs. If there is no public FP supporting emergency calls available, the handset tries to search also for private FPs supporting emergency calls.

If a PP which is attempting an emergency calls is not in range of a FP where it has access-rights to, the PP is allowed to lock to every FP in range which supports emergency calls even when no emergency call is initiated. This will shorten the time for setting up emergency calls and makes it possible to indicate the availability of the emergency call to the user. If the PP is locked to a FP, to which it does not have access-rights to, the PP shall not initiate any other procedure than emergency call setup towards this FP.

14.7 PMID management

If the PP has a valid assigned individual TPUI, the PMID shall be this TPUI.

If the PP has not a valid assigned individual TPUI, the PMID shall be the arbitrary PMID. It may be derived from the IPUI used for the MAC connection setup.

A PP attempting an emergency call shall use the emergency call TPUI as defined in ETS 300 175-6 [6] subclause 6.3.1 as PMID value.

Within a link establishment procedure, the assigned PMID is recalculated for every connection setup attempt (during the connection setup procedure the assigned PMID shall not change); the arbitrary PMID is recalculated for every new bearer setup attempt.

The PT shall not update its PMID until the current DLC link is released even if a connection or bearer handover has taken place or the individual assigned TPUI has changed, e.g. due to change of the LA.

14.8 Broadcast attributes management

RFPs belonging to the same location area shall broadcast the same values of higher layer attributes at any given time (see annex F in ETS 300 175-5 [5]).

The CAP PP shall be capable to read and interpret at least the following broadcast attributes codings during locking procedure. In the locked state the PP may assume them as static.

Table 18: Broadcast attributes interpretation by the PP

BIT Number	Attribute	Value	Note
a32	ADPCM/G.721 Voice service	All	
a33	GAP and/or PAP basic speech	All	
a36	Standard authentication required	All	
a37	Standard ciphering supported	All	
a38	Location registration supported	All	See location update procedure, subclause 8.29 as an exception.
a40	Non-static FP	All	A FP which is mounted on a moving vehicle.
a44	Access Rights requests supported	All	The FP can toggle this bit to enable or disable on air subscription, see annex A.
a45	External handover supported	All	Relate to feature (CAP-N.1, see subclause 5.1).
a46	Connection handover supported	All	
PAP: Public Access Profile			

Table 19: Extended higher layer capabilities interpretation by the PP

BIT Number	Attribute	Value	Note
a40	Emergency call supported	All	Relate to feature (CAP-N.2, see subclause 5.1).

15 Application procedures

15.1 General

The complete clause 14 of ETS 300 444 [12] is part of the description of the application procedures for the CAP with the following modifications.

15.2 Subscription control

The PP shall be capable of accepting a new subscription for the active IPUI and PARK pair, in order to change the access rights (i.e. overwriting the active subscription).

The active IPUI/PARK pair is the stored IPUI/PARK value that the PT is using to seek to get locked or is locked to.

The CAP PT shall be capable of storing at least four subscriptions i.e. 4 pairs of IPUI and PARK and associated subscription data.

Annex A (normative): System parameters

A.1 NWK layer constants

N500: external handover re-attempt value.
Mandated value is 8.

N501: unsuccessful external handover attempts within a defined time.
Mandated value is 5.

N700: location re-attempt timer low-water mark.
Mandated value is 20.

N800: location re-attempt timer high-water mark.
Mandated value is 60.

A.2 PHL constants

P100: accuracy of FT multiframe synchronization window for external handover.
Mandated value is 5.

Annex B (informative): PP locking procedure for on air subscription

This procedure is given in annex A of ETS 300 444 [12].

Annex C (normative): ETS 300 175 changes

C.1 General

This annex highlights the differences between this ETS and ETS 300 175 [1] to [8], enforced by the current and future DECT standards and equipment development. All the changes are intended to be incorporated in the future third edition of the ETS 300 175. When the third edition of ETS 300 175 is released this annex may be removed.

C.2 Network layer

C.2.1 New codings in << Duration>> IE

ETS 300 175-5 [5], subclause 7.7.13:

The following replaces the "Lock limits coding (octet 3)" text of subclause 7.7.13 of ETS 300 175-5 [5]:

Lock limits coding (octet 3):

Bits	7	6	5	Meaning
	1	0	1	Temporary user limits 2 (note 1)
	1	1	0	Temporary user limits (note 1)
	1	1	1	No limits

NOTE: "Temporary user limit" indicates that a time limit applies when the PP leaves the locked state with the relevant FP (see ETS 300 175-6 [6]).

C.2.2 <<Terminal capability>> IE coding

ETS 300 175-5 [5], subclause 7.7.41:

The following replaces the "Profile Indicator_1 Coding (Octet 4)" text of subclause 7.7.41 of ETS 300 175-5 [5]:

Profile Indicator_1 Coding (Octet 4):

Bits	7	6	5	4	3	2	1	Meaning
	x	x	x	x	x	x	1	CAP supported
	x	x	x	x	x	1	x	GAP/PAP supported
	x	x	x	x	1	x	x	DECT/GSM interworking profile supported
	x	x	x	1	x	x	x	ISDN supported
	x	x	1	x	x	x	x	Data Services Profile E, Class 2
	x	1	x	x	x	x	x	Data Services Profile A/B, Class 2
	1	x	x	x	x	x	x	Multi-bearers supported for the Data Services Profiles

C.3 Identities and addressing

C.3.1 New lock timer user limit

ETS 300 175-6 [6], clause 5:

In addition to the requirements in ETS 300 175-6 [6], clause 5, the following applies:

A location registration at a FP can be permanent or temporary. If the location registration indicates "temporary user limit 2" all registration data shall be cleared from a PP if the PP leaves the locked state with that FP (fails to receive the PARI) for more than T603 seconds. See subclause 6.3.

ETS 300 175-6 [6], subclause 6.3.1:

In addition to the requirements in ETS 300 175-6 [6], subclause 6.3.1, the following applies:

The lock limit may be used to indicate a "temporary user limit 2" assignment. When "temporary user limit 2" is indicated, the assigned TPUI shall be erased if the PP leaves the locked state (fails to receive the PARI) with that FP for more than T603 seconds.

ETS 300 175-6 [6], annex B:

The following replaces the text of ETS 300 175-6 [6], annex B:

T601 = 5 minutes	location registration data and TPUIs maximum storage time for Temporary user limits, if PP is not locked to FP.
T602 = 5 minutes	time between TARI requests, subclause 8.2.6.
T603 = 40 seconds	location registration data and TPUIs maximum storage time for Temporary user limits 2, if PP is not locked to FP.

Annex D (informative): Tones, progress indicator and U-plane connection

See annex B of ETS 300 444 [12].

Annex E (informative): PARI and SARI use for CTM roaming

A CTM user subscribes to the CTM service offered by a CTM service provider. The CTM service provider provides the CTM service using the equipment of one or more network operators. These network operators can be of different nature: public, business and/or residential. The area of mobility provided to the CTM-user depends on the geographical area covered by the totality of equipment of the network operators with whom his service provider has a relationship.

The CTM service provider is identified by one single and globally unique CTM service provider identity, the SP-id.

The network operator equipment is identified by a range of network operator equipment identities, the NO-id's. More than one NO-id can be assigned to the same network operator.

As part of the agreement between CTM service provider and network operators, all involved network operators will administer the SP-id.

Radio base stations of all involved network operators will broadcast the SP-id of the CTM service provider in addition to their own local network equipment's NO-id.

CTM users have a contract with the CTM service provider and as part of the contract they are given the SP-id by means of which they can recognize those parts of the network that take part in the provision of the CTM service for that particular CTM service provider. This SP-id is stored in the user's cordless terminal.

While roaming around, the CTM terminal uses the SP-id to determine whether it has access to local radio base stations (by comparing the broadcasted SP-id with its own stored SP-id). If it has access, then the NO-id of the local base station is used as an indication of the location within the network.

NO-ids are structured in such a way that a terminal, while moving within the domain of a SP-id, can determine whether handover or location registration is required (by comparison of the current NO-id with the newly detected NO-id of a neighbouring piece of network operator equipment).

Both the SP-id and the NO-id are mapped to the single DECT concept of "Access Rights Identities" (ARI). However it is important the release that the application is principally different.

The NO-id is kept in the DECT Fixed Part as the Primary Access Rights Identity (PARI) and is broadcasted as part of the Radio Fixed Part Identity (RFPI). Separate PARI values are assigned to each DECT Fixed Part.

The SP-id is kept in the DECT Fixed Part as a Secondary Access Rights Identity (SARI) and is broadcasted (but less frequently) by all radio base stations in addition to their RFPI.

In the CTM terminal the SP-id is kept as the user's Portable Access Rights Key (PARK) in association with the user's IPUI.

Figure E.1 gives an illustration.

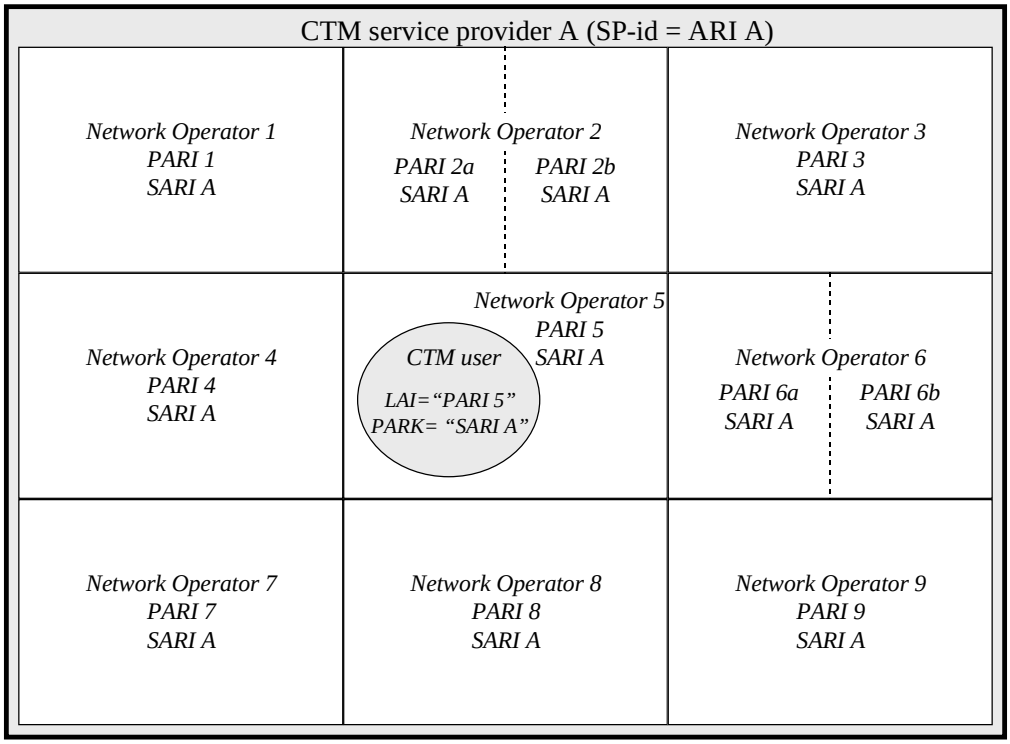

Figure E.1

By comparison of its PARK with the ARI(s) in the SARI-lists of broadcasting radio base stations, the CTM terminal decides whether it has access to that part of the network, and if required starts a location registration. If that is successful, the terminal uses the PARI-value of the current part of the network as a Location Area Identification (LAI). While roaming around, the terminal recognizes other valid network parts by the broadcasted SARI. The currently stored LAI, in combination with received PARI-values of local network elements is used by the terminal to decide for handover and/or location registration.

In summary:

- there is a logical and functional difference between the ARI assigned to a network operator and the ARI assigned to a service provider;

- the ARI broadcasted as PARI (in RFPI) identifies the network operator and is used to provide the criteria for handover and location registration;

- the ARI broadcasted as SARI identifies the service provider and is used by the terminal to determine whether the broadcasting network operator is associated with the CTM service provider, i.e. whether that network operator can give him/her access to subscribed-to CTM service;

- the NO-id's ARI-class (public, business, residential) is independent of the SP-id's ARI-class;

- the SARI glues together all of the network operator equipment into a single domain of a CTM service provider;

- the CTM terminal only needs one subscription. IPUI and PARK are allocated by the service provider and the PARK relates to the ARI of the service provider.

  NOTE: If a certain network operator uses its equipment exclusively for CTM and only for one CTM service provider, then the functions of SP-id and NO-id may combined into the PARI and no SARI would be needed.

History

Document history			
January 1997	Public Enquiry	PE 9720:	1997-01-17 to 1997-05-16