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Digital Enhanced Cordless Telecommunications (DECT);
New Generation DECT;
Part 5: Additional feature set nr. 1
for extended wideband speech services

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Digital Enhanced Cordless Telecommunications (DECT).

The present document is based on EN 300 175 parts 1 to 8 ([1], [2], [3], [4], [5], [6], [7] and [8]) and EN 300 444 [11]. General attachment requirements and speech attachment requirements are based on EN 301 406 [10] (replacing TBR 006 [i.2]) and EN 300 176-2 [9] (previously covered by TBR 010 [i.3]). Further details of the DECT system may be found in TR 101 178 [i.1].

The present document has been developed in accordance to the rules of documenting a profile specification as described in ISO/IEC 9646-6 [i.12].

The information in the present document is believed to be correct at the time of publication. However, DECT standardization is a rapidly changing area, and it is possible that some of the information contained in the present document may become outdated or incomplete within relatively short time-scales.

The present document is part 5 of a multi-part deliverable covering the New Generation DECT as identified below:

Part 1: "Wideband speech" [17];

Part 2: "Support of transparent IP packet data" [i.4];

Part 3: "Extended wideband speech services" [18];

Part 4: "Light Data Services: Software Update Over The Air (SUOTA), content downloading and HTTP based applications" [i.5];

Part 5: "Additional feature set nr. 1 for extended wideband speech services".

1 Scope

The present document specifies a set of functionalities of the New Generation DECT.

The New Generation DECT provides the following basic new functionalities:

- Wideband speech service (part 1).
- Packet-mode data service supporting Internet Protocol with efficient spectrum usage and high data rates (part 2).
- Extended wideband speech services (part 3).
- Light Data Services: Software Update Over The Air (SUOTA), Content Downloading and HTTP based applications (part 4).
- Additional feature set nr. 1 for extended wideband speech services (part 5).

All New Generation DECT devices will offer at least one or several of these services.

The present document describes the part 5: Additional feature set nr. 1 for extended wideband speech services.

- For the description of the wideband speech service, see TS 102 527-1 [17].
- For the description of the support of transparent IP packet data, see TS 102 527-2 [i.4].
- For the description of the Extended wideband speech services, see TS 102 527-3 [18].
- For the description of the Light Data Services: Software Update Over The Air (SUOTA), Content Downloading and HTTP based applications, see TS 102 527-4 [i.5].

Part 5 ("Additional feature set nr. 1 for extended wideband speech services") is defined as an extension of part 3 ("Extended wideband speech services" [18]) which is itself an extension of part 1 ("Wideband speech service" [17]). Consequently, this means that all devices compliant to the present document will also implement at least all mandatory features and may implement the optional features defined in part 3 and part 1. In addition to that, the present document defines additional mandatory or optional features.

Part 1, and therefore also part 3 and part 5, are defined as extensions of the "Generic Access Profile (GAP)" [11]. All DECT devices offering Wideband speech services (part 1, or part 1 plus part 3, or part 1 plus part 3 plus part 5) are also compliant with the "Generic Access Profile (GAP)" [11], and offer the DECT standard 32 kbit/s voice service according to GAP [11].

All DECT devices claiming to be compliant with this Application Profile will offer at least the basic services defined as mandatory. In addition to that, optional features can be implemented to offer additional DECT services.

The aim of the present document is to guarantee a sufficient level of interoperability and to provide an easy route for development of DECT wideband speech applications, with the features of the present document being a common fall-back option available in all compliant to this profile equipment.

The present document is defined as an extension of TS 102 527-3 [18] so the numbering and order of figures and tables in the present document is aligned with the corresponding numbering and order of figures and tables in TS 102 527-3 [18].

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[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 and audio coding and transmission".

[9] ETSI EN 300 176-2: "Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 2: Audio and speech".

[10] ETSI EN 301 406: "Digital Enhanced Cordless Telecommunications (DECT); Harmonized EN for Digital Enhanced Cordless Telecommunications (DECT) covering the essential requirements under article 3.2 of the R&TTE Directive; Generic radio".

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

[12] Recommendation ITU-T G.726 (1990): "40, 32, 24, 16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM) ".

[13] Recommendation ITU-T G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".

[14] Recommendation ITU-T G.722 (1988): "7 kHz audio-coding within 64 kbit/s".

[15] Recommendation ITU-T G.729.1 (2006): "G.729-based Embedded Variable bit-rate coder: An 8-32 kbit/s scalable wideband coder bitstream interoperable with G.729".

[16] ISO/IEC JTC1/SC29/WG11 (MPEG): International Standard ISO/IEC 14496-3:2005: "Information Technology - Coding of audio-visual objects - Part 3: Audio".

[17] ETSI TS 102 527-1: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 1: Wideband Speech".

[18] ETSI TS 102 527-3: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 3: Extended Wideband Speech Services".

[19] ETSI TS 123 038 (V11.0.0) (2012-10):"Digital cellular telecommunications system (Phase 2+);Universal Mobile Telecommunications System (UMTS); LTE;Alphabets and language-specific information (3GPP TS 23.038 version 11.0.0 Release 11)".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TR 101 178: "Digital Enhanced Cordless Telecommunications (DECT); A high Level Guide to the DECT Standardization".

[i.2] ETSI TBR 006: "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements".

[i.3] ETSI TBR 010: "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements: Telephony applications".

[i.4] ETSI TS 102 527-2: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 2: Support of transparent IP packet data".

[i.5] ETSI TS 102 527-4: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 4: Light Data Services; Software Update Over The Air (SUOTA), content downloading and HTTP based applications".

[i.6] Recommendation ITU-T P.311 (2005): "Transmission characteristics for wideband (150-7000 Hz) digital handset telephones".

[i.7] Recommendation ITU-T G.729: "Coding of speech at 8 kbit/s using conjugate structure algebraic-code-excited linear prediction (CS-ACELP)".

[i.8] Recommendation ITU-T Q.23 (1988): "Technical features of push-button telephone sets".

[i.9] Recommendation ITU-T Q.24 (1988): " Multifrequency push-button signal reception".

[i.10] Recommendation ITU-T E.180: "Technical characteristics of tones for the telephone service".

[i.11] Recommendation ITU-T E.180- Supplement 2 (1994): "Various tones used in national networks".

[i.12] ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".

[i.13] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

[i.14] ETSI TS 123 040 (V11.3.0) (2012-10): "Digital cellular telecommunications system (Phase 2+);Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS) (3GPP TS 23.040 version 11.3.0 Release 11)".

[i.15] ETSI ES 201 912 (V1.2.1) (2004-08): "Access and Terminals (AT);Short Message Service (SMS) for PSTN/ISDN; Short Message Communication between a fixed network Short Message Terminal Equipment and a Short Message Service Centre".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 300 444 [11] and the following apply:

attached to a line: PP is "attached to a line" if its associated bit is set in the "Handset bitmap" in the "Attached handsets" field of the "Line Settings List" entry for that line

NOTE: A PP that is attached to a line can send and receive calls on that line.

call status: part of the call information sent from FP to PP about the FP call state toward the peer party

double call with in-band signalling (line): legacy line on which second calls -incoming or outgoing- are handled using signalling "in-band"

FP-managed line selection: mode for an outgoing external call, in which the PP does not indicate the line to be used to the FP and the FP chooses the line where the call is placed

Headset PP (HPP): headset PP is a wireless headset telephone using the DECT air interface

NOTE: A HPP usually has only one speaker and one microphone combined with a limited set of keys (e.g. call button, volume plus, and volume minus). Headsets provide the equivalent functionality of a PP with hands-free operation.

late release: sending of a "CS idle" call status by the FP for a call that has been released a long time before in the network.

NOTE: See clause 7.4.3.10.3.1.

line: logical channel, separately accessible from the external world through a dedicated external directory entry (e.g. telephone number, uri, etc.)

NOTE: These lines may be of various types, for example: PSTN, VoIP or ISDN lines.

multiple call line: line supporting several simultaneous (external) calls

NOTE: An example of multiple call line is a VoIP line used with the SIP protocol.

multiple-call mode: configuration mode of a multiple call line from a DECT system point of view, enabling several simultaneous incoming or outgoing calls on different PPs (i.e. this possibility is not disabled by configuration)

new generation DECT: further development of the DECT standard introducing wideband speech, improved data services, new slot types and other technical enhancements

none: a special line identifier value (called "None") is defined in clause 7.7.56 of EN 300 175-5 [5] and is used to indicate that the line id for the external call is not yet known

NOTE: It is used for FP managed line selection (clauses 7.4.3.5.1 and 7.4.5.2.4) and, as a special case, for call intrusion (clause 7.4.3.8).

off-hook CLIP: ability of a network to send CLIP information for a waiting call (also known as "CLIP on call waiting" or "CLIP phase II")

single-call mode: configuration mode of a multiple call line from a DECT system point of view, in which the possibility of making several fully parallel call is (temporarily) disabled

NOTE: This mode may be useful for a user alone in the home. This mode does not prevent several simultaneous calls on the same PP. A line which is not "multiple call" (for instance a PSTN line only enabling double calls) is also said to be in "single call" mode.

super-wideband speech: voice service with enhanced quality compared to ADPCM G.726 and allowing the transmission of a maximum vocal frequency of at least 14 kHz

wideband speech: voice service with enhanced quality compared to ADPCM G.726 and allowing the transmission of a vocal frequency range of at least 150 Hz to 7 kHz, and fulfilling, at least, the audio performance requirements described in the Recommendation ITU-T P.311 [i.6]

3.2 Symbols

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

M	mandatory to support (provision mandatory, process mandatory)
O	optional to support (provision optional, process mandatory)
I	out-of-scope (provision optional, process optional) not subject for testing
C	conditional to support (process mandatory)
N/A	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 is to 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 is to be implemented as described in the present document, and may be subject to testing.

NOTE: The used notation is based on the notation proposed in ISO/IEC 9646-7 i.13.

3.3 Abbreviations

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

AAC	Advanced Audio Coding (MPEG)
AAC-LD	MPEG-4 Low Delay Audio Coder
AC	Authentication Code
ADPCM	Adaptive Differential Pulse Code Modulation
AES	Advanced Encryption Standard
AI	Air Interface
API	Application Program Interface
ARI	Access Rights Identity
ARQ	Automatic Repeat reQuest
ASCII	American Standard Code for Information Interchange
BCD	Binary Coded Decimal
BTPC	Base manual Transmit Power Control
CC	Call Control
CFB	Call Forwarding on Busy
CFNA	Call Forwarding on No Answer
CFU	Call Forwarding Unconditional
CI	Common Interface
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identity Restriction
CNIP	Calling Name Identification Presentation
CRC	Cyclic Redundancy Check
CS	Call Status
DCIBS	Double Call with In-Band Signalling
DECT	Digital Enhanced Cordless Telecommunications
DHCP	Dynamic Host Configuration Protocol
DLC	Data Link Control
DNS	Domain Name System
DSAA	DECT Standard Authentication Algorithm
DSAA2	DECT Standard Authentication Algorithm #2
DSC	DECT Standard Cipher (algorithm)
DSC2	DECT Standard Cipher (algorithm) #2
DTAM	Digital Telephone Answering Machine
DTMF	Dual Tone Multi-Frequency
ECN	Exchanged Channel Number

ER	Error Resilient (MPEG)
FEC	Forward Error Correction
FP	Fixed Part
FT	Fixed radio Termination
GAP	Generic Access Profile
GFSK	Gaussian Frequency-Shift Keying
GMT	Greenwich Mean Time
HATS	Head And Torso Simulator
HPP	Headset Portable Part
HTTP	HyperText Transfer Protocol
IA	Implementation Alternative
IE	Information Element
IP	Internet Protocol
IPUI	International Portable User Identity
ISDN	Integrated Services Digital Network
IWU	InterWorking Unit
LA	Location Area
LAN	Local Area Network
LAPC	Link Access Protocol for the Control plane
LD	Low Delay (MPEG)
LiA	List Access
LLME	Lower Layer Management Entity
LU	Link Access Protocol User
MAC	Medium Access Control
MD	Manufacturer Defined
MM	Mobility Management
MMI	Man Machine Interface
MPEG	Moving Picture Experts Group
NA	Not Applicable
NG	New Generation
NG-DECT	New Generation DECT
NWK	NetWorK
P	Public (environment)
PABX	Private Automatic Branch Exchange
PARK	Portable Access Rights Key
PCM	Pulse Code Modulation
PHL	PHysical Layer
PIN	Personal Identification Number
PLC	Packet Loss Concealment
PP	Portable Part
PSTN	Public Switched Telephone Network
PT	Portable radio Termination
R/B	Residential/Business (environment)
RFP	Radio Fixed Part
RFPI	Radio Fixed Part Identity
S/T	ISDN S/T Interface
SARI	Secondary Access Rights Identity
SC	Speech Coding
SIP	Session Initiation Protocol
SMS	Short Message Service
SMSC	SMS Centre
TCLw	weighted Telephone Coupling Loss
TPUI	Temporary Portable User Identity
TRUP	TRansparent UnProtected service
U	ISDN U-Interface
UAK	User Authentication Key
UCS	Universal Character Set
UMT	Universal Mean Time
UNF	UNprotected Framed service
UPI	User Personal Identity
UTF	UCS Transformation Format
VoIP	Voice over IP

WAN	Wide Area Network
WB	WideBand

4 Description of Services

4.1 Additional feature set nr.1 for extended wideband speech services

The present document is defined as an extension of New Generation DECT; part 3: extended wideband speech services (TS 102 527-3 [18]). All devices compliant with the present document shall implement all mandatory features and may implement all optional features defined in TS 102 527-3 [18]. In addition to that, the present document defines additional features and procedures, or upgrades the support status of features and procedures defined in TS 102 527-3 [18].

See TS 102 527-3 [18], for description of the extended wideband speech services.

The present document is also defined as an extension of New Generation DECT; part 1: wideband speech (TS 102 527-1 [17]). All devices compliant with the present document shall implement wideband (150 Hz to 7 kHz) audio with 16 kHz frequency sampling, and shall implement, at least, the speech coding format according to Recommendation ITU-T G.722 [14]. In addition to that, other wideband and superwideband audio codecs, providing even better audio quality, may be implemented.

See TS 102 527-1 [17], clause 4.1 for description about wideband speech.

4.1.1 Back-compatibility with GAP

The present document is defined as a backcompatible extension of the Generic Access Profile (GAP), EN 300 444 [11]. All devices compliant with the present document shall be interoperable with equipment compliant with Generic Access Profile (GAP) [11] and shall implement ADPCM narrowband speech service according to Recommendation ITU-T G.726 [12], with automatic detection of the capabilities of the other peer.

4.1.2 Back-compatibility with New Generation DECT; Part 1: wideband speech

The present document is defined as a backcompatible extension of the New Generation DECT; Part 1: wideband speech, TS 102 527-1 [17]. All devices compliant with the present document shall be interoperable with equipment compliant with New Generation DECT; Part 1: wideband speech, TS 102 527-1 [17]. They shall implement the procedures described in TS 102 527-1 [17] and shall implement the 7 kHz wideband speech codec according to Recommendation ITU-T G.722 [14], with automatic detection of the capabilities of the other peer. They may also implement the optional codecs described in TS 102 527-1 [17].

4.1.3 Back-compatibility with New Generation DECT; Part 3: extended wideband speech services

The present document is defined as a backcompatible extension of the New Generation DECT; Part 3: extended wideband speech services, TS 102 527-3 [18]. All devices compliant with the present document shall be interoperable with equipment compliant with TS 102 527-3 [18]. They shall implement all mandatory procedures described in TS 102 527-3 [18] and may implement the optional procedures.

The following editorial conventions regarding feature or service descriptions (i.e. from clause 7.4 on) are used in the present document:

New clauses NOT existing in TS 102 527-3 [18] use free clause numbers (i.e. not used in TS 102 527-3 [18]).

Clauses already existing in TS 102 527-3 [18] keep their original clause number in the present document:

- If the clause has not been updated for the present document, only its title is repeated here, and its content is replaced with a statement that the clause with same number in TS 102 527-3 [18] applies.

NOTE: As an exception to this rule, subclauses of such clauses (also unchanged by definition) do not appear at all in the present document.

- If the clause has been updated for the present document, then sibling clauses of that clause are always present (whether updated or not). For the updated clause, one of the following cases occurs:
  - if the change is an addition of text at the end of the original clause, only the additional text is given in the present document, with an explanatory sentence at clause start;
  - if the change is at any other place in the clause, or if it is not an addition (e.g. a modification or a removal), or if there are multiple changes in the clause, then the whole new text of the clause is given. However, in order to help the reader already aware of the original clause wording, tags are added to the new text at all spots where a change occurred.

Tag format. The following rules are used for the tag format (see also the following table).

An enclosing pair of tags is used for each change: the change is enclosed between a begin tag and an end tag.

The begin tags contains the type of change: either a 'modification', a 'deletion', or an 'addition'

At some places a single tag pair is used for several changes (in that case a 'modification' tag pair is used).

Tag pair type	Tag pair format
Tag pair used for text addition	**<<Text changed from TS 102 527-3 [18] (addition)** *…the added text…* **End of change>>**
Tag pair used for text modification (content may include some unchanged text)	**<<Text changed from TS 102 527-3 [18] (modification)** …modified text… **<= End of change>>**
Tag pair used for text modification (example with some explanative text following tag type)	**<<Text changed from TS 102 527-3 [18] (modification, field "..." added in table)** …modified text… **End of change>>**
Tag pair used for text deletion Such tags have no content at all	**<<Text changed from TS 102 527-3 [18] (deletion)** **End of change>>**

4.2 Additional features for extended wideband speech services defined in the present document

The following additional services are provided by the present document, compared to TS 102 527-3 [18]:

- "Digital Telephone Answering Machine" (DTAM) feature.
- "Short Message Service" (SMS) feature.
- Enhanced 3-party conference call.
- Enhanced intrusion call with on/off setting.
- Enhanced CLIR with on/off setting.
- Mandatory "Date and time recovery" procedure (already defined but optional in TS 102 527-3 [18]).
- Mandatory "All Calls List" on FP side (already defined but optional in TS 102 527-3 [18]).
- "Contact number and name matching on outgoing call" procedure.
- "Contact number and name matching on incoming call" procedure.

- "Line and diagnostic information" feature.
- Green feature 1: "Base manual transmit power control" feature; (procedure content to be defined in a further revision of the present document).
- Green feature 2: "Handset adaptive transmit power control" feature; (procedure content to be defined in a further revision of the present document).

The new extended services, take in to account the additional scenarios possible in DECT systems connected to the network via VoIP interfaces.

5 Service and feature definitions

5.1 New Generation DECT Speech Services

For the purposes of the present document, the definitions of TS 102 527-1 [17], clause 5.1 shall apply.

5.2 Network (NWK) features

For the purposes of the present document, all definitions of TS 102 527-3 [18], clause 5.2, TS 102 527-1 [17], clause 5.2 and EN 300 444 [11], clause 4.1, plus the following shall apply:

Line and diagnostic information [NG1.N.23]: Ability for a DECT system to inform the user about the status of the system.

Short Message Service [NG1.N.24]: Ability to send and receive SMS messages from a handset.

Digital Telephone Answering Machine (DTAM) [NG1.N.25]: Ability for a DECT system to provide access to one or more digital telephone answering machine(s).

DTAM Screening [NG1.N.26]: Ability for a DECT system and a DTAM to allow listening of messages when being recorded by the remote party.

5.3 Data Link Control (DLC) service definitions

For the purposes of the present document, all definitions of TS 102 527-1 [17], clause 5.3 and EN 300 444 [11], clause 5.1 shall apply.

5.4 Medium Access Control (MAC) service definitions

For the purposes of the present document, all definitions of TS 102 527-3 [18], clause 5.4, TS 102 527-1 [17], clause 5.4 and EN 300 444 [11], clause 5.2, shall apply.

5.5 Physical Layer (PHL) service definitions

For the purposes of the present document, all definitions of TS 102 527-1 [17], clause 5.5 shall apply.

5.6 Speech coding and audio feature definitions

For the purposes of the present document, all definitions of TS 102 527-1 [17], clause 5.6 shall apply.

5.7 Application features

For the purposes of the present document, all definitions of TS 102 527-3 [18], clause 5.7 and EN 300 444 [11], clause 4.3 plus the following shall apply.

Base manual transmit power control [NG1.A.4]: ability to enter low transmit power state on the FP.

Handset adaptive transmit power control [NG1.A.5]: ability to enable adaptive transmit power control on the PP.

6 Inter-operability requirements

6.1 General

The tables listed in this clause define the status of all protocol elements (i.e. features, services, and procedures) which can be: mandatory, optional, conditional under the provision of another protocol element, outside the scope of the present document, or not applicable. The status is identified by the status column designations defined in clause 3.2, and is described separately for FT and PT. In the case of FT, the status can be different for products intended for the Residential/Business (R/B) market or for the Public market segment.

Any optional elements chosen for implementation shall be implemented according to the procedures described in the present document.

Protocol elements defined as mandatory, optional or conditional in this clause are further defined in the referenced DECT specification, or, if needed, in clause 7 of the present document.

6.1.1 Editorial conventions

All New Generation DECT voice specifications are defined as backcompatible enhancements of EN 300 444 [11] (Generic Access Profile (GAP)). All procedures not specific of the New Generation DECT, are referenced to their original description in EN 300 444 [11] (GAP).

New Generation DECT part 5 (the present document) is also defined as backcompatible enhancements of TS 102 527-1 (NG-DECT part 1) [17] and TS 102 527-3 (NG-DECT part 3) [18]. All procedures reused without modification from these two specifications are referenced to their original description in either TS 102 527-1 (NG-DECT part 1) [17] or TS 102 527-3 (NG-DECT part 3) [18]. However, if any modification is required when the procedures are applied to the present document, they are newly described in the present document.

The following editorial conventions regarding status tables are used in the present document:

- Feature and service status tables for New Generation DECT Part 5 devices are listed in full in the present document.
- Feature (or service) to procedures mapping tables are only provided when there is a modification in the feature (or service) procedure composition or references. Only modified entries (feature or services) are listed. For all other entries, the mapping table of TS 102 527-3 [18] shall be used. Since TS 102 527-3 [18] follows the same editorial convention when features (or services) defined in GAP (EN 300 444 [11]) are used, this means that the user of the present document should potentially consult the mapping tables of these three documents to obtain the procedure composition of any service or feature. For convenience, an annex is provided (annex F) with the content of such tables at the time when the present document is released. However, this is only informative, and in case of errors or changes due to maintenance, the real content of the tables in EN 300 444 [11] (GAP) and TS 102 527-3 (NG-DECT part 3) [18] shall rule.

There has not been any modification, compared to TS 102 527-3 (NG-DECT part 3) [18], in the following tables:

- Speech services status (table 1)
- Speech service to DECT features implementation mappings (table 2)
- DLC services status (table 4)

- MAC services status (table 5)
- PHL services status (table 6)
- Speech Coding and audio features (table 7)
- Application features status (table 8)

NOTE: The MAC services table and Application features status table are changed by the Green feature.

However, the tables are provided to in order to comply with ETSI editorial policy.

6.1.2 Radio and audio conformance requirements

The requirements of EN 301 406 [10] and EN 300 176-2 [9] shall be met by all equipment conforming to the present document.

6.2 New Generation DECT Speech Services support status

The following end-user services shall be supported by "New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" devices shall support the following end-user services.

Table 1: Speech service status

Feature supported					
			Status		
Item no.	Name of Service	Reference	PT	FT	
				R/B	P
NG1.1	Narrow band ADPCM G.726 32 kbit/s voice service	5.1 [17]	M	M	M
NG1.2	Narrow band PCM G.711 64 kbit/s voice service	5.1 [17]	O	O	O
NG1.3	Wideband G.722 64 kbit/s voice service	5.1 [17]	M	M	M
NG1.4	Wideband G.729.1 32 kbit/s voice service	5.1 [17]	O	O	O
NG1.5	MPEG-4 ER AAC-LD super wideband 64 kbit/s voice service	5.1 [17]	O	O	O
NG1.6	MPEG-4 ER AAC-LD wideband 32 kbit/s voice service	5.1 [17]	O	O	O

6.3 Services to DECT feature implementation mappings

"New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" end user services shall be implemented using the DECT features and implementation alternatives defined in table 2.

Table 2: Speech service to DECT features implementation mappings

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
NG1.1 Narrow band ADPCM G.726 32 kbit/s voice service	**I**		**5.1 [**17**]**	**M**	**M**	**M**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.2 Physical Packet P32	5.5 [17]	M	M	M
		NG1.M.1 I_N_minimum delay symmetric MAC service type	5.4 [17]	M	M	M
		GAP.M.4 Basic Connections	5.2 [11]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	C201	C201	C201
		NG1.D.1 DLC Service LU1 TRUP Class 0/min_delay	5.3 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.1 Recommendation ITU-T G.726 [12] 32 kbit/s ADPCM codec	5.6 [17]	M	M	M

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
		NG1.SC.10 PP Audio type 1a (classic GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.11 PP Audio type 1b (improved GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.12 PP Audio type 1c (HATS 3,1 kHz handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.13 PP Audio type 1d (HATS 3,1 kHz improved handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.17 PP Audio type 3a (HATS 3,1 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.18 PP Audio type 3b (HATS 3,1 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.23 FP Audio type 1b (new ISDN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.24 PP echo canceller for FP, narrowband	5.6 [17]	N/A	C707	C707
		NG1.SC.25 PP echo supressor for FP, narrowband	5.6 [17]	N/A	C707	C707
		NG1.SC.26 FP Audio type 2 (analog PSTN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.27 FP Audio type 3 (VoIP 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control for FP	5.6 [17]	N/A	O	O
NG1.2 Narrow band PCM G.711 64 kbit/s voice service	**I**		**5.1 [17]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.3 Physical Packet P64	5.5 [17]	M	M	M
		NG1.M.1 I_N_minimum delay symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.1 DLC Service LU1 TRUP Class 0/min_delay	5.3 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.2 Recommendation ITU-T G.711 [13] 64 kbit/s PCM codec	5.6 [17]	M	M	M
		NG1.SC.8 Detection of Fax/modem tone	5.6 [17]	O	O	O
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.10 PP Audio type 1a (classic GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.11 PP Audio type 1b (improved GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.12 PP Audio type 1c (HATS 3,1 kHz handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.13 PP Audio type 1d (HATS 3,1 kHz improved handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.17 PP Audio type 3a (HATS 3,1 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.18 PP Audio type 3b (HATS 3,1 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.23 FP Audio type 1b (new ISDN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.24 PP echo canceller for FP, narrowband	5.6 [17]	N/A	C707	C707
		NG1.SC.25 PP echo supressor for FP, narrowband	5.6 [17]	N/A	C707	C707

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
		NG1.SC.26 FP Audio type 2 (analog PSTN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.27 FP Audio type 3 (VoIP 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control for FP	5.6 [17]	N/A	O	O
NG1.2 Narrow band PCM G.711 64 kbit/s voice service	**II**		**5.1 [17]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.4 Physical Packet P67	5.5 [17]	M	M	M
		NG1.M.3 I_{PQ}_error_detection symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.1 DLC Service LU1 TRUP Class 0/min_delay	5.3 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.2 Recommendation ITU-T G.711 [13] 64 kbit/s PCM codec	5.6 [17]	M	M	M
		NG1.SC.8 Detection of Fax/modem tone	5.6 [17]	O	O	O
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.10 PP Audio type 1a (classic GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.11 PP Audio type 1b (improved GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.12 PP Audio type 1c (HATS 3,1 kHz handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.13 PP Audio type 1d (HATS 3,1 kHz improved handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.17 PP Audio type 3a (HATS 3,1 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.18 PP Audio type 3b (HATS 3,1 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.23 FP Audio type 1b (new ISDN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.24 PP echo canceller for FP, narrowband	5.6 [17]	N/A	C707	C707
		NG1.SC.25 PP echo supressor for FP, narrowband	5.6 [17]	N/A	C707	C707
		NG1.SC.26 FP Audio type 2 (analog PSTN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.27 FP Audio type 3 (VoIP 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control for FP	5.6 [17]	N/A	O	O

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
NG1.2 Narrow band PCM G.711 64 kbit/s voice service	**III**		**5.1 [17]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.5 Physical Packet P80	5.5 [17]	M	M	M
		NG1.M.2 I_N_normal_delay symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.3 DLC service LU7 64 kbit/s protected bearer service	5.3 [17]	M	M	M
		NG1.D.6 DLC frame FU7	5.3 [17]	M	M	M
		NG1.SC.2 Recommendation ITU-T G.711 [13] 64 kbit/s PCM codec	5.6 [17]	M	M	M
		NG1.SC.8 Detection of Fax/modem tone	5.6 [17]	O	O	O
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.10 PP Audio type 1a (classic GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.11 PP Audio type 1b (improved GAP handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.12 PP Audio type 1c (HATS 3,1 kHz handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.13 PP Audio type 1d (HATS 3,1 kHz improved handset)	5.6 [17]	C702	N/A	N/A
		NG1.SC.17 PP Audio type 3a (HATS 3,1 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.18 PP Audio type 3b (HATS 3,1 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.23 FP Audio type 1b (new ISDN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.24 PP echo canceller for FP, narrowband	5.6 [17]	N/A	C707	C707
		NG1.SC.25 PP echo supressor for FP, narrowband	5.6 [17]	N/A	C707	C707
		NG1.SC.26 FP Audio type 2 (analog PSTN 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.27 FP Audio type 3 (VoIP 3,1 kHz)	5.6 [17]	N/A	C706	C706
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control for FP	5.6 [17]	N/A	O	O7

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
NG1.3 Wideband 7 kHz G.722 64 kbit/s voice service	**I**		**5.1 [17]**	**M**	**M**	**M**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.3 Physical Packet P64	5.5 [17]	M	M	M
		NG1.M.1 I_N_minimum delay symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.1 DLC Service LU1 TRUP Class 0/min_delay	5.3 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.3 Recommendation ITU-T G.722 [14] 64 kbit/s 7 kHz wideband codec	5.6 [17]	M	M	M
		NG1.SC.7 Packet loss Concealment (PLC) for Recommendation ITU-T G.722 [14]	5.6 [17]	O	O	O
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.14 PP Audio type 2a (Recommendation ITU-T P.311 [i.6] 7 kHz handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.15 PP Audio type 2b (HATS 7 kHz handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.16 PP Audio type 2c (HATS 7 kHz improved handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.19 PP Audio type 4a (HATS 7 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.20 PP Audio type 4b (HATS 7 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.28 FP Audio type 4 (ISDN wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.29 FP Audio type 5 (VoIP wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.30 NG1.SC.24 PP echo canceller for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.31 NG1.SC.24 PP echo supressor for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control	5.6 [17]	N/A	O	O

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
NG1.3 Wideband 7 kHz G.722 64 kbit/s voice service	**II**		**5.1 [**17**]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.3 Physical Packet P67	5.5 [17]	M	M	M
		NG1.M.3 I_{PQ}_error_detection symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.1 DLC Service LU1 TRUP Class 0/min_delay	5.3 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.3 Recommendation ITU-T G.722 [14] 64 kbit/s 7 kHz wideband codec	5.6 [17]	M	M	M
		NG1.SC.7 Packet loss Concealment (PLC) for Recommendation ITU-T G.722 [14]	5.6 [17]	O	O	O
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.14 PP Audio type 2a (Recommendation ITU-T P.311 [i.6] 7 kHz handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.15 PP Audio type 2b (HATS 7 kHz handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.16 PP Audio type 2c (HATS 7 kHz improved handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.19 PP Audio type 4a (HATS 7 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.20 PP Audio type 4b (HATS 7 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.28 FP Audio type 4 (ISDN wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.29 FP Audio type 5 (VoIP wideband	5.6 [17]	N/A	C708	C708
		NG1.SC.30 NG1.SC.24 PP echo canceller for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.31 NG1.SC.24 PP echo supressor for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control	5.6 [17]	N/A	O	O

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
NG1.4 Wideband 7 kHz G.729.1 32 kbit/s voice service	**I**		**5.1 [**17**]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.3 Physical Packet P32	5.5 [17]	M	M	M
		NG1.M.2 I_N_normal_delay symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.4 DLC service LU12 (UNF) Class 0	5.3 [17]	M	M	M
		NG1.D.7 DLC frame FU12 with adaptation for codec G.729.1	5.3 [17]	M	M	M
		NG1.SC.4 Recommendation ITU-T G.729.1 [15] 32 kbit/s 7 kHz wideband codec	5.6 [17]	M	M	M
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.14 PP Audio type 2a (Recommendation ITU-T P.311 [i.6] 7 kHz handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.15 PP Audio type 2b (HATS 7 kHz handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.16 PP Audio type 2c (HATS 7 kHz improved handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.19 PP Audio type 4a (HATS 7 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.20 PP Audio type 4b (HATS 7 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.28 FP Audio type 4 (ISDN wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.29 FP Audio type 5 (VoIP wideband	5.6 [17]	N/A	C708	C708
		NG1.SC.30 NG1.SC.24 PP echo canceller for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.31 NG1.SC.24 PP echo supressor for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control	5.6 [17]	N/A	O	O

Service/DECT Feature mapping						
				Status		
Service	IA	DECT feature/service	Reference	PT	FT	
					R/B	P
NG1.5 Superwideband 14 kHz MPEG-4 ER AAC-LD 64 kbit/s voice service	**I**		**5.1 [**17**]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.3 Physical Packet P64	5.5 [17]	M	M	M
		NG1.M.2 I_N_normal_delay symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.2 DLC Service LU1 Class 0	5.4 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.5 MPEG4 AAC-LD 64 kbit/s 14 kHz superwideband codec	5.6 [17]	M	M	M
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.21 PP Audio type 5a (Superwideband 14 KHz handset)	5.6 [17]	M	N/A	N/A
		NG1.SC.22 PP Audio type 5b (Superwideband 14 KHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.28 FP Audio type 4 (ISDN wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.29 FP Audio type 5 (VoIP wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control for FP	5.6 [17]	N/A	O	O
NG1.5 Superwideband 14 kHz MPEG-4 ER AAC-LD 64 kbit/s voice service	**II**		**5.1 [**17**]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.3 Physical Packet P67	5.5 [17]	M	M	M
		NG1.M.3 I_{PQ}_error_detection symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.2 DLC service LU1 Class 0	5.3 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.5 MPEG4 AAC-LD 64 kbit/s 14 kHz superwideband codec	5.6 [17]	M	M	M
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.21 PP Audio type 5a (Superwideband 14 KHz handset)	5.6 [17]	M	N/A	N/A
		NG1.SC.22 PP Audio type 5b (Superwideband 14 KHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.28 FP Audio type 4 (ISDN wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.29 FP Audio type 5 (VoIP wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control for FP	5.6 [17]	N/A	O	O

Service/DECT Feature mapping						
				Status		
Service	**IA**	**DECT feature/service**	**Reference**	**PT**	**FT**	
					R/B	**P**
NG1.6 Wideband 11 kHz MPEG-4 ER AAC-LD 32 kbit/s voice service	**I**		**5.1 [**17**]**	**O**	**O**	**O**
		NG1.P.1 2 level GFSK modulation	5.5 [17]	M	M	M
		NG1.P.3 Physical Packet P32	5.5 [17]	M	M	M
		NG1.M.2 I_N_normal_delay symmetric MAC service type	5.4 [17]	M	M	M
		NG1.M.4 Advanced Connections	5.4 [17]	M	M	M
		NG1.D.2 DLC service LU1 Class 0	5.4 [17]	M	M	M
		NG1.D.5 DLC frame FU1	5.3 [17]	M	M	M
		NG1.SC.6 MPEG4 AAC-LD 32 kbit/s 11 kHz wideband codec	5.6 [17]	M	M	M
		NG1.SC.9 Codec selection and switching	5.6 [17]	M	M	M
		NG1.SC.14 PP Audio type 2a (Recommendation ITU-T P.311 [i.6] 7 kHz handset)	5.6 [17]	I	N/A	N/A
		NG1.SC.15 PP Audio type 2b (HATS 7 kHz handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.16 PP Audio type 2c (HATS 7 kHz improved handset)	5.6 [17]	C703	N/A	N/A
		NG1.SC.19 PP Audio type 4a (HATS 7 kHz handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.20 PP Audio type 4b (HATS 7 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
		NG1.SC.28 FP Audio type 4 (ISDN wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.29 FP Audio type 5 (VoIP wideband)	5.6 [17]	N/A	C708	C708
		NG1.SC.30 NG1.SC.24 PP echo canceller for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.31 NG1.SC.24 PP echo supressor for FP, wideband	5.6 [17]	N/A	C709	C709
		NG1.SC.32 FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
		NG1.SC.33 FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
		NG1.SC.34 Adaptive volume control	5.6 [17]	N/A	O	O

IA = Implementation Alternative:
C201: Advanced connections for Service NG1.1 shall only be used in the case of multiple connections between the same PT-FT pair. The support of this case is optional.
C702: At least one should be provided.
C703: At least one should be provided.
C706: At least one should be provided.
C707: IF feature NG1.SC.23 (FP type 1b) OR NG1.SC.27 (FP type 3) THEN O ELSE I. Either NG1.SC.24 or NG1.SC.25 may be provided, but not both at the same time.
C708: At least one should be provided.
C709: IF feature NG1.SC.28 (FP type 4) OR NG1.SC.29 (FP type 5) THEN O ELSE I. Either NG1.SC.30 or NG1.SC.31 may be provided, but not both at the same time.

6.4 NWK features

"New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" devices shall support the following Network layer features.

Table 3: NWK features status

Feature supported					
			Status		
Item no.	Name of feature	Reference	PT	FT	
				R/B	P
NG1.N.1	Codec Negotiation	5.2 [17]	M	M	M
NG1.N.2	Codec Switching	5.2 [17]	M	M	M
NG1.N.3	Missed call notification	5.2 [18]	M	M	M
NG1.N.4	Voice message waiting notification	5.2 [18]	M	M	M
NG1.N.5	Date and Time synchronization	5.2 [18]	M	M	M
NG1.N.6	Parallel calls	5.2 [18]	M	M, note 7	O
NG1.N.7	Common parallel call procedures (external or internal)	5.2 [18]	M	M, note 7	O
NG1.N.8	Call transfer (external or internal)	5.2 [18]	M	M	O
NG1.N.9	3-party conference with established external and/or internal calls	5.2 [18]	M	M	O, note 6
NG1.N.10	Intrusion call	5.2 [18]	M	M	O, note 6
NG1.N.11	Call deflection (external or internal)	5.2 [18]	O	O, note 6	O, note 6
NG1.N.12	Line identification	5.2 [18]	M	M	M
NG1.N.13	Call identification	5.2 [18]	M	M	M
NG1.N.14	Multiple Lines	5.2 [18]	M	O	O
NG1.N.15	Multiple calls	5.2 [18]	M	M	O
NG1.N.16	List access service	5.2 [18]	M	M	O
NG1.N.17	Calling line identity restriction	5.2 [18]	M	M	O
NG1.N.18	Call forwarding (external calls)	5.2 [18]	M	M	I
NG1.N.19	DTMF handling	5.2 [18]	M	M	O
NG1.N.20	Tones provision	5.2 [18]	M	M	O
NG1.N.21	Headset management	5.2 [18]	C301	M	O
NG1.N.22	Handling of lines where second calls are signalled in-band	5.2 [18]	M	O, note 7	O
NG1.N.23	Line and diagnostic information	5.2	M	M	O
NG1.N.24	Short Message Service	5.2	O	O	O
NG1.N.25	DTAM support	5.2	O	O	O
NG1.N.26	Screening support	5.2	O	O	O
GAP.N.1	Outgoing call	4.1 [11]	M	M	M
GAP.N.2	Off hook	4.1 [11]	M	M	M
GAP.N.3	On hook (full release)	4.1 [11]	M	M	M
GAP.N.4	Dialled digits (basic)	4.1 [11]	M	M	M
GAP.N.5	Register recall (see notes 4 and 5)	4.1 [11]	M	O	O
GAP.N.6	Go to DTMF signalling (defined tone length) (see note 1)	4.1 [11]	M	O	M
GAP.N.7	Pause (dialling pause) (see note 3)	4.1 [11]	M	O	O
GAP.N.8	Incoming call	4.1 [11]	M	M	M
GAP.N.9	Authentication of PP	4.1 [11]	M	M	M
GAP.N10	Authentication of user (see note 2)	4.1 [11]	M	O	O
GAP.N.11	Location registration	4.1 [11]	M	O	M
GAP.N.12	On air key allocation (see note 2)	4.1 [11]	M	M	O
GAP.N.13	Identification of PP	4.1 [11]	M	O	O
GAP.N.14	Service class indication/assignment	4.1 [11]	M	O	M
GAP.N.15	Alerting	4.1 [11]	M	M	M
GAP.N.16	ZAP (see note 2)	4.1 [11]	M	O	O
GAP.N.17	Encryption activation FT initiated	4.1 [11]	M	M	M
GAP.N.18	Subscription registration procedure on-air	4.1 [11]	M	M	M
GAP.N.19	Link control	4.1 [11]	M	M	M
GAP.N.20	Terminate access rights FT initiated (see note 2)	4.1 [11]	M	M	O
GAP.N.21	Partial release	4.1 [11]	O	O	O

Feature supported					
			Status		
Item no.	Name of feature	Reference	PT	FT	
				R/B	P
GAP.N.22	Go to DTMF (infinite tone length)	4.1 [11]	O	O	O
GAP.N.23	Go to Pulse	4.1 [11]	O	O	O
GAP.N.24	Signalling of display characters	4.1 [11]	O	O	O
GAP.N.25	Display control characters	4.1 [11]	O	O	O
GAP.N.26	Authentication of FT	4.1 [11]	O	O	O
GAP.N.27	Encryption activation PT initiated	4.1 [11]	O	O	O
GAP.N.28	Encryption deactivation FT initiated	4.1 [11]	O	O	O
GAP.N.29	Encryption deactivation PT initiated	4.1 [11]	O	O	O
GAP.N.30	Calling Line Identification Presentation (CLIP)	4.1 [11]	M	M	M
GAP.N.31	Internal call	4.1 [11]	M	M	M
GAP.N.32	Service call	4.1 [11]	O	O	O
GAP.N.33	Enhanced U- plane connection	4.1 [11]	O	O	O
GAP.N.34	Calling Name Identification Presentation (CNIP)	4.1 [11]	M	M	M
GAP.N.35	Enhanced security	4.1 [11]	M	M	M
GAP.N.36	AES/DSAA2 authentication	4.1 [11]	O	O	O
C301:	IF the PT is a headset PP THEN "M" ELSE "I".				
NOTE 1:	The PT is only required to be able to send the <<MULTI-KEYPAD>> information element containing the DECT standard 8-bit character (EN 300 175-5 [5], annex D) codings "Go to DTMF", defined tone length and the FT is required to be able to understand it in the public environment.				
NOTE 2:	This feature is required to be supported in the PT to guarantee the same level of security among all the handsets that operates in a system. The invocation of the feature is however optional to the operator.				
NOTE 3:	The PT is required to be able to send the <<MULTI-KEYPAD>> information element containing the DECT standard 8-bit character (EN 300 175-5 [5], annex D) codings "Dialling Pause". This guarantees automatic access to secondary or alternative networks.				
NOTE 4:	This feature uses keypad code 15 hex.				
NOTE 5:	The FT is not mandated to receive and understand the register recall DECT character. However, if a FT supports it there may be no corresponding action that the FT can take with the local network as a result of this function.				
NOTE 6:	If the feature is not supported on FT side, the FT shall however implement the "sending negative acknowledgement" procedure (see clause 7.4.3.4 of TS 102 527-3 [18]).				
NOTE 7:	All procedures of NG1.N.6 and NG1.N.7 shall apply to all FTs and for all line types (full parallel call compliant lines and DCIBS lines). For DCIBS lines, the FT shall implement in addition NG1.N.22 feature, which describes some amendments to NG1.N.6 and NG1.N.7 for such lines. A given FT shall be designed to handle both line types, or only one of them.				

6.5 Data Link Control (DLC) services

"New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" devices shall support the following DLC services.

Table 4: DLC services status

Service supported					
			Status		
Item no.	Name of service	Reference	PT	FT	
				R/B	P
NG1.D.1	LU1 Transparent UnProtected service (TRUP) Class 0 /minimum_delay	5.3 [17]	M	M	M
NG1.D.2	LU1 Transparent UnProtected service (TRUP) Class 0	5.3 [17]	C001	C001	C001
NG1.D.3	LU7 64 kbit/s protected bearer service	5.3 [17]	C001	C001	C001
NG1.D.4	LU 12 Unprotected Framed service (UNF) Class 0	5.3 [17]	C001	C001	C001
NG1.D.5	FU1 DLC frame	5.3 [17]	M	M	M
NG1.D.6	FU7 DLC frame	5.3 [17]	C001	C001	C001
NG1.D.7	FU12 DLC frame with adaptation for codec G.729.1	5.3 [17]	C401	C401	C401
GAP.D.1	LAPC class A service and Lc	5.1 [11]	M	M	M
GAP.D.2	C_S channel fragmentation and recombination	5.1 [11]	M	M	M
GAP.D.3	Broadcast Lb service	5.1 [11]	M	M	M
GAP.D.4	Intra-cell voluntary connection handover	5.1 [11]	M	C002	C002
GAP.D.5	Intercell voluntary connection handover (see note)	5.1 [11]	M	O	O
GAP.D.6	Encryption activation	5.1 [11]	M	C004	M
GAP.D.9	Encryption deactivation	5.1 [11]	C003	C003	C003
C001: Status defined by clause 6.3, table 2. C002: IF service GAP.M.9 THEN O ELSE M. C003: IF feature GAP.N.29 OR GAP.N.28 THEN M ELSE I. C004: IF feature GAP.N.17 OR GAP.N.27 THEN M ELSE I.					
NOTE: The PT is required to be able to support handover between RFPs. The invocation of the feature is however optional to the operator.					

6.6 Medium Access Control (MAC) services

"New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" devices shall support the following MAC layer services.

Table 5: MAC services status

Service supported					
			Status		
Item no.	Name of service	Reference	PT	FT	
				R/B	P
NG1.M.1	I_N_minimum delay symmetric MAC service type	5.4 [17]	M	M	M
NG1.M.2	I_N_normal delay symmetric MAC service type	5.4 [17]	C001	C001	C001
NG1.M.3	I_{PQ}_error_detection symmetric MAC service type	5.4 [17]	C001	C001	C001
NG1.M.4	Advanced connections	5.4 [17]	M	M	M
NG1.M.5	"no emission" mode	5.4 [18]	O	O	O
NG1.M.6	"low duty cycle Idle_Locked" mode	5.4	O	O	O
GAP.M.1	General	5.2 [11]	M	M	M
GAP.M.2	Continuous broadcast	5.2 [11]	M	M	M
GAP.M.3	Paging broadcast	5.2 [11]	M	M	M
GAP.M.4	Basic connections	5.2 [11]	M	M	M
GAP.M.5	C_S higher layer signalling	5.2 [11]	M	M	M
GAP.M.6	Quality control	5.2 [11]	M	M	M
GAP.M.7	Encryption activation	5.2 [11]	M	M	M
GAP.M.8	Extended frequency allocation (see note 1)	5.2 [11]	M	O	O
GAP.M.9	Bearer Handover, intra-cell	5.2 [11]	M	C002	C002
GAP.M.10	Bearer Handover, inter-cell	5.2 [11]	M	O	O
GAP.M.11	Connection Handover, intra-cell	5.2 [11]	M	C003	C003
GAP.M.12	Connection Handover, inter-cell	5.2 [11]	M	O	O
GAP.M.13	SARI support	5.2 [11]	M	O	O
GAP.M.14	Encryption deactivation	5.2 [11]	C004	C004	C004
GAP.M.15	Re-keying	5.2 [11]	M	M	M
GAP.M.16	Early encryption	5.2 [11]	M	M	M
GAP.M.17	AES/DSC2 encryption (see note 2)	5.2 [11]	O	O	O
C001: Status defined by clause 6.3, table 2. C002: IF service GAP.M.11 THEN O ELSE M. C003: IF service GAP.M.9 THEN O ELSE M. C004: IF feature GAP.N.29 OR N.28 THEN M ELSE I.					
NOTE 1: Handsets not supporting these extra frequencies need only adapt scanning to allow continued use of the standard DECT frequencies. NOTE 2: IF implemented THEN NWK feature GAP.N.36 shall be implemented.					

6.7 Physical layer (PHL) services

"New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" devices shall support the following Physical layer (PHL) services.

Table 6: PHL services status

Service supported					
			Status		
Item no.	Name of service	Reference	PT	FT	
				R/B	P
NG1.P.1	2 level GFSK modulation	5.5 [17]	M	M	M
NG1.P.2	Physical Packet P32	5.5 [17]	M	M	M
NG1.P.3	Physical Packet P64	5.5 [17]	M	M	M
NG1.P.4	Physical Packet P67	5.5 [17]	O	O	O
NG1.P.5	Physical Packet P80	5.5 [17]	O	O	O

The requirements of EN 300 444 [11], clause 11 also apply.

6.8 Speech coding and audio features

"New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" devices shall support the following Speech coding and audio related features.

Table 7: Speech Coding and audio features

Service supported					
			Status		
Item no.	Name of service	Reference	PT	FT	
				R/B	P
NG1.SC.1	G.726 32 kbit/s ADPCM codec	5.6 [17]	M	M	M
NG1.SC.2	G.711 64 kbit/s PCM codec	5.6 [17]	C701	C701	C701
NG1.SC.3	G.722 64 kbit/s 7 kHz wideband codec	5.6 [17]	M	M	M
NG1.SC.4	G.729.1 32 kbit/s 7 kHz wideband codec	5.6 [17]	C701	C701	C701
NG1.SC.5	MPEG4 AAC-LD 64 kbit/s 14 kHz superwideband codec	5.6 [17]	C701	C701	C701
NG1.SC.6	MPEG4 AAC-LD 32 kbit/s 11 kHz wideband codec	5.6 [17]	C701	C701	C701
NG1.SC.7	Packet Loss Concealment (PLC) for G.722]	5.6 [17]	C701	C701	C701
NG1.SC.8	Detection of Fax/modem tone	5.6 [17]	C701	C701	C701
NG1.SC.9	Codec selection and switching	5.6 [17]	M	M	M
NG1.SC.10	PP Audio profile type 1a (classic GAP handset)	5.6 [17]	I	N/A	N/A
NG1.SC.11	PP Audio profile type 1b (improved GAP handset)	5.6 [17]	I	N/A	N/A
NG1.SC.12	PP Audio profile type 1c (HATS 3,1 kHz handset)	5.6 [17]	C702	N/A	N/A
NG1.SC.13	PP Audio profile type 1d (HATS 3,1 kHz improved handset)	5.6 [17]	C702	N/A	N/A
NG1.SC.14	PP Audio profile type 2a (Recommendation ITU-T P.311 [i.6] 7 kHz handset)	5.6 [17]	I	N/A	N/A
NG1.SC.15	PP Audio profile type 2b (HATS 7 kHz handset)	5.6 [17]	C703	N/A	N/A
NG1.SC.16	PP Audio profile type 2c (HATS 7 kHz improved handset)	5.6 [17]	C703	N/A	N/A
NG1.SC.17	PP Audio profile type 3a (HATS 3,1 kHz handsfree)	5.6 [17]	O	N/A	N/A
NG1.SC.18	PP Audio profile type 3b (HATS 3,1 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
NG1.SC.19	PP Audio profile type 4a (HATS 7 kHz handsfree)	5.6 [17]	O	N/A	N/A
NG1.SC.20	PP Audio profile type 4b (HATS 7 kHz improved handsfree)	5.6 [17]	O	N/A	N/A
NG1.SC.21	PP Audio profile type 5a superwideband (14 kHz) handset	5.6 [17]	C704	N/A	N/A
NG1.SC.22	PP Audio profile type 5b superwideband (14 kHz) handsfree	5.6 [17]	C705	N/A	N/A
NG1.SC.23	FP Audio type 1b (new ISDN 3,1 kHz)	5.6 [17]	N/A	C706	C706
NG1.SC.24	PP echo canceller for FP, narrowband	5.6 [17]	N/A	C707	C707
NG1.SC.25	PP echo supressor for FP, narrowband	5.6 [17]	N/A	C707	C707
NG1.SC.26	FP Audio type 2 (analog PSTN 3,1 kHz)	5.6 [17]	N/A	C706	C706
NG1.SC.27	FP Audio type 3 (VoIP 3,1 kHz)	5.6 [17]	N/A	C706	C706
NG1.SC.28	FP Audio type 4 (ISDN wideband)	5.6 [17]	N/A	C708	C708
NG1.SC.29	FP Audio type 5 (VoIP wideband)	5.6 [17]	N/A	C708	C708
NG1.SC.30	PP echo canceller for FP, wideband	5.6 [17]	N/A	C709	C709
NG1.SC.31	PP echo supressor for FP, wideband	5.6 [17]	N/A	C709	C709
NG1.SC.32	FP Audio type 6a (internal call)	5.6 [17]	N/A	M	M
NG1.SC.33	FP Audio type 6b (internal conference)	5.6 [17]	N/A	O	O
NG1.SC.34	Adaptive volume control for FP	5.6 [17]	N/A	O	O

C701: Status defined by clause 6.3, table 2.
C702: At least one should be provided.
C703: At least one should be provided.
C704: IF Service NG1.5 (Superwideband) THEN M ELSE I.
C705: IF Service NG1.5 (Superwideband) THEN O ELSE I.
C706: At least one should be provided.
C707: IF feature NG1.SC.23 (FP type 1b) OR NG1.SC.27 (FP type 3) THEN O ELSE I. Either NG1.SC.24 or NG1.SC.25 may be provided, but not both at the same time.
C708: At least one should be provided.
C709: IF feature NG1.SC.28 (FP type 4) OR NG1.SC.29 (FP type 5) THEN O ELSE I. Either NG1.SC.30 or NG1.SC.31 may be provided, but not both at the same time.

NOTE 1: Testing specification for audio features, including handsfree, is provided in EN 300 176-2 [9].

NOTE 2: PP types 1c, 1d, 2b and 2c are based on HATS methodology. This methodology provides objective test results more consistent with subjective tests compared to artificial ear methodology.

NOTE 3: All audio types used in the present document are compatible with VoIP or long delay networks.

6.9 Application features

"New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services" devices shall support the following Application features.

Table 8: Application features status

Feature supported					
			Status		
Item no.	Name of feature	Reference	PT	FT	
				R/B	P
NG1.A.1	Easy PIN code registration	5.7 [18]	M	O	N/A
NG1.A.2	Easy pairing registration	5.7 [18]	M	M	N/A
NG1.A.3	Handset locator	5.7 [18]	M	O	O
NG1.A.4	Base manual transmit power control	5.7	N/A	M	O
NG1.A.5	Handset adaptive transmit power control	5.7	M	N/A	N/A
GAP.A.1	AC_bitstring_mapping	4.2 [11]	M	M	M
GAP.A.2	Multiple subscription registration	4.2 [11]	M	N/A	N/A
GAP.A.3	Manual entry of the PARK	4.2 [11]	O	N/A	N/A
GAP.A.4	Terminal identity number assignment in mono cell system	4.2 [11]	M	M	N/A

6.10 Network (NWK) feature to procedure mapping

The NWK features to procedure mapping of EN 300 444 [11] (GAP), clause 6.7 with the following changes and additional features shall apply.

Table 9: NWK feature to procedure mapping

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.N.1 Codec Negotiation		5.2 [17]	M	M	M
	Exchange of codec list during registration and location registration	7.3.1 [17]	M	M	M
	Basic service wideband speech and default attributes	7.3.2 [17]	M	M	M
	Codec Negotiation during call establishment	7.3.3 [17]	M	M	M
NG1.N.2 Codec Switching		5.2 [17]	M	M	M
	Codec Change	7.3.4 [17]	M	M	M
	Slot type modification	7.3.5 [17]	M	M	M
	MAC layer advanced connection slot type modification	7.6.7 [17]			
	MAC layer connection type modification: basic to/from advanced	7.6.6 [17]	M	M	M
NG1.N.3 Missed call notification		5.2 [18]	M	M	M
	Generic events notification, general	7.4.1.1 [18]	M	M	M
	Missed call notification	7.4.1.3	M	M	M
NG1.N.4 Voice message waiting notification		5.2 [18]	M	M	M
	Generic events notification, general	7.4.1.1 [18]	M	M	M
	Voice message waiting notification	7.4.1.2 [18]	M	M	M
NG1.N.5 Date and Time synchronization		5.2 [18]	M	M	M
	Date and Time synchronization	7.4.2 [18]	M	M	M
	Date and Time recovery	7.4.20 [18]	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.N.6 Parallel Calls		5.2 [18]	M	M, note 2	O
	Parallel call common requirements	7.4.3.1 [18]	M	M	M
	Control messages	7.4.3.2	M	M	M
	Sending Keypad information	8.10 [11]	M	M	M
	Codec change for parallel calls	7.4.3.3 [18]	M	M	M
	Sending negative acknowledgement	7.4.3.4 [18]	M	M	M
	Busy system or line notification	7.4.8.3 [18]	M	M	M
NG1.N.7 Common parallel call procedures (external or internal)		5.2 [18]	M	M, note 2	O
	Outgoing parallel call initiation (external or internal)	7.4.3.5.1 [18]	M	M	M
	Call waiting indication (external or internal)	7.4.3.5.2 [18]	M	M	M
	Call toggle (external or internal)	7.4.3.5.3 [18]	M	M	M
	Call release and call release rejection	7.4.3.5.4 [18]	M	M	M
	Call waiting acceptance (from PP to FP)	7.4.3.5.6 [18]	M	M	M
	Call waiting rejection (from PP to FP)	7.4.3.5.7 [18]	M	M	M
	Active call release with replacement (from PP to FP)	7.4.3.5.12 [18]	O	M	M
	Putting a call on-hold	7.4.3.5.8 [18]	O	M	M
	Resuming a call put on-hold	7.4.3.5.9 [18]	O, note 6	M	M
	CLIP on call waiting indication	7.4.3.5.10 [18]	M	M	M
	CNIP on call waiting indication	7.4.3.5.11 [18]	M	M	M
	Call remote status notification	7.4.3.5.13 [18]	M	M	M
NG1.N.8 Call transfer (external or internal)		5.2 [18]	M	M	O
	Announced call transfer	7.4.3.6.1 [18]	M	M	M
	Unannounced call transfer	7.4.3.6.2 [18]	M	M	M
	Call re-injection to the system (external or internal)	7.4.3.6.3 [18]	M	M	M
	Remote party CLIP on call transfer	7.4.3.6.4 [18]	M	M	M
	Remote party CNIP on call transfer	7.4.3.6.5 [18]	M	M	M
NG1.N.9 3-party conference call (external or internal)		5.2 [18]	M	M	O (note 1)
	3-party Conference with established internal and external calls	7.4.3.7 [18]	M	M	M
NG1.N.10 Intrusion call		5.2 [18]	M	M	O (note 1)
	Implicit intrusion call into a line in "single call" mode	7.4.3.8.1 [18]	C901	M	M
	Explicit intrusion call (from PP to FP)	7.4.3.8.2 [18]	C901	M	M
NG1.N.11 Call deflection (internal or external)		5.2 [18]	O	O (note 1)	O (note 1)
	Call deflection (internal)	7.4.4.2 [18]	M	M	M
	Call deflection (external)	7.4.4.2 [18]	M	M	M
	Call deflection control messages	7.4.4.1.1 [18]	M	M	M
NG1.N.12 Line identification		5.2 [18]	M	M	M
	Line identification general requirements	7.4.5.1 [18]	M	M	M
	General line identification requirements for external outgoing calls	7.4.5.2.1 [18]	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	Line identification for a first external outgoing call using <<CALL-INFO>> IE	7.4.5.2.2 [18]	M	M	M
	Line identification for a first external outgoing call using <<MULTI-KEYPAD>> IE	7.4.5.2.3 [18]	I (note 5)	M	M
	FP managed line selection for a first external outgoing call	7.4.5.2.4 [18]	M	M	M
	General line identification requirements for external incoming calls	7.4.5.3.1 [18]	M	M	M
	Line identification for a first external incoming call	7.4.5.3.2 [18]	M	M	M
NG1.N.13 Call identification		5.2 [18]	M	M	M
	Call identifier general requirements	7.4.6.1 [18]	M	M	M
	Call identifier assignment on outgoing call (FP to PP)	7.4.6.2 [18]	M	M	M
	Call identifier assignment on incoming call (FP to PP)	7.4.6.3 [18]	M	M	M
	Call status indication to the handset	7.4.6.4 [18]	M	M	M
NG1.N.14 Multiple lines		5.2 [18]	M	O	O
	Multiple lines common requirements	7.4.7.1 [18]	M	M	M
	Terminal attachment and line settings	7.4.7.2 [18]	M	M	M
	Incoming and outgoing external calls on a multiple line system	7.4.7.3 [18]	M	M	M
	Internal calls in multiple line context	7.4.7.4 [18]	M	M	M
	Compatibility with non multiple line PP or FP	7.4.7.5 [18]	M	M	M
NG1.N.15 Multiple calls		5.2 [18]	M	M	O
	Multiple calls general requirements	7.4.8.1 [18]	M	M	M
	Incoming and outgoing external calls on a multiple call line	7.4.8.2 [18]	M	M	M
	Busy system or line notification	7.4.8.3 [18]	M	M	M
NG1.N.16 List access service		5.2 [18]	M	M	O
	General considerations	7.4.10.1	M	M	M
	List change notification	7.4.10.2	O	M	M
	Extended list change notification	7.4.10.7	O	M	M
	Start / end session (note 4)	7.4.10.4.1	M	M	M
	Query supported entry fields (note 4)	7.4.10.4.2	O	M	M
	Read entries (note 4)	7.4.10.4.3	M	M	M
	Edit entry (note 4)	7.4.10.4.4	M	M	M
	Save entry (note 4)	7.4.10.4.5	M	M	M
	Delete entry (note 4)	7.4.10.4.6	M	M	O
	Delete list (note 4)	7.4.10.4.7	M	M	M
	Search entries (note 4)	7.4.10.4.8	M	M	M
	Negative acknowledgement	7.4.10.4.9	M	M	M
	Data packet / Data packet last	7.4.10.4.10	M	M	M
	DECT system and line settings considerations	7.4.11.1 [18]	M	M	O
	Interactions between registration, attachment of handsets and lists	7.4.11.2 [18]	M	M	O
	Fields description	7.4.10.5.1 [18]	M	M	M
	Abnormal release in case of call setup collisions	9.5.2.3 [5]	M	M	M
	[Supported lists]				
	List of Supported Lists	7.4.10.5.2 [18]	O	M	M
	Missed Calls List	7.4.10.5.3 [18]	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	Outgoing Calls List	7.4.10.5.4 [18]	O	O	O
	Incoming Accepted Calls List	7.4.10.5.5 [18]	M	M	M
	All Calls List	7.4.10.5.6 [18]	O	M	M
	Contact List	7.4.10.5.7 [18]	M	M	M
	Internal Names List	7.4.10.5.8 [18]	M	M	M
	All Incoming Calls List	7.4.10.5.11 [18]	O	O	O
	DECT System Settings List	7.4.11.3 [18]	M	M	O
	Line Settings List	7.4.11.4 [18]	M	M	O
	Virtual Contact List and call list per line	7.4.11.5 [18]	O	C902	O
	Line and Diagnostic Statuses List	7.4.34.3	M	M	O
	SMS Settings List	7.4.35.4.1	C912	C912	C913
	Incoming SMS List	7.4.35.5.2	C912	C912	C913
	Sent SMS List	7.4.35.5.3	C912	C912	C913
	Outgoing SMS List	7.4.35.5.4	C912	C912	C913
	Draft SMS List	7.4.35.5.5	C912	C912	C913
	DTAM Settings List	7.4.36.5.2	C914	C914	C914
	DTAM Incoming Calls List	7.4.36.5.3	C915 (note 7)	C915 (note 7)	C915 (note 7)
	DTAM Welcome Message List	7.4.36.5.4	C914	C914	C914
	[Supported DECT system settings]				
	Current PIN code	7.4.11.3.1 [18]	M	M	O
	Clock master	7.4.11.3.2 [18]	M	M	O
	Base reset	7.4.11.3.3 [18]	M	M	O
	FP IP address / type	7.4.11.3.4 [18]	O	O	O
	FP IP address / value	7.4.11.3.5 [18]	O	O	O
	FP IP address / subnet mask	7.4.11.3.6 [18]	O	O	O
	FP IP address / gateway	7.4.11.3.7 [18]	O	O	O
	FP IP address / DNS server	7.4.11.3.8 [18]	O	O	O
	FP version / Firmware version	7.4.11.3.9 [18]	M	M	O
	FP version / EEprom version	7.4.11.3.10 [18]	M	M	O
	FP version / Hardware version	7.4.11.3.11 [18]	O	O	O
	Emission mode	7.4.11.3.12 [18]	C903	C903	O
	New PIN code	7.4.11.3.13 [18]	M	M	O
	Transmit power mode	7.4.11.3.14	M	M	O
	[Supported line settings]				
	Line name	7.4.11.4.1 [18]	M	M	O
	Line id	7.4.11.4.2 [18]	M	M	O
	Attached handsets	7.4.11.4.3 [18]	M	M	O
	Dialling prefix	7.4.11.4.4 [18]	O	O	O
	FP melody	7.4.11.4.5 [18]	O	O	O
	FP volume	7.4.11.4.6 [18]	O	O	O
	Blocked number	7.4.11.4.7 [18]	O	O	O
	Multiple calls mode (single/multiple)	7.4.11.4.8 [18]	M	M	M
	Intrusion call	7.4.11.4.9 [18]	M	M	C904
	Permanent CLIR	7.4.11.4.10 [18]	M	M	C905
	Call forwarding Unconditional	7.4.11.4.11 [18]	M	M	I
	Call forwarding on No Answer	7.4.11.4.12 [18]	M	M	I
	Call forwarding on Busy subscriber	7.4.11.4.13 [18]	M	M	I
NG1.N.17 Calling line identity restriction		5.2 [18]	M	M	O
	Considerations	7.4.12.1 [18]	M	M	O
	Permanent CLIR mode (all calls)	7.4.12.2 [18]	M	M	O
	Temporary CLIR mode (call by call)	7.4.12.3 [18]	M	N/A	O
NG1.N.18 Call forwarding (external calls)		5.2 [18]	M	M	I
	Call Forwarding common requirements	7.4.13.1 [18]	M	M	I

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	External Call Forwarding Unconditional (CFU) to external number	7.4.13.2 [18]	M	M	I
	External Call Forwarding on No Answer (CFNA) to external number	7.4.13.3 [18]	M	M	I
	External Call Forwarding on Busy subscriber (CFB) to external number	7.4.13.4 [18]	M	M	I
NG1.N.19 DTMF handling		5.2 [18]	M	M	O
	Uplink DTMF transmission at call setup when FP connected to classic switching network	7.4.14.1.1 [18]	M	C906	C906
	Uplink DTMF transmission when connected	7.4.14.1.2 [18]	M	M	O
	Downlink DTMF reception	7.4.14.2 [18]	M	M	O
	Local DTMF feedback of dialled digits	7.4.14.3 [18]	M	M	O
NG1.N.20 Tones provision		5.2 [18]	M	M	O
	General considerations	7.4.15.1 [18]	M	M	O
	Tones provision by the system	7.4.15.2 [18]	M	M	O
	Transparency to tones provision by the network or PABX	7.4.15.3 [18]	M	M	O
NG1.N.21 Headset management		5.2 [18]	C907	M	O
	Headset considerations	7.4.16.1 [18]	C907	M	O
	Headset call interception	7.4.16.2 [18]	C907	M	O
	Headset incoming call	7.4.16.3 [18]	C907	M	O
	Re-dial of last outgoing call	7.4.16.4 [18]	C908	M	O
	Re-dial of last incoming call	7.4.16.5 [18]	C908	M	O
	Switching from headset to handset (headset initiated)	7.4.16.6 [18]	C908	M	O
	Switching from headset to handset (handset initiated)	7.4.16.7 [18]	C909	M	O
	Compatibility with other telephony features and profiles	7.4.16.8 [18]	C907	M	O
NG1.N.22 Handling of lines where second calls are signalled in-band		5.2 [18]	M	O (note 2)	O
	General requirements	7.4.3.10.1 [18]	I	M	M
	Basic 'double call with in-band signalling' lines	7.4.3.10.2 [18]	I	M (note 3)	M
	Off-hook CLIP enabled 'double call with in-band signalling' lines	7.4.3.10.3 [18]	M	M (note 3)	M
	Use of transparent commands on DCIBS lines (Basic or Off-hook CLIP enabled) or any other line	7.4.3.10.4 [18]	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.N.23 Line and diagnostic information		5.2	M	M	O
	Generic events notification, general	7.4.1.1 [18]	M	M	O
	General requirements	7.4.34.1	M	M	O
	Exposed diagnostic information	7.4.34.2	M	M	O
	Line and Diagnostic Statuses List	7.4.34.3	M	M	O
	Line and Diagnostic Statuses List details 'OK status' (one status per line) 'Line use status' (one status per line) 'Handset use status' (one status per line) 'Call Forwarding status' (3 statuses per line) 'Diagnostic error status', - line related (1 status per line) - non-line related (1 st. for system)	 7.4.34.3.2 7.4.34.3.3 7.4.34.3.4 7.4.34.3.5 7.4.34.3.6 7.4.34.3.6	M M M O M M M	M M M M M M M	O O O O O O O
	Diagnostic indication	7.4.1.5	M	M	O
NG1.N.24 Short Message Service		5.2	O	O	O
	General requirements	7.4.35.1	M	M	M
	Incoming SMS handling	7.4.35.2	M	M	M
	Outgoing SMS handling	7.4.35.3	M	M	M
	SMS settings	7.4.35.4	M	M	M
	SMS related entry fields and lists	7.4.35.5	M	M	M
NG1.N.25 Digital Telephone Answering Machine		5.2	O	O	O
	Voice Message waiting notification	7.4.1.2	M	M	M
	List access service	7.4.10	M	M	M
	DTAM General description	7.4.36.1	M	M	M
	Voice oriented DTAM	7.4.36.2.1	C914	C914	C914
	Visual DTAM	7.4.36.2.2	C914	C914	C914
	DTAM consulting call	7.4.36.3	M	M	M
	DTAM Commands	7.4.36.4	M	M	M
	DTAM specific fields description	7.4.36.5.1	M	M	M
	DTAM Settings List	7.4.36.5.2	M	M	M
	DTAM Incoming Calls List	7.4.36.5.3	C915	C915	C915
	DTAM Welcome Message List	7.4.36.5.4	M	M	M
	List Access service call transformation into a DTAM consulting call	7.4.36.5.5	M	M	M
NG1.N.26 Call screening		5.2	O	O	O
	Screening general requirements	7.4.36.6.1	M	M	M
	Call screening indication (FP to PP)	7.4.36.6.2	M	M	M
	Call screening acceptance (PP to FP)	7.4.36.6.3	M	M	M
	Call screening rejection (PP to FP)	7.4.36.6.4	M	M	M
	Call screening interception (PP to FP)	7.4.36.6.5	M	M	M
	FP initiated call screening release (FP to PP)	7.4.36.6.6	M	M	M
	Parallel call during active call screening	7.4.36.6.7	M	M	M
	Call screening of a waiting call	7.4.36.6.8	M	M	M
	Call screening with screening and non-screening PPs	7.4.36.6.9	M	M	M
	Single/Multiple PP(s) call screening mode	7.4.36.6.10	M	M	M
GAP.N.1 Outgoing call		4.1 [11]	M	M	M
	Outgoing call request	8.2 [11]	M	M	M
	Overlap sending	8.3 [11]	M	O	O

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	Outgoing call proceeding	8.4 [11]	M	O	O
	Outgoing call confirmation	8.5 [11]	M	O	O
	Outgoing call connection	8.6 [11]	M	M	M
	Sending keypad information	8.10 [11]	M	M	M
	Abnormal release in case of call setup collisions	9.5.2.3 [5]	M	M	M
	Contact number and name matching on outgoing call	7.4.32	M	M	O
GAP.N.8 Incoming call		4.1 [11]	M	M	M
	Incoming call request	8.12 [11]	M	M	M
	Incoming call confirmation	8.13 [11]	M	M	M
	PT alerting	8.14 [11]	M	M	M
	Incoming call connection	8.15 [11]	M	M	M
	Abnormal release in case of call setup collisions	9.5.2.3 [5]	M	M	M
GAP.N.11 Location registration		4.1 [11]	M	O	M
	Location registration	8.28 [11]	M	M	M
	Location update	8.29 [11]	M	O	O
	Terminal Capability indication	7.4.9.1	M	M	M
	Location registration after re-lock	7.4.18	M	N/A	N/A
GAP.N.14 Service class indication/assignment		4.1 [11]	M	O	M
	Obtaining access rights	8.30 [11]	M	M	M
	Terminal Capability indication	7.4.9.1	M	M	M
	Authentication of PP using DSAA	8.24 [11]	M	M	M
	Authentication of PP using DSAA2	8.45.7 [11]	C910	C910	C910
GAP.N.16 ZAP		4.1 [11]	M	O	O
	Obtaining access rights	8.30 [11]	M	M	M
	Terminal Capability indication	7.4.9.1	M	M	M
	Incrementing the ZAP value	8.26 [11]	M	M	M
	Authentication of FT using DSAA	8.23 [11]	O	M	M
	Authentication of FT using DSAA2	8.45.6 [11]	C911	C910	C910
GAP.N.18 Subscription registration user procedure on-air		4.1 [11]	M	M	M
	Obtaining access rights	8.30 [11]	M	M	M
	Terminal Capability indication	7.4.9.1	M	M	M
GAP.N.19 Link control		4.1 [11]	M	M	M
	Indirect FT initiated link establishment	7.3.8 [17]	M	M	M
	Direct PT initiated link establishment	8.36 [11]	M	M	M
	Link release "normal"	8.37 [11]	M	M	M
	Link release "abnormal"	8.38 [11]	M	M	M
	Link release "maintain"	8.39 [11]	M	M	M
GAP.N.24 Signalling of display characters		4.1 [11]	O	O	O
	Display	8.16 [11]	M	M	M
	Terminal capability indication	7.4.9.1	M	M	M
GAP.N.25 Display control characters		4.1 [11]	O	O	O
	Display	8.16 [11]	M	M	M
	Terminal capability indication	7.4.9.1	M	M	M
GAP.N.31 Internal Call		4.1 [11]	M	M	M
	Internal call setup	7.3.6 [17]	M	M	M
	Internal call keypad	8.19 [11]	M	O	O
	Internal call CLIP	8.43 [11]	M	M	M
	Internal call CNIP	8.44 [11]	M	M	M
	Internal call codec priority	7.4.3.9 [18]	M	M	M
	UTF-8 CNIP	7.4.17 [18]	M	M	M
GAP. N.34 Calling Name Identification Presentation (CNIP)		4.1 [11]	M	M	M
	Calling Name Identification Presentation (CNIP) Indication	8.42 [11]	M	M	M
	UTF-8 CNIP	7.4.17 [18]	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	Contact number and name matching on incoming call	7.4.33	M	M	M
GAP.N.35 Enhanced security		4.1 [11]	M	M	M
	Encryption of all calls	8.45.1 [11]	M	M	M
	Re-keying during a call	8.45.2 [11]	M	M	M
	Early encryption	8.45.3 [11]	M	M	M
	Subscription requirements	8.45.4 [11]	M	M	M
	Behaviour against legacy devices	8.45.5 [11]	M	M	M

C901: At least one of the two procedures 7.4.3.8.1 OR 7.4.3.8.2 shall be implemented.
C902: IF NG1.N.14 THEN "O" ELSE "I".
C903: IF NG1.M.5 THEN "M" ELSE "I".
C904: IF NG1.N.10 THEN "M" ELSE "I".
C905: IF NG1.N.17 THEN "M" ELSE "I".
C906: IF FP is connected to classic switching networks (PSTN for example) THEN "M" ELSE "N/A".
C907: IF the PT is a headset PP THEN "M" ELSE "I".
C908: IF the PT is a headset PP THEN "O" ELSE "I".
C909: IF the PT is a headset PP THEN "I" ELSE "O".
C910: IF feature GAP.N.36 THEN M ELSE I.
C911: IF feature GAP.N.36 THEN O ELSE I.
C912: IF NG1.N.24 (Short Message Service) THEN "M" ELSE "I".
C913: IF NG1.N.24 (Short Message Service) THEN "O" ELSE "I".
C914: IF NG1.N.25 (DTAM) THEN "M" ELSE "I".
C915: IF NG1.N.25 (DTAM) and Visual DTAM implemented THEN "M" ELSE IF NG1.N.25 THEN "O" ELSE I.
C916: At least one of the two procedures 7.4.36.2.1 OR 7.4.36.2.2 shall be implemented.
C917: IF Visual DTAM implemented THEN "M" ELSE "O".

NOTE 1: If the corresponding feature is not supported on FT side, the FT shall however implement the "sending negative acknowledgement" procedure (see 7.4.3.4 of [18]).
NOTE 2: All procedures of NG1.N.6 and NG1.N.7 shall apply to all FTs and for all line types (full parallel call compliant lines and DCIBS lines). For DCIBS lines, the FT shall implement in addition NG1.N.22 feature, which describes some amendments to NG1.N.6 and NG1.N.7 for such lines. A given FT shall be designed to handle both line types, or only one of them.
NOTE 3: Both procedures are M for the FP. However, for a given line, only one of the procedures 7.4.3.10.2 or 7.4.3.10.3 of [18] is used.
NOTE 4: See also clause 7.4.10.4 for details per list.
NOTE 5: This procedure is provisioned for GAP and Part 1 PPs and is irrelevant for Part 3 and Part 5 PPs.
NOTE 6: The procedure "Resuming a call put on-hold" is optional for the PP. However the corresponding control message is mandatory for PPs since it may be needed by the call release procedure (see clause 7.4.3.5.4).
NOTE 7: Some DTAMs may not support the DTAM incoming calls list, even if the PP and FP support it. See clause 7.4.36.2.1.

6.11 Data Link Control (DLC) Service to procedure mapping

The DLC service to procedure mapping of EN 300 444 [11] (GAP), clause 6.8.1, with the following changes and additional services shall apply.

Table 10: DLC service to procedure mapping

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
NG1.D.1 LU1 Transparent UnProtected service (TRUP) Class 0/minimum_delay		5.3 [11]	M	M	M
	LU1 Transparent UnProtected service (TRUP) operation	11.2 [4]	M	M	M
	Class 0: No Lu_x retransmission or sequencing	14.2.3.1 [4]	M	M	M
	Class 0 procedures	14.3.2 [4]	M	M	M
	Minimum delay (speech) operation	14.2.3 [4]	M	M	M
	LLME U-plane establishment	9.9.1 [11]	M	M	M
NG1.D.2 LU1 Transparent UnProtected service (TRUP) Class 0		5.3 [17]	C1001	C1001	C1001
	LU1 Transparent UnProtected service (TRUP) operation	11.2 [4]	M	M	M
	Class 0: No Lu_x retransmission or sequencing	14.2.3.1 [4]	M	M	M
	Class 0 procedures	14.3.2 [4]	M	M	M
	LLME U-plane establishment	9.9.1 [11]	M	M	M
NG1.D.3 LU7 64 kbit/s protected bearer service		5.3 [17]	C1001	C1001	C1001
	LU7 DLC layer service	11.9.4 [4]	M	M	M
NG1.D.4 LU12 Unprotected Framed service (UNF) Class 0		5.3 [11]	C1001	C1001	C1001
	LU12 UNprotected Framed service (UNF) operation	11.14 [4]	M	M	M
	Class 0: No Lu_x retransmission or sequencing	14.2.3.1 [4]	M	M	M
	Class 0 procedures	14.3.2 [4]	M	M	M
	LLME U-plane establishment	9.9.1 [11]	M	M	M
NG1.D.5 FU1 DLC frame		5.3 [11]	M	M	M
	FU1 frame operation	8.19 [11]	M	M	M
	FU1 frame structure	12.2 [4]	M	M	M
NG1.D.6 FU7 DLC frame		5.3 [11]	C1001	C1001	C1001
	FU7 frame structure	11.9.4.2 [4]	M	M	M
NG1.D.7 FU12 DLC frame with adaptation for codec G.729.1		5.3 [11]	C1001	C1001	C1001
	FU12 frame structure	12.12 [4]	M	M	M
	Annex for codec G.729.1	E.1 [4]	M	M	M
	FU12 frame operation	7.5.2 [11]	M	M	M
C1001: Status defined by clause 6.3, table 2.					

6.12 Medium Access Control (MAC) service to procedure mapping

The MAC service to procedure mapping of EN 300 444 (GAP) [11], clause 6.8.2, with the following changes and additional services shall apply.

Table 11: MAC service to procedure mapping

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
NG1.M.1 I_N_minimum delay symmetric MAC service type		5.4 [17]	M	M	M
	MAC layer procedures: general	7.9.1 [17]	M	M	M
	MAC Connection oriented service	5.6 [3]	M	M	M
	MAC Basic connection	5.6.1.1 [3]	M	M	M
	MAC Advanced connection	5.6.1.2 [3]	M	M	M
	I_N_minimum delay symmetric MAC service, type 1	5.6.2.1 [3]	M	M	M
NG1.M.2 I_N_normal delay symmetric MAC service type		5.4 [17]	O	O	O
	MAC layer procedures: general	7.9.1 [17]	M	M	M
	MAC Connection oriented service	5.6 [3]	M	M	M
	MAC Basic connection	5.6.1.1 [3]	M	M	M
	MAC Advanced connection	5.6.1.2 [3]	M	M	M
	I_N_normal delay symmetric MAC service type 2	5.6.2.1 [3]	M	M	M
NG1.M.3 I_{PQ}_error_detection symmetric MAC service type		5.4 [17]	O	O	O
	MAC layer procedures: general	7.9.1 [17]	M	M	M
	MAC Connection oriented service	5.6 [3]	M	M	M
	MAC Basic connection	5.6.1.1 [3]	M	M	M
	MAC Advanced connection	5.6.1.2 [3]	M	M	M
	I_P_error_detection symmetric MAC service type 3	5.6.2.1 [3]	M	M	M
	Single-subfield protected format	6.2.1.3.4 [3]	M	M	M

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
NG1.M.4 Advanced connections		5.4 [17]	M	M	M
	Setup of advanced connection, bearer setup (A-field)	7.6.5 [17]	M	M	M
	Connection type modification: basic to/from advanced	7.6.6 [17]	M	M	M
	Slot type modification	7.6.7 [17]	M	M	M
	Service type modification	7.6.8 [17]	C1101	C1101	C1101
	ECN number modification	7.6.9 [17]	C1102	C1102	C1102
	Connection/bearer release	7.6.10 [17]	M	M	M
NG1.M.5 "no-emission" mode		5.4 [18]	O	O	O
	Tail identification for "no emission" mode	7.1.2 [3]	M	M	M
	Extended Physical and Mac layer capabilities (part 2) bit a_{23}	7.2.3.11 [3]	M	M	M
	Bearer handover/replacement information, multiframe-countdown	7.2.4.3 [3]	M	M	M
	"no emission" mode sync information	7.3.5.3 [3]	M	M	M
	"no emission" mode procedures	9.4 [3]	M	M	M
	Management procedures for "no emission" mode	11.11 [3]	M	M	M
NG1.M.6 "low duty cycle Idle_Locked" mode		5.4 [3]	O	O	O
GAP.M.2 Continuous broadcast		5.2 [11]	M	M	M
	Downlink broadcast	7.6.3	M	M	M
	Higher Layer information FP broadcast	7.4.9.2	M	M	M
GAP.M.3 Paging broadcast		5.2 [11]	M	M	M
	Paging broadcast	7.6.4 [17]	M	M	M
GAP.M.9 Bearer handover, intra-cell		5.2 [11]	M	C1103	C1103
	Bearer handover request	7.6.11 [17]	M	M	M
GAP.M.10 Bearer handover, inter-cell		5.2 [11]	M	O	O
	Bearer handover request	7.6.11 [17]	M	M	M
GAP.M.11 Connection handover, intra-cell		5.2 [11]	M	C1104	C1104
	Connection handover request	7.6.12 [17]	M	M	M
GAP.M.12 Connection handover, inter-cell		5.2 [11]	M	O	O
	Connection handover request	7.6.12 [17]	M	M	M
GAP.M.13 SARI support		5.2 [11]	M	O	O
	Downlink broadcast	7.6.3	M	M	M
	Higher Layer information FP broadcast	7.4.9.2	M	M	M
GAP.M.15 Re-keying		5.2 [11]	M	M	M
	Re-keying	10.17 [11]	M	M	M
GAP.M.16 Early encryption		5.2 [11]	M	M	M
	Early encryption	10.18 [11]	M	M	M
C1101: IF service NG1.4 OR NG1.5 OR NG1.6 OR NG1.2 IA II OR NG1.2 IA III THEN M ELSE O. C1102: IF multiple connection between the same PT-FT pair THEN M ELSE O. C1103: IF service GAP.M.11 THEN O ELSE M. C1104: IF service GAP.M.9 THEN O ELSE M.					

6.13 Application feature to procedure mapping

The Application feature to procedure mapping of EN 300 444 [11] (GAP), clause 6.8.3, with the following changes shall apply.

Table 12: Application feature to procedure mapping

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.A.1 Easy PIN code registration		5.7 [18]	M	O	N/A
	Registration mode automatic access	7.10.1.3.1 [18]	M	N/A	N/A
	Searching mode and PIN code requests	7.10.1.1.1 [18]	M	N/A	N/A
	Base station name selection	7.10.1.3.2 [18]	O	O	N/A
	Registration user feedback	7.10.1.3.3 [18]	M	O	N/A
NG1.A.2 Easy pairing registration		5.7 [18]	M	M	N/A
	Easy pairing description	7.10.1.2.1 [18]	M	M	N/A
	Registration mode automatic access	7.10.1.3.1 [18]	M	N/A	N/A
	Base station limited registration mode	7.10.1.2.2 [18]	N/A	M	N/A
	Searching mode request	7.10.1.2.3 [18]	M	N/A	N/A
	Base station name selection	7.10.1.3.2 [18]	O	M	N/A
	Registration user feedback	7.10.1.3.3 [18]	M	O	N/A
NG1.A.3 Handset locator		5.7 [18]	M	O	O
	Handset locator	7.10.2 [18]	M	M	O
NG1.A.5 Base manual transmit power control		5.7	N/A	M	O
	Base manual transmit power control	7.10.3.1	N/A	M	O
NG1.A.6 Handset adaptive transmit power control		5.7	M	N/A	N/A
	Handset adaptive transmit power control	7.10.3.2	M	N/A	N/A
GAP.A.1 AC to bitstring mapping		4.2 [11]	M	C1201	M
	AC to bitstring mapping	14.2 [11]	M	M	M
GAP.A.2 Multiple subscription registration		4.2 [11]	M	N/A	N/A
	Subscription control	14.1 [11]	M	N/A	N/A
GAP.A.3 Manual entry of the PARK		4.2 [11]	O	N/A	N/A
	Manual entry of the PARK	14.3 [11]	M	N/A	N/A
GAP.A.4 Terminal identity number assignment in mono cell system		4.2 [11]	M	M	N/A
	Terminal identity number assignment	14.4 [11]	M	M	N/A
C1201: IF feature GAP.N.9 OR GAP.N.10 OR GAP.N.12 OR GAP.N.26 THEN M ELSE N/A.					

6.14 General requirements

6.14.1 Network (NWK) layer message contents

The requirements of TS 102 527-1 [17], clause 6.14.1 shall apply.

6.14.2 Transaction identifier

The requirements of TS 102 527-1 [17], clause 6.14.2 shall apply.

6.14.3 Length of a Network (NWK) layer message

The requirements of TS 102 527-1 [17], clause 6.14.3 shall apply.

6.14.4 Handling of error and exception conditions

The requirements of TS 102 527-1 [17], clause 6.14.4 shall apply.

6.14.5 Generic Access Profile (GAP) default setup attributes

The requirements of TS 102 527-1 [17], clause 6.14.5 shall apply.

6.14.6 Coexistence of Mobility Management (MM) and Call Control (CC) procedures

The requirements of TS 102 527-1 [17], clause 6.14.6 shall apply.

6.14.7 Coding rules for information elements

The requirements of TS 102 527-1 [17], clause 6.14.7 shall apply.

7 Procedure description

The following clauses define the process mandatory procedures which are in the scope of the "New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services". Each procedure (if appropriate) is divided into three parts:

a) Normal (i.e. successful) case(s). 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 the present document), 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 clause following the description of the normal case.

c) Exceptional case(s). This is an integral part of the actual procedure (if defined in the present document), i.e. if a procedure is being declared to be supported, the respective entity shall also support the exception handling defined in the clause 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 receive and process 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.

7.1 Backward compatibility with Generic Access Profile (GAP), New Generation DECT part 1 (wideband speech) and with New Generation DECT part 3 (extended wideband speech services) equipment

7.1.1 Backward compatibility with Generic Access Profile (GAP); Requirements for NG-DECT, part 5 Fixed Parts (FPs)

The FP shall support the GAP (EN 300 444 [11]) standard procedures (full slot and Recommendation ITU-T G.726 [12]). In other words, it shall inter-operate with a GAP compliant PP. The use of messages or information elements not known to GAP PPs is not recommended.

NOTE 1: The FP may detect the type of PP by means of the Information Element <Terminal Capability> provided at registration.

NOTE 2: It should be noted that GAP compliant PPs may have a more relaxed requirement of TCLw than New Generation DECT part 3 devices. In some scenarios, when combining GAP terminals with poor TCLw with long delay networks (like VoIP) and insufficient echo cancellation in the network, audible echo could be perceived by the far end terminal. This problem is not specific of devices compliant with the present document. For more information refer to EN 300 175-8 [8], annex E.

7.1.2 Backward compatibility with Generic Access Profile (GAP); Requirements for NG-DECT, part 5 Portable Parts (PPs) registered on GAP compliant FPs

The PP shall use the GAP standard procedures and voice codec (full slot and Recommendation ITU-T G.726 [12]) when registered in a GAP Fixed Part. In other words, it shall inter-operate with a GAP compliant FP. The use of messages or information elements not known to GAP FPs is not recommended.

NOTE: The PP may detect the type of FP by observing the higher layer capabilities information broadcasted by the FP.

7.1.3 Backward compatibility with New Generation DECT, part 1; Requirements for NG-DECT, part 5 Fixed Parts (FPs)

The FP shall support DECT New Generation part 1 (TS 102 527-1 [17]) procedures. In other words, a DECT New Generation, part 5 Fixed part shall operate exactly as a DECT New Generation, part 1 FP for a New Generation Part 1 PP. All features and services defined in TS 102 527-1 [17] shall be provided. The use of messages or information elements not known to New Generation DECT Part 1 PPs is not recommended.

NOTE 1: The FP may detect the type of PP by means of the Information Element <Terminal Capability> provided at registration.

NOTE 2: It should be noted that New Generation DECT part 1 PPs may have a more relaxed requirement of TCLw than New Generation DECT part 3 and part 5 devices. Note 2 of clause 7.1.1 of [18] may be also applicable this case. For more information refer to EN 300 175-8 [8], annex E.

7.1.4 Backward compatibility with New Generation DECT, part 1; Requirements for NG-DECT, part 5 Portable Parts (PPs) registered on NG-DECT part 1 FPs

The PP shall use the part 1 standard procedures (TS 102 527-1 [17]) when registered in a NG-DECT part 1 Fixed Part. In other words, it shall inter-operate with a New Generation DECT Part 1 compliant FP. The use of messages or information elements not known to New Generation DECT Part 1 FPs is not recommended.

NOTE: The PP may detect the type of FP by observing the higher layer capabilities information broadcasted by the FP.

7.1.5 Backward compatibility with New Generation DECT, part 3; Requirements for NG-DECT, part 5 Fixed Parts (FPs)

The FP shall support DECT New Generation part 3 (TS 102 527-3 [18]) procedures. In other words, a DECT New Generation, part 5 Fixed Part shall operate exactly as a DECT New Generation, part 3 FP for a New Generation Part 3 PP. All features and services defined in TS 102 527-3 [18] shall be provided. The use of messages or information elements not known to New Generation DECT Part 3 PPs is not recommended.

NOTE 1: The FP may detect the type of PP by means of the Information Element <Terminal Capability> provided at registration.

NOTE 2: New Generation DECT part 3 PPs have similar requirements of TCLw than New Generation DECT part 5 devices.

7.1.6 Backward compatibility with New Generation DECT, part 3; Requirements for NG-DECT, part 5 Portable Parts (PPs) registered on NG-DECT part 3 FPs

The PP shall use the part 3 standard procedures (TS 102 527-3 [18]) when registered in a NG-DECT part 3 Fixed Part. In other words, it shall inter-operate with a New Generation DECT Part 3 compliant FP. The use of messages or information elements not known to New Generation DECT Part 3 FPs is not recommended.

NOTE: The PP may detect the type of FP by observing the higher layer capabilities information broadcasted by the FP.

7.2 Generic Access Profile (GAP) procedures

Unless otherwise noted, all procedures defined in EN 300 444 [11] GAP apply. Therefore the present document can be considered an extension of GAP.

7.3 New Generation DECT; part 1: Wideband Speech and New Generation DECT; part 3: Extended Wideband Speech Services procedures

The present document is defined as an extension of New Generation DECT; part 3: Extended Wideband Speech Services [18], which is itself an extension of New Generation DECT; part 1: Wideband Speech [17].

Unless otherwise noted, all procedures defined in TS 102 527-3 [18] (New Generation DECT; part 3: Extended Wideband Speech Services) are automatically applicable to New Generation DECT; part 5: Additional feature set nr. 1 for extended wideband speech services.

Unless otherwise noted, all procedures defined in TS 102 527-1 [17] (New Generation DECT; part 1: Wideband Speech) are automatically applicable to New Generation DECT; part 5: Additional feature set nr. 1 for extended wideband speech services.

The clauses 7.4 to 7.10 describe the additional procedures specific for New Generation DECT; part 5: Additional feature set nr. 1 for extended wideband speech services.

7.3.1 Implementation examples of part 1: Wideband Speech specific procedures

For detailed examples of Wideband speech specific procedures, please refer to the informative annex D of TS 102 527-1 [17].

7.3.2 Implementation examples of part 3: Extended Wideband Speech Services specific procedures

For detailed examples of part 3: Extended Wideband Speech Services specific procedures, please refer to the informative annex C of TS 102 527-3 [18]. See also the normative annex B of the same document for Events Notification, Date-Time synchronization and List Access Service procedures.

7.4 Network (NWK) layer procedures specific to part 5

This clause specifies the additional NWK layer procedures, messages and information elements required in "New Generation DECT; Part 5:Additional feature set nr. 1 for extended wideband speech services" not described in TS 102 527-3 [18], TS 102 527-1 [17] or in EN 300 444 [11] (GAP), or incorporating modifications to the descriptions given in these specifications.

This profile does not prevent any PT or FT from 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 EN 300 175-5 [5], clause 17.

The following conventions have been used for the numeration of the subclauses in this clause of the present document:

- Subclauses describing procedures that are a modification of similar procedures described in TS 102 527-3 [18] have received the same subclause number.
- Descriptions of new procedures specific to the present document, start at clause 7.4.32. This leaves room before clause 7.4.32 for features and procedures that may be designed in the future but which are not specific to Part 5, that is, which apply to both Part 3 and Part 5, because they are considered important to both parts. As a result, all non Part 5 specific features and procedures will not be interleaved with Part 5 specific ones and will be in contiguous subclauses.
- Subclause numbers of procedures that are described in TS 102 527-3 [18] (Part 3) and are not modified by the present document are not re-used and when present just refer the reader to the corresponding procedure in Part 3.

NOTE: Unmodified clauses whose parent clause is itself not modified by the present document are absent.

7.4.1 Generic events notification

7.4.1.1 General

All mandatory requirements as defined in clause 7.4.1.1 of TS 102 527-3 [18] shall apply.

7.4.1.2 Voice Message waiting notification

All mandatory requirements as defined in clause 7.4.1.2 of TS 102 527-3 [18] shall apply.

7.4.1.3 Missed call notifications

All mandatory requirements as defined in clause 7.4.1.3 of TS 102 527-3 [18] shall apply, with the following addition:

Extended notification: If extended notifications are used (see 7.4.10.7.1), the above requirements still apply, in addition to the requirements of clause 7.4.10.7. In particular an additional <<List change details>> IE may be used in the same message.

7.4.1.4 List change notification

See "List access service", list change notification procedure (see clause 7.4.10.2) for the detailed behaviour.

7.4.1.5 Line and diagnostic statuses notifications

7.4.1.5.1 General requirements

One or more indication(s) are sent by the FP each time an event modifies the 'Line and diagnostic statuses' list for notifying the changes to the PPs. Depending on the type of event (and related modification within the 'Line and diagnostic statuses' list) one or several indications are sent from the FP to the PPs (see clause 7.4.1.5.2 for details).

Indication: Indications are special types of generic events notification and are sent in an <<Events Notification>> IE (see EN 300 175-5 [5], clause 7.7.55). For the purpose of the 'Line and diagnostic information' feature, three types of indications are defined below.

Notification: An <<Events notification>> IE may contain several indications, of the same or of different types. The term 'notification' is therefore reserved in the following text for the set of indications sent together in an <<Events notification>> IE (possibly a single one).

Line relating event: An event may or not relate to a specific line. The <Event multiplicity> field of the indications is used to indicate the line on which the change occurred. If the change does not related to any specific line, the <Event multiplicity> field holds a *don't care* value.

NOTE: For indication types allowing *line related* and *non line related* indications (i.e. diagnostic indications), the <event subtype> field indicates whether the indication is line related or not.

Indication types: There are three types of indications:

- 'line use status' indication (always 'line related')
- 'handset use status' indication (always 'line related')
- 'diagnostic' indication (line related or not, depending on the case); a 'diagnostic' indication relates to the working status of a line or of the system. Apart from the line where it happens (if any), the diagnostic indication itself does not indicate any diagnostic details.

NOTE 1: Typically, an 'external call setup' or 'external call release' event could either generate both a 'line use status' and a 'handset use status' indications, or only one of them, or even none of them.

EXAMPLE: If a handset already involved in a call on a multiple call line sets up another parallel call on the same line, one of the two situations could occur:
- if the line and FP would support a third call, no indication is sent to the PPs (line use and handset use statuses do not change).
- if the line or system supports only two calls, a *line use status* indication is sent, as the line or system is becoming *busy*.

NOTE 2: List change indications are not used for the 'Line and diagnostic statuses' list, and are replaced with *line use status*, *handset use status* and *diagnostic* indications. Therefore clause 7.4.10.2, 'List change notification' is irrelevant for this list.

A line use status, handset use status and/or a diagnostic indication is sent from the FP to the PP each time a *status change* occurs on FP side resulting in an update of the 'Line and diagnostic statuses' list (e.g. a change of the 'Line OK' or 'Line use' status, a change of the call forwarding settings etc.).

NOTE 3: However, some status changes in the Line and Diagnostic Statuses List are not notified. See clause 7.4.1.5.2 for details.

New status value: As a general rule, the line and diagnostic indications do not contain the new status *value* but only notifies the status change. If the PP wants to get information about the new status value, it has to perform a List Access to the 'Line and diagnostic status' list.

Line use status value: As an exception to this general rule, a 'line use status' indication shall always contain the current 'Line use' status value.

The contained 'Line use' status value shall always reflect the current use status of the line. This avoids the PP needing to access the 'Line and diagnostic statuses' list for retrieving this frequently changing status value.

Targeted PPs: The targeted PPs is the set of PPs receiving the notification. The set of targeted PPs depends on the type of event triggering the notifications and is described in the next clause. For a line related change, at least the PP(s) attached to the line(s) on which the change(s) occurred shall be notified by the FP.

Aggregation of indications of almost simultaneous events: If successive indications of the same type (and relating to the same line if line related) are about to be sent in order to notify successive but almost simultaneous changes, it is allowed to send only the last indication.

Conversely, indications of the same type and relating to the same line— if line related—that are sent separately (i.e. that are not aggregated) cannot be sent in the same <<Events-notification>> IE: in that case, different {FACILITY} messages shall be used.

NOTE 4: Where the FP uses aggregation, the FP is not required to check whether the successive changes cancel one another or not. The PP should therefore be prepared to sometimes receive a notification for no real change.

If indications of different types *or* relating to different lines are about to be sent in order to notify several events that occurred almost simultaneously, it is allowed to send the related indications together within a single <Event Notification>> IE (and therefore a single {FACILITY} message).

NOTE 5: Indications of type 'Line use status' and 'Handset use status' may be sent as a result of a single event; this is a different case which is handled in clause 7.4.1.5.2.

7.4.1.5.2 Events triggering 'Line and diagnostic status' list related indications

In general any event that modifies the 'Line and diagnostic status' list shall trigger the FP to sent one or more line and diagnostic indications to at least those PPs that are affected by the change. Aggregation of indications of almost simultaneous events is allowed (as indicated above) if these indications are of the same type and (if line related) occur on the same line.

In some cases and in order to reduce the number of notifications to be sent, no notification shall be sent. This includes following cases:

- some intermediate states in the'OK status' field (see clause 7.4.34.3.2) shall not be notified.

Types of notifications: With the help of the three indications types (see clause 7.4.1.5.1), it is possible to distinguish five different types of notifications within the Line and Diagnostic Statuses List:

1) Line related change where the *Line use status* has changed

2) Line related change where the *Handset use status* has changed

3) Line related change, where both the *Line use status* and *Handset use status* have changed

4) Line related change, but concerning other statuses than the *Line use* and *Handset use* statuses

5) Non line related change

Use of a common message for indications relating to the same event: Indications relating to a single event should use the same <<Events-notification>> IE (and therefore the same {FACILITY} message).

EXAMPLE 1: Most line use status changes will result in a simultaneous change of the 'handset use status' (case 3 above). In that case, the resulting 'Line use status' indication and 'Handset use status' indication should be combined into one single {FACILITY} message.

EXAMPLE 2: In the case of a single error implying that the 'OK status' of several lines will become 'down', the diagnostic indications for the various lines should be sent into one single {FACILITY} message.

7.4.1.5.2.1 'Line use status' indication

The table 15a describes the event types that shall trigger a 'Line use status' indication from the FP.

Table 15a: Event types triggering a 'Line use status' indication

Event	Specified line	Targeted PPs
A line use status has changed	Line whose 'Line use status' field has changed	At least all PPs attached to the line where the change occurred (note)
A PP is newly attached to a line	Line to which the PP is newly attached	The newly attached PP only
NOTE: A PP shall check whether a received notification concerns a line it is attached to; otherwise the PP may ignore the notification.		

For a 'line use status' indication, the << Events notification >> information element shall be filled with the values given in table 15b.

Table 15b: Values used within {FACILITY} message for a 'Line use status' indication

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Events notification>>			
	<Event type>	5	**Line use status indication**
	<Event sub type>	All	The 'Line use status' value
	<Event multiplicity>	All	The line identifier value itself

Upon reception of a {FACILITY} message with a content as defined in table 15b, the PP shall follow the display requirements as given in table 41 in clause 7.4.34.2. Line use status information is indicated directly in the <Event subtype>.

7.4.1.5.2.2 'Handset use status' indication

The following table describes the event types that shall trigger a 'Handset use status' indication from the FP.

Table 15c: Event types triggering a 'Handset use status' indication

Event type	Specified line	Targeted PPs
A handset previously not in use on the specified line has just become in use on that line, or vice versa (note 1)	Line whose 'Handset use status' field has changed	At least all PPs attached to the line where the change occurred (note 2)
NOTE 1: A handset is said here to be 'in use' if it is engaged in an external call; this event type is therefore relating to the specified line. NOTE 2: A PP shall check whether a received notification concerns a line it is attached to; otherwise the PP may ignore the notification.		

For a 'handset use status' indication, the << Events notification >> information element shall be filled with the values given in table 15d.

Table 15d: Values used within {FACILITY} message for a 'Handset use status' indication

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Events notification>>			
	<Event type>	6	**Handset use status indication**
	<Event sub type>	All	Not used
	<Event multiplicity>	All	The line identifier value itself

Upon reception of a {FACILITY} message with a content as defined in table 16, the PP may follow the display requirements as given in table 41 in clause 7.4.34.2. This may require access to the 'Line and diagnostic status' list.

7.4.1.5.2.3 'Diagnostic' indication

The following table describes the event types that shall trigger a 'Diagnostic' indication from the FP.

Table 15e: Event types triggering a 'Diagnostic' indication

Event	Related status change	Specified line	Targeted PPs	*Event subtype*
Call forwarding (either CFU, CFNA or CFB) is activated or deactivated on a line	'Call forwarding status'	Line whose 'call forwarding status' field has changed	At least all PPs attached to the line where the change occurred. (note 1)	'1'H (note 2)
A line is no longer usable (down) or is up again (note 5)	Line related 'OK status'	Line where local or network error occurs or ceases to occur.	At least all PPs attached to the line where the error occurred or ceased to occur.	'1'H (note 2)
Line-relating local or network diagnostic error as indicated by error number, is occurring or ceases to occur	Line related 'Diagnostic error status'			
A non line specific service provided by the FP is down or up again (see clause 7.4.34.3.2 for examples of services) (note 5)	System related 'OK status'	None	All PPs attached to the system.	'2'H (note 3)
Non line-relating local or network diagnostic error as indicated by error number, is occurring or ceases to occur	System related 'Diagnostic error status'	None		
Location registration of the PP (note 4)	Not a status change related indication (unconditional sending)	A line the PP is attached to (note 4)	The PP performing location registration (and only this PP)	'1'H (note 2)
New attachment of a PP to a line	Not a status change related (unconditional sending)	The newly attached line id	The PP newly attached to the line	'1'H (note 2)

NOTE 1: A PP shall check whether a received notification concerns a line it is attached to; otherwise the PP may ignore the notification.
NOTE 2: "Line related change".
NOTE 3: "Non line related change".
NOTE 4: The notification is sent after the location registration is completed successfully. It is sent once for each line the PP is attached to. See also clause 7.4.34.2.
NOTE 5: A important case is system reboot if completed after the NG DECT chipset is setup (so lines and system are up after the PPs performed location registration). Diagnostic indications should be aggregated as much as possible if several events triggering diagnostic indications (line related or not) occur during that period.

Almost simultaneous events: Several events (i.e. status list changes) occurring almost simultaneously may be the subject of a single notification.

For Diagnostic indication the << Events notification >> information element shall be filled with the values given in table 15f.

Table 15f: Values used within {FACILITY} message for a 'Diagnostic' indication

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Events notification>>			
	<Event type>	7	**Diagnostic indication**
	<Event sub type>	1,2	1: Line related changes only 2: Non line related changes only (note 1)
	<Event multiplicity>	All	The line identifier value itself (note 2)

NOTE 1: For changes in the 'Line use status' the *Line use status indication* is used instead and for changes in the 'Handset use status' the *Handset use status indication* is used instead.
NOTE 2: If the <Event subtype> is '2', the <Event multiplicity> field holds a *don't care* value.

Upon reception of a {FACILITY} message with a content as defined in table 15f, the PP shall follow the display requirements as given in table 505 in clause 7.4.34.2. This may require access to the 'Line and diagnostic status' list.

7.4.1.6 SMS Message notification

Upon reception of a short message from the network for a given SMS service, the FP shall send to all PPs accessing this SMS service (i.e. to all PPs attached to the line used by the SMS service), an SMS message notification using the generic events notification. The notification shall only be sent when the whole message has been received.

The new incoming short message shall be indicated by the FP to the PPs through a Generic events notification with event type 'SMS message' (see EN 300 175-5 [5], clause 7.7.55) and with one of the following event subtypes:

- A new SMS message just arrived (value 01H).
- No new SMS message arrived, but some other list change(s) triggered the notification (value 02H).

SMS service identification: The SMS message notification shall always be sent with an SMS service identifier, sent in a <<CALL-INFORMATION>> IE within the same {FACILITY} message, and using subtype 'SMS service identifier'.

Simultaneous 'list change indication': A 'list change indication' for the 'Incoming SMS List' shall be sent together with the 'SMS message notification', in the same <<Events notification>> IE.

Conversely, a 'list change indication' for the 'Incoming SMS List' shall never be sent alone, but always within an 'SMS message notification'.

The <event multiplicity> field of the 'list change indication' shall contain the total number of entries in the 'Incoming SMS List' *for the specified SMS service*, at the time the notification is sent ('unread' plus 'read' SMS messages).

<<Events notification>> information element shall be filled with the values specified in table 15g.

Table 15g: Values used within {FACILITY} message for SMS message notification

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<List change details>>			*Optional* (sent only if PP supports extended notification, and if full resync not requested by FP)
	<Originating PP>	0 All other	Not a single PP, or FP originating Originating PP terminal id number
	<List of added or modified entry ids>	All	
	<List of deleted entry ids>	All	
<<Events notification>>			
	<Event type>	5	SMS message
	<Event sub type>	1 2	A new SMS message just arrived (see note 1). No new SMS message arrived, but some other list change(s) triggered the notification (see note 2)
	<Event multiplicity >	0..127	Number of unread messages, for the specified SMS service
	<Event type>	3	List change indication
	<Event sub type>	11	Incoming SMS List
	<Event multiplicity >	All	Total number of elements in the list for the specified SMS service
<<Call Information>>			
	<Identifier type>	3	Service identifier
	<Identifier sub type>	0	SMS service identifier
	<Identifier value>	All	The SMS service identifier value itself

NOTE 1: Value 01H is used for notifying the PP (and end user) of a change (or set of changes close in time) in the Incoming SMS List (and concerning the indicated SMS service). The change or set of changes notified includes one single SMS arrival for that SMS service. Conversely, only a single notification with this subtype value can be used for any given SMS.

NOTE 2: Value 02H is used for notifying a change (or set of changes close in time) in the Incoming SMS List that do not include any new SMS arrival.

Upon reception of a { FACILITY } message with a content as defined in table 15g, the PP shall indicate the SMS status to the receiving user.

SMS deactivation notification: As a particular case, as soon as the number of unread messages for a given line is '0', the FP shall send a 'SMS message notification' to all PPs attached to the line used by the SMS service, with the <Event multiplicity> field (for the 'SMS message' part of the notification) set to '0'.

NOTE: This notification allows the PP to give a hint to the user that the Incoming SMS List does no longer need to be consulted for the specified SMS service (e.g. by switching off a LED).

SMS message waiting notification after successful location registration: An SMS message notification shall be sent by the FP after successful location registration of the PP, once for each SMS service the PP has access to (i.e. if attached to the line used by that SMS service). One {FACILITY} message per SMS service accessible from the PP shall be used.

7.4.2 Date and Time synchronization

All mandatory requirements as defined in clause 7.4.2 of TS 102 527-3 [18] shall apply.

7.4.3 Handling of parallel calls

7.4.3.1 Parallel call common requirements

All mandatory requirements as defined in clause 7.4.3.1 of TS 102 527-3 [18] shall apply.

7.4.3.2 Control messages

The procedure relates to DECT systems allowing to handle several simultaneous calls, and offers a common handling of them in various situations (PSTN double calls, VoIP multiple calls on a single line, as well as parallel call situations occurring in a multiple line DECT system).

The following control codes shall be transmitted as keypad information in {CC-INFO} (or {CC-SETUP} if explicitly noted) messages and shall trigger the corresponding actions in the FP according to table 17.

<<Text changed from TS 102 527-3 [18] (modification):

Table 17: Control messages for control of parallel calls

Procedure	Control message	Direction	PP Status	FP status
Outgoing parallel call initiation (internal)	17H + number 17H + '*' (see note 1)	PP to FP	M	M
Outgoing parallel call initiation (external)	1C15H + number (see note 2)	PP to FP	M	M
Call waiting indication (external or internal)	Call status "CS call setup" + IE <<SIGNAL = 'call waiting tone' = 07H>> + IE <<CLIP>> (see notes 3 and 8)	FP to PP	M	M
Intrusion call request indication (only internal)	Call status "CS conference connect" + IE <<SIGNAL = 'Intercept tone ON' = 02H>> (see note 8)	FP to PP	M	M
Call toggle request (external or internal)	1CH 31H	PP to FP	M	M
3-party conference call request (external or internal)	1CH 32H	PP to FP	M	M
Call release (of the indicated call)	1CH 33H	PP to FP	M	M
Call transfer request (external or internal)	1CH 34H	PP to FP	M	M
Call waiting acceptance	1CH 35H	PP to FP	M	M
Call waiting rejection	1CH 36H	PP to FP	M	M
Active call release with replacement (from PP to FP)	1CH 38H	PP to FP	O	M
Negative acknowledgement	Confirmed call status + IE <<SIGNAL, 09H = negative acknowledgement tone>> (see note 8)	FP to PP	M	M
Explicit call intrusion	1CH 40H in {CC-SETUP} + targeted terminal identifier number (handset intrusion) or targeted line id (line intrusion)	PP to FP	C1704	M
Putting a call on-hold	1CH 41H	PP to FP	O	M
Resuming a call put on-hold (see note 9)	1CH 42H	PP to FP	M	M
Call interception request from HPP (or PP) (see note 7)	1CH 50H in {CC-SETUP}	PP to FP	C1701	M
Outgoing parallel DTAM call initiation	1CH 20H + DTAM id	PP to FP	M	M
Call screening acceptance	1CH 48H	PP to FP	M	M
Call screening interception	1CH 49H	PP to FP	M	M

C1701: If the PT is a headset PP THEN "M" ELSE "O".
C1704: "O" if implicit call intrusion procedure is supported, "M" if implicit call intrusion not supported. Note that this is because at least one of the intrusion call procedures (implicit/explicit) shall be supported (see status of procedures of NG1.N10 in table 9).

NOTE 1: The '*' is used to call all the registered handsets (except the initiator) and the FP when capable of; this function is also called "internal general call" as defined in Generic Access Profile (GAP) EN 300 444 [11]. It may be also used when only two PPs are registered (this allow to omit the terminal number).
NOTE 2: This value is purposely distinct from '15'H value, although it is used here in a similar context. Use of 31H, 32H, 33H, 35H, etc., as number after 15H may have a specific meaning for the network. For backward compatibility reasons, the FP may have to interpret these codes as control messages or send them transparently to the network.
NOTE 3: Numbering plan id field of CLIP IE is set to "private numbering plan" for internal calls, any other type for external calls (as specified in TS 102 527-1 [17]).
NOTE 4: The definition of the new C0-control code 1C is proposed for use as described in table 17.
NOTE 5: The new DECT codes may need a translation into network control messages on FP side. These messages are network operator dependent.
NOTE 6: Network control messages may be sent directly by the user as keypad information. The FP should send them transparently to the network.
NOTE 7: "Call interception" means that a PP intercepts a call initiated (i.e. being setup or in active state) by another PP. The intercepting PP is in principle a headset PP but could be any standard PP (see clause 7.4.16.2). This control code will be transmitted as keypad information in a {CC-SETUP} message.
NOTE 8: See clause 7.4.6.4 for the definition of call statuses. Presence of <<Signal>> IE depends on the "Tones provision" feature. See clause 7.4.3.4 for more details on the negative acknowledgement.
NOTE 9: "Resuming a call put on hold" (1C 42H) is mandatory for PPs since it may be needed by the call release procedure (see clause 7.4.3.5.4). The control code may be sent after interaction with the user, or automatically by the PP.

End of change>>

7.4.3.3 Codec change for parallel calls

All mandatory requirements as defined in clause 7.4.3.3 of TS 102 527-3 [18] shall apply.

7.4.3.4 Sending negative acknowledgement

All mandatory requirements as defined in clause 7.4.3.4 of TS 102 527-3 [18] shall apply.

7.4.3.5 Common parallel call procedures (external or internal)

All mandatory requirements as defined in clause 7.4.3.5 of TS 102 527-3 [18] shall apply.

7.4.3.6 Call transfer

All mandatory requirements as defined in clause 7.4.3.6 of TS 102 527-3 [18] shall apply.

7.4.3.7 3-party conference with established external and/or internal calls

All mandatory requirements as defined in clause 7.4.3.7 of TS 102 527-3 [18] shall apply.

7.4.3.8 Intrusion call (from PP to FP)

All mandatory requirements as defined in clause 7.4.3.8 of TS 102 527-3 [18] shall apply.

7.4.3.9 Internal call codec priority

All mandatory requirements as defined in clause 7.4.3.9 of TS 102 527-3 [18] shall apply.

7.4.3.10 Handling of lines where second calls are signalled in-band

All mandatory requirements as defined in clause 7.4.3.10 of TS 102 527-3 [18] shall apply.

7.4.4 Handling of single call services

All mandatory requirements as defined in clause 7.4.4 of TS 102 527-3 [18] shall apply.

7.4.5 Line identification

All mandatory requirements as defined in clause 7.4.5 of TS 102 527-3 [18] shall apply.

7.4.6 Call identification

7.4.6.1 Call identification general requirements

All mandatory requirements as defined in clause 7.4.6.1 of TS 102 527-3 [18] shall apply.

7.4.6.2 Call identifier assignment on first outgoing call (FP to PP)

All mandatory requirements as defined in clause 7.4.6.2 of TS 102 527-3 [18] shall apply.

7.4.6.3 Call identifier assignment on first incoming call (FP to PP)

All mandatory requirements as defined in clause 7.4.6.3 of TS 102 527-3 [18] shall apply.

7.4.6.4 Call status indication to the handset (FP to PP)

7.4.6.4.1 Call status indication general requirements

All mandatory requirements as defined in clause 7.4.6.4.1 of TS 102 527-3 [18] shall apply.

7.4.6.4.2 Call status indication as call information

All mandatory requirements as defined in clause 7.4.6.4.2 of TS 102 527-3 [18] shall apply.

7.4.6.4.3 Call status principles and values

General rules. The following three call statuses shall always be sent:

- '*CS call setup*' (for all incoming calls);
- '*CS idle*' (for all calls, incoming or outgoing, first or parallel). However, the use of the 'CS idle' call status for the last released call is optional (see clause 7.4.3.5.4); and
- '*CS call connect*' (for all incoming and outgoing calls, first or parallel, but only when the call is end to end connected from PP to remote system, and unless 'CS conference connect' is used).

NOTE 1: Contrary to the 'CS call connect', the {CC-CONNECT} message indicates local U-plane connection and is sometimes sent before the call is end to end connected.

The rules for using call statuses are further detailed in the 'Values summary and condition of use' clause below and especially in table 30.

Other call statuses shall also be sent by the FP if applicable or upon reception of the corresponding information from the network.

A {CC-INFO} message shall not be used to convey a call status for the first call before the {CC-CONNECT}has been sent. In this case, the standard CC message shall be used instead.

Contrary to the case of first calls, the procedure "Call status indication to the handset" introduces the concept of a state machine on PP side for the handling of parallel calls. Consequently, call statuses for a parallel call are not conveyed within specific CC messages and shall always be sent using the all-purpose {CC-INFO}message type.

Call statuses for a first outgoing call. Call statuses shall be used for a first outgoing call. The sending of a call status by the FP shall be as timely and accurate as possible with regard to the external world situation (network, other handsets).

For a 'Non early {CC-CONNECT}' implementation of the FP, the sending of a call status for a first outgoing call shall coïncide with the sending of the corresponding CC message:

- the call statuses 'CS call setup ack', 'CS call proc', and 'CS call alerting' are optional and shall be sent in {CC-SETUP-ACK}, {CC-CALL PROC}, {CC-ALERTING}respectively. The call status is used if and only if the corresponding message is used;
- the call status 'CS call connect' shall always be used (if the call succeeds), and shall always be sent in the {CC-CONNECT} message.

For an 'Early {CC-CONNECT}' implementation the sending of a call status for a first outgoing call shall be done by means of a {CC-INFO} message for call statuses sent after the {CC-CONNECT}. More specifically:

- the {CC-CONNECT} message shall not bear any call status;
- the call statuses 'CS call setup ack', 'CS call proc', and 'CS call alerting' are optional and-for those which are used-shall be sent in this order in separate {CC-INFO}messages following the {CC-CONNECT} message;
- the call status 'CS call connect' shall always be used (if the call succeeds) and shall be sent after the previously mentioned call statuses in a {CC-INFO} message following the {CC-CONNECT} message.

Call statuses for a parallel outgoing call. Call statuses shall be used for a parallel outgoing call. More specifically:

- the call statuses 'CS call setup ack', 'CS call proc', and 'CS call alerting' are optional and - for those which are used-shall be sent in this order in separate {CC-INFO}messages, as part of the outgoing parallel call initiation (see clause 7.4.3.5.1);

- the call status 'CS call connect' shall always be used (if the call succeeds) and shall be sent after the previously mentioned call statuses in a {CC-INFO} message.

Call statuses for a first incoming call. Call statuses shall be used for a first incoming call. More specifically:

- the call status 'CS call setup' shall always be used, and shall be sent within the incoming {CC-SETUP} message;

- the call status 'CS call connect' shall always be used, and shall be sent within a {CC-INFO} following the {CC-CONNECT-ACK} message. The {CC-CONNECT-ACK} message shall never be used to convey any call status.

Call statuses for a parallel incoming call. Call statuses shall be used for a parallel incoming call. More specifically:

- the call status 'CS call setup' shall always be used, and shall be sent in a {CC-INFO} message, as part of the call waiting indication (see clause 7.4.3.5.2);

- the call status 'CS call connect' shall always be used, and shall be sent in a {CC-INFO}message if (and after) the call is accepted (see clause 7.4.3.5.6).

NOTE 2: The sending of the 'CS call connect' call status by the FP for a *first* incoming call corresponds to the sending of the {CC-CONNECT-ACK} message, but is however sent in a separate {CC-INFO} message.

Call statuses for held and released calls. Call statuses shall be used for putting a call on-hold or for releasing a call:

- the call status 'CS call hold' shall be used, and shall be sent in a {CC-INFO} message, in order to put a call on-hold (see clauses 7.4.3.5.1 and 7.4.3.5.8);

- the call status 'CS idle' shall be used, and shall be sent in a {CC-INFO}message, if the call is to be released on PP side (see clause 7.4.3.5.4). However, use of this call status is optional for the last call;

- as soon as a call is held (CS call hold) or released (CS idle) and until another call is connected (CS call connect), the FP shall play appropriate audio toward the PP. Appropriate audio consists in:

  - audio received from the network if any (e.g. announcements);

  - audio translation of network events if any (e.g. waiting call message from network);

  - mute patterns otherwise (FP sends mute pattern as defined in TS 102 527-1 [17]).

NOTE 3: If an additional local muting is performed on PP side during those "transition" periods, this should be carefully handled as this would also mute possible audio received from the network or FP (e.g. inband call waiting tones, network announcements).

Call remote status notification. 'CS call remote connect' and 'CS call remote hold' call statuses are used to notify the PP of the *connected* or *on-hold* status of the call on remote handset side. See table 30 below and clause 7.4.3.5.12 (call remote status notification) for more details.

<<Text changed from TS 102 527-3 [18] (addition):

Call status for the first call screened: The following procedure applies:

- The 'CS call setup' call status is always used, sent within the incoming {CC-SETUP} message.

- The 'CS call connect' call status is always used, sent within {CC-INFO} following the {CC-CONNECT-ACK} message. The {CC-CONNECT-ACK} message shall never be used to convey any call status.

- The 'CS screening setup' call status is always used, sent within the incoming {CC-INFO} message.

- The 'CS screening connect' call status is always used, sent within {CC-INFO} following the {CC-CONNECT} message.

End of change>>

Special case of PSTN calls. The use of call statuses for external calls on a PSTN line is described in procedure 'Handling of lines where second calls are signalled in-band' of clause 7.4.3.10.

Values summary and condition of use. Table 30 explains use of the call status values defined in EN 300 175-5 [5], clause 7.7.56, "Call information".

<<**Text changed from TS 102 527-3 [18] (modification, CS screening setup and CS screening connect rows added to table):**

Table 30: Call status value explanation

Call status	Use	Status	Explanation
CS call setup	Incoming call	Mandatory for incoming calls	Incoming call presentation to local handset The handset has not yet confirmed user alerting (e.g. CS call alerting not yet sent)
CS call setup ack	Outgoing call	If and only if the FP (or the network) is expecting to collect further dial information	
CS call proc	Outgoing call	If and only if the network provides corresponding signalling	Call is proceeding. Dial information is assumed to be complete. The FP has started outgoing call towards the network (or internal party). No final response from network or internal party has been received yet
CS call alerting	Outgoing call	If and only if the network provides corresponding signalling or for internal call	Outgoing call is signalled (ring back) at called party side. A waiting call uses a control code for the same purpose in the opposite direction
CS call connect	Both	Mandatory for all successful calls (unless CS conference connect is used)	End to end call is connected from PP to remote system, and locally active; voice is available if the remote handset is also connected (i.e. not on hold)
CS call disconnecting	Both		Disconnect in progress, used from FP to differ the sending of 'CS idle' in order to signal in-band and/or Call status reason information to the handset
CS call hold	Both	If and only if applicable	connection is being held locally
CS call under transfer	Both	If and only if applicable	Used for unannounced call transfer in clause 7.4.3.6.2, to indicate that the incoming call is used for a call transfer
CS conference connect		If and only if applicable	3PTY conference is active If used, replaces CS call connect
CS call intercepted		If and only if applicable	Used in the "Headset management" feature (see clause 7.4.16.2.2, Call interception)
CS idle	Both	Mandatory for all calls except the last call; Optional for the last call	Indicates that the corresponding call context shall be deleted on PP side at least. For more detail, see clauses 7.4.3.5.4 and 7.4.6.1
CS call remote connect	Call remote status notification	Optional for the PP and the FP	Status of the call on the remote end of that call is 'connected' or 'on-hold' respectively; see clause 7.4.3.5.12 (call remote status notification). These remote statuses allow to improve the local PP MMI, but do not interfere in any way with the local statuses defined above
CS call remote hold	Call remote status notification	Optional for the PP and the FP	
CS screening setup	Screened incoming call	If PP and FP are screening capable and screening is activated on both sides	Call screening indication. Indicates to a screening PP that call screening has started for the presented call
CS screening connect	Screened incoming call	If screened call has been accepted (i.e. in screening mode) by the PP with 1C48H	End to end call connected from PP to remote system. Call is locally in screening mode

<<**end of change**>>

7.4.6.4.4 Call status reasons summary and MMI mapping

All mandatory requirements as defined in clause 7.4.6.4.4 of TS 102 527-3 [18] shall apply.

7.4.6.4.5 Call statuses for a first "Outgoing external call"

All mandatory requirements as defined in clause 7.4.6.4.5 of TS 102 527-3 [18] shall apply.

7.4.6.4.6 Call statuses for a first "Outgoing external call" using early {CC-CONNECT} message

All mandatory requirements as defined in clause 7.4.6.4.6 of TS 102 527-3 [18] shall apply.

7.4.6.4.7 Call statuses for an "Outgoing external call" - user busy

All mandatory requirements as defined in clause 7.4.6.4.7 of TS 102 527-3 [18] shall apply.

7.4.6.4.8 Call statuses for an "Outgoing external call" - number not available

All mandatory requirements as defined in clause 7.4.6.4.8 of TS 102 527-3 [18] shall apply.

7.4.6.4.9 Call statuses for a first "Incoming external call"

All mandatory requirements as defined in clause 7.4.6.4.9 of TS 102 527-3 [18] shall apply.

7.4.6.4.10 Call statuses for a first "Incoming external call"

All mandatory requirements as defined in clause 7.4.6.4.10 of TS 102 527-3 [18] shall apply.

7.4.7 Multiple lines handling

All mandatory requirements as defined in clause 7.4.7 of TS 102 527-3 [18] shall apply.

7.4.8 Multiple call line handling

All mandatory requirements as defined in clause 7.4.8 of TS 102 527-3 [18] shall apply.

7.4.9 PP and FP capabilities indication and broadcast

7.4.9.1 Terminal capability indication

The following text replaces clause 7.4.9.1 of TS 102 527-3 [18] and shall apply (see tagged changes).

Clause 8.17 of EN 300 444 [11] (GAP) shall be replaced by the following procedure.

The PP shall be able to send the <<Terminal capability>> information element and the FP shall be able to receive it at least in {ACCESS-RIGHTS-REQUEST} and when location registration is supported in the {LOCATE-REQUEST}. The following text together with the associated clauses define the mandatory requirements with regard to the present document.

<<**Text changed from TS 102 527-3 [18] (modification, table modified):**

Table 35: Values used within the <<TERMINAL CAPABILITY>> information element

Information element	Field within the information element	Standard values within the field/information element	Normative action/comment
<<Terminal capability>>	<Display capability>	All	If PT supports feature (GAP.N.24) it shall indicate in this field value which is equal to or higher than 2
	<Tone capability>	All	
	Echo parameters	3	VoIP compatible TCLw. See note 1
	Ambient noise Rejection (N-REJ)	[1, 2]	See note 2

Information element	Field within the information element	Standard values within the field/information element	Normative action/comment
	Adaptive volume control (A-VOL)	[1, 2, 3]	See note 2
	Slot type capability	All	Full and long 640 slots mandatory; double and long 672 optional. See also note 2
	<Profile indicator_1>, bit 2	"xxxxx1x"B	GAP and/or PAP supported
	<Profile indicator_6>, bit 6	"xXxxxxx"B X = [0, 1]	Fast or slow hopping radio
	<Profile indicator_6>, bit 7	"Xxxxxxx"B X = [0, 1]	Support (or not support) of "no-emission" mode (optional MAC service [NG1.M.5])
	<Profile indicator_7>, bits 2, 3 and 7	"1xxx11x"B	New Generation DECT part 1 (wideband speech), part 3, (extended wideband speech services) and part 5 (additional feature set nr.1 for extended wideband voice services) supported
	<Profile indicator_7>, bit 4	"xxxXxxx"B X = [0, 1]	Support (or not support) of the "Headset management" feature [NG1.N.21]
	<Profile indicator_7>, bit 5	"xx1xxxx"B	Support of the 'Re-keying' and 'default cipher key mechanism early encryption' (related to feature [GAP.N.35])
	<Profile indicator_7>, bit 6	"xXxxxxx"B X = [0, 1]	Support (or not support) of the 'associated melody' per contact (related to procedure 'PT Alerting using pattern signaling' 7.4.1.9)
	DSAA2 (Octet 5)	[0,1]	Support (or not support) of the DSAA2 (see EN 300 175-7 [7])
	DSC2 (Octet 5)	[0,1]	Support (or not support) of the DSC2 (see EN 300 175-7 [7])
	<Control codes>	All	If PT supports feature (GAP.N.25) it shall indicate in this field value which is equal to or higher than 2
NOTE 1: PPs compliant with the present document shall always set the value 3 ('11'B) as result of the audio type requirements (see clause 6.8 table 7). FPs shall also understand the values 1 ('01'B) and 2 ('10'B) that may be set by PPs compliant with NG-DECT Part 1 [17] or GAP [11] when attached to FPs compliant to the present document. NOTE 2: This capability is assumed as the default value (see table) if the <<TERMINAL-CAPABILITY>> information element is omitted.			

End of change>>

The capabilities in table 36 shall be assumed as default if the following fields in the <<TERMINAL CAPABILITY>> information element are not present.

<<Text changed from TS 102 527-3 [18] (modification, row for bit 5(re-keying) and note 3 added):

Table 36: Values assumed as terminal capabilities

Information element	Field within the information element	Standard values within the field/information element	Normative action/comment
<<Terminal capability>>	<Echo parameters>	3	VoIP compatible TCLw (see note 1)
	<N-REJ>	1	No noise rejection
	<A-VOL>	1	No PP adaptive volume control
	<Slot type capability>	"xxx1x1x"B	Full slot and Long slot (j=640) supported (see note 2)
	<Profile indicator_6>, bit 7	"0xxxxxx"B	No support of "no-emission" mode (optional MAC service [NG1.M.5])
	<Profile indicator_6>, bit 4	"xxx0xxx"B	No support of the "Headset management" feature [NG1.N.21]
	<Profile indicator_7>, bit 5	"xx1xxxx"B	Support of "Re-keying" and "default cipher key early encryption mechanism" (see note 3)
	DSAA2 (Octet 5)	0	No support of the DSAA2
	DSC2 (Octet 5)	0	No support of the DSC2
NOTE 1: Value 3 (VoIP compatible TCLw) shall be assumed if the PP has declared to be a NG-DECT Part 5 or Part 3 PP. For GAP and NG-DECT Part 1 PPs the default values given in [11] and [17] shall be assumed.			
NOTE 2: This value shall be assumed if the PP has declared to be a NG-DECT Part 5, Part 3 or Part 1 PP. For GAP PPs the default values given in [11] shall be assumed.			
NOTE 3: This value shall be assumed if the PP has been declared to be a NG-DECT Part 5 PP.			

End of change>>

No echoing of characters is allowed in the FT and therefore the PT would be responsible for displaying dialled digits. All display information from the FT would be assumed to be additional information that the PT shall display in addition. The PT shall logically separate display information originating at the FT and PT. This could be achieved, for example, by one physical display and two logical displays or two physical displays and two logical displays. The key point is that display characters from the PT and FT shall not be simultaneously interleaved/mixed on the same physical display.

7.4.9.2 Higher layer information FP broadcast

All mandatory requirements as defined in clause 7.4.9.2 of TS 102 527-3 [18] until start of clause 7.4.9.2.1 shall apply.

7.4.9.2.1 Higher layer information in standard FP broadcast (Qh = 3)

All mandatory requirements as defined in clause 7.4.9.2.1 of TS 102 527-3 [18] shall apply.

7.4.9.2.2 Higher layer information in Extended FP broadcast (Qh = 4)

All mandatory requirements as defined in clause 7.4.9.2.2 of TS 102 527-3 [18] shall apply.

7.4.9.2.3 Extended Higher Layer capabilities part 2 (Qh = 11)

The following text replaces clause 7.4.9.2.3 of TS 102 527-3 [18] and shall apply (see tagged changes).

The Extended Higher Layer capabilities, part 2, Fixed Part Information field shall be used indicating the supported set of Wideband speech Services.

<<Text changed from TS 102 527-3 [18] (modification):

Table 37: Extended Higher Layer Capabilities part 2 interpretation by the PP

BIT Number	Attribute	Value	Note
< a_{24} >	NG-DECT Wideband voice supported	1	See TS 102 527-1 [17] (see notes 1 and 2)
< a_{29} >	NG-DECT extended wideband voice services supported	1	See TS 102 527-3 [18] (see notes 1 and 2)
< a_{30} >	Permanent CLIR	1	Related procedures: clause 7.4.12
< a_{31} >	Three-party conference call (external or external)	1	Related procedures: clause 7.4.3.7
< a_{32} >	Intrusion call	1	Related procedures: clause 7.4.3.8
< a_{33} >	Call deflection	[0, 1]	Related procedures: clause 7.4.4.1.1, 7.4.4.2
< a_{34} >	Multiple lines	[0, 1]	Related procedures: clause 7.4.7
< a_{35} >	"no emission" mode support	[0, 1]	Related procedures: see NG1.M.5 in clause 6.12
< a_{36} >	NG-DECT Part 5 (additional feature set nr.1 for extended wideband voice services) supported	1	The present document (see notes 1 and 2)
< a_{42} >	Support of 'Re-keying' and 'early encryption'	1	Support of the 'Re-keying' and 'default cipher key mechanism early encryption' procedures (related to feature [GAP.N.35])
< a_{43} >	DSAA2 supported	[0, 1]	Support (or not support) of the DSAA2 See EN 300 175-7 [7].
< a_{44} >	DSC2 supported	[0, 1]	Support (or not support) of the DSC2 See EN 300 175-7 [7] and note 3.
NOTE 1: Value refers to the value to be set by FPs complying with the present document. PPs may need to understand other values due to the compatibility with GAP and NG-DECT Part 1 FPs. NOTE 2: All equipment compliant with the present documents shall broadcast and shall understand the "Extended Higher layer capabilities (part 2)". NOTE 3: The support of the DECT Standard Cipher #2 (DSC2) requires the support of the DECT Standard Authentication Algorithm #2 (DSAA2).			

Even if a capability bit relates to a feature which is mandatory in the present document, this bit shall be set (indicating the support of the feature). Setting only the bit a_{36} NG-DECT " Part 5 "additional feature set nr.1 for extended wideband voice services supported" is not enough.

End of change>>

7.4.10 List access service

7.4.10.1 General considerations

All mandatory requirements as defined in clause 7.4.10.1 of TS 102 527-3 [18] until subsection 'Entry identifier' shall apply.

Entry identifier:

All mandatory requirements as defined in clause 7.4.10.1/'Entry identifier' of TS 102 527-3 [18] shall apply.

Field identifier:

All mandatory requirements as defined in clause 7.4.10.1/'Field identifier' of TS 102 527-3 [18] shall apply.

Field instances management:

The following text replaces clause 7.4.10.1/'Field instances management' of TS 102 527-3 [18] and shall apply (see tagged changes).

Most of the time, the FP supports only one instance of a given field in a given list. However, for some fields in some lists, the FP supports several instances of the same field (same field id) in a given entry. The concerned fields and corresponding lists are the following:

- Field 'Contact number' in the Contact List (see clause 7.4.10.5.1.11). The FP shall support at least two 'Contact number' field instances for all entries in the Contact List (i.e. the maximum number of instances supported shall be greater or equal to 2). Different contacts may have different numbers of 'Contact number' field instances. See clause 7.4.10.5.7.

- Field 'Blocked number' in the Line Settings List (see clause 7.4.11.4.7). The FP may implement several 'Blocked number' field instances in every entry of the Line Settings List.

- Field 'FP IP address / DNS server' in the DECT System Settings List (see clause 7.4.11.3.8).

The PP may use the 'Query supported entry fields' command (see clause 7.4.10.4.2) in order to be informed of the maximum number of instances supported by the FP for a field.

Available instances. Instances held by the FP in a given entry are called *available* instances. There may be less instances available in a given entry than supported by the FP. Different entries may hold different number of instances for the same field.

However, there shall be at least one available instance for each implemented field ($n_{available} \geq 1$). If there are no data currently associated with the field, this instance shall be empty. Empty field (instances) are defined in clause 7.4.10.5.1.

NOTE 1: This empty instance needs not be actually stored by the FP, but has to be present over the air. Apart from this specific case, available instances are always non-empty (see clause 7.4.10.4.5.1, "Save entry" command).

NOTE 2: When the FP supports a maximum of one instance for a field, this single instance is therefore always available.

EXAMPLE 1: An instance shall always be available for the following single-instance fields, although there may be no defined value for them at a given point in time (empty instance used):

- 'Number' field in call lists, when the number is not known.

- 'Dialling prefix', when no dialling prefix has been defined by the user.

Ordering of instances. The FP shall respect the order of instances received from the PP at all times: at entry creation and at entry modification (and especially in the case of instance deletion). This order of instances shall be respected over the air when the entry is requested again by one of the PPs.

NOTE 3: The PP may re-order instances when displaying them on its MMI. This re-ordering does not imply any re-ordering of the instances on FP side, unless the PP specifically requires this through a subsequent save command.

NOTE 4: In order to delete an existing instance, the PP uses the 'Save entry' command. See clause 7.4.10.4.5.

Requesting entries. When requesting entries (i.e. when using 'Read entries', 'Search entries', or 'Edit entry'), the PP specifies the number of instances requested ($n_{requested}$) for a given field by repeating the corresponding field id as many times. The PP may request any number of instances for a field ($n_{requested} \in [0, \infty[$). The FP shall ignore the field id occurrences exceeding the number of instances it supports.

EXAMPLE 2: A PP could always request as many instances of the field as it is able to handle on its MMI. This number may exceed the maximum number of instances supported by the FP for the field.

The FP shall answer in the command confirmation with available instances, in the order they are stored on FP side. If there are less instances available on FP side than requested by the PP ($n_{available} < n_{requested}$), the FP shall answer with all instances available; Otherwise (i.e. if $n_{available} \geq n_{requested}$), the FP shall answer with the first $n_{requested}$ instances.

NOTE 5: If $n_{received}$ is the number of received instances, $n_{received} = \min(n_{available}, n_{requested})$.

Saving existing entry. When saving an existing entry, the PP shall send at least all $n_{received}$ instances received during the previous *edit entry confirm* answer (with possible modifications or deletions). If $n_{received} < n_{requested}$, the PP may save more instances than received (thus adding extra instances). However, the total number of saved instance shall never exceed the number of requested instances.

NOTE 6: This can be summarized as: $n_{received} \leq n_{saved} \leq n_{requested}$.

NOTE 7: This only applies if the PP saves the field. Otherwise, $n_{saved} = 0$. In other words, if no modification is done by the PP on any instances of a field, all instances of the field should be simply omitted by the PP in the save.

<<Text changed from TS 102 527-3 [18] (modification):

A non-editable field or field instance shall never appear in the 'save entry command'. Otherwise, a 'Procedure not allowed' negative acknowledgement shall be used by the FP. See clause 7.4.10.4.5.

End of change>>

Saving new entry. When creating a new entry, the PP may send any number of instances. The FP shall discard instances exceeding the maximum number of instances it supports.

NOTE 8: However, the PP should use the 'Query supported entry fields' command (see clause 7.4.10.4.2) in order to avoid handling and sending more instances than supported by the FP for the field.

List index:

All mandatory requirements as defined in clause 7.4.10.1/'List index' of TS 102 527-3 [18] shall apply.

Bytes order:

All mandatory requirements as defined in clause 7.4.10.1/'Bytes order' of TS 102 527-3 [18] shall apply.

Guarantee of service:

All mandatory requirements as defined in clause 7.4.10.1/'Guarantee of service' of TS 102 527-3 [18] shall apply.

Display and edition of string fields:

All mandatory requirements as defined in clause 7.4.10.1/'Display and edition of string fields' of TS 102 527-3 [18] shall apply.

Alphabet compatibility:

All mandatory requirements as defined in clause 7.4.10.1/'Alphabet compatibility' of TS 102 527-3 [18] shall apply.

Initial values:

All mandatory requirements as defined in clause 7.4.10.1/'Initial values' of TS 102 527-3 [18] shall apply.

Guarantee of interactivity for the user:

All mandatory requirements as defined in clause 7.4.10.1/'Guarantee of interactivity for the user' of TS 102 527-3 [18] shall apply.

7.4.10.2 List change notification

7.4.10.2.1 General rule

The following text replaces clause 7.4.10.2.1 of TS 102 527-3 [18] and shall apply (see tagged changes).

The present 'List change notification' procedure describes the use of the 'list change indication' type of generic events notification (see clause 7.7.55 of EN 300 175-5 [5]). It is potentially usable with any of the lists described in clause 7.4.10.5, but:

- Clause 7.4.10.2.2 enumerates the lists for which the present procedure makes a 'list change indication' mandatory. Use of the procedure for other lists is optional and may not be relevant.

- The 'Missed Calls List' does not use the list change notification procedure (see clause 7.4.10.2) for the sending of list change indications. The procedure 7.4.1.3 'Missed call notification' describes all uses of a 'list change indication' for the 'Missed Calls List'.

<<Text changed from TS 102 527-3 [18] (addition):

- The 'Line and diagnostic statuses' list does not use the list change notification procedure (clause 7.4.10.2). Clause 7.4.1.5 'Line and diagnostic statuses notifications' describes all uses of an 'events notification' for the 'Line and diagnostic statuses' list.

- The 'Incoming SMS' list does not use the list change notification procedure (clause 7.4.10.2). Clause 7.4.1.6 'SMS message waiting notification' describes all uses of an 'events notification' for the 'Incoming SMS' list.

End of change>>

Line identification used in a 'list change indication': As a general rule:

- If the list contains a line identifier field, a 'line change indication' shall contain a line identifier, specified in a <<CALL INFORMATION>> IE. The line id to be used is described below (see 'Events triggering the notification' clause).

- If the list does not contain any line identifier, the list change indication shall NOT contain any <<CALL-INFORMATION>> IE.

Event multiplicity: The <event multiplicity> field shall contain the total number of entries in the list *for the specified line id* at the time the notification is sent. More specifically:

- If the specified line id subtype 'Line identifier for external call' or 'Relating to' is used, the entries with 'All lines' value shall not be counted.

- If the specified line id subtype is 'All lines', only entries with this subtype shall be counted.

NOTE 1: As a result, if one entry of the Line Settings List is modified, a list change notification is sent with the event multiplicity value set to 1, together with a <<CALL INFORMATION>> IE set to 'Relating to' subtype and the line identifier value (see also clause 7.4.10.2.2).

Events triggering the notification: When the present 'List change notification' procedure is implemented by the FP for a list, the following event types shall trigger a 'list change indication' from the FP. For each event type, the line to specify and the set of PPs receiving the notification (targeted PP or PPs) are indicated.

- **Entry created, modified, or deleted.** If an entry in the list is created, modified or deleted, a 'list change indication' shall be sent.

  - *Specified line* (only if the list contains a line identifier field): The line id subtype used, and the value used (if any value) shall be those of the concerned entry.

NOTE 2: If the line id subtype 'All lines' is used, the line id value field is absent.

  - *Targeted PPs*: All PPs attached to the specified line:

    - If the concerned entry relates to a single line (line id subtype 'Line identifier for external call' or 'Relating to'), the notification shall be sent to all PPs attached to the corresponding line.

    - If the concerned entry contains a line identifier field with 'All lines' subtype, the notification shall be sent to all registered PPs (and shall contain the 'All lines' line id subtype, as already stated above).

NOTE 3: The Contact List may use both types of targeted PPs, depending on the concerned entry.

- If the list does not containing any line identifier field, the targeted PPs shall depend on the list and on the context (see clause 7.4.10.2.2).

- **Base reset:** If the FP is reset, a 'list change indication' shall be sent once for each line.

NOTE 4: If a list is lost (i.e. erased from memory) as a result of the base reset, a 'list change indication' is sent with <Event multiplicity> field set to '0'.

- *Specified line*: Line for which the notification is sent (once for each line).

- *Targeted PPs*: All PPs attached to the specified line.

NOTE 5: The purpose of this notification is re-synchronise the PPs with the lists state, when the lists have changed during the base reset.

- **Location registration:** A 'list change indication' shall be sent after location registration, once for each line the PP is attached to (1 FACILITY message per line the PP is attached to).

- *Specified line*: Line for which the notification is sent (once for each line the PP is attached to).

- *Targeted PP*: The PP performing location registration (and only this PP).

NOTE 6: A location registration request ({LOCATE-REQUEST} message) is sent by the PP when the handset is switched on. A location registration request could be sent by the PP when it goes back in range (after it got out of range) in order to inform the FP that it may have lost some notifications.

Almost simultaneous events: Several events (i.e. list changes) occurring almost simultaneously may be the subject of a single notification, provided the following rules are respected:

1) all events notified together shall occur on, or concern, the same list;

2) all events notified together shall occur on, or concern, the same line (same line id subtype and value).

Notifications shall be sent by the FP by use of the "generic event notification" procedure. For indication of list change and values used in <<Events notification>> information element, consider table 39.

Table 39: Values used within {FACILITY} message for list change indication

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Events notification>>	<Event type>	3	List change indication
	<Event sub type>	All	List identifier as indicated in clause 7.4.10.3
	<Event multiplicity >	0..127	Total number of entries in the list (see note 1)
<<Call Information>>			See note 2
	<Identifier type>	0	Line identifier
	<Identifier sub type>	'Line identifier for external call', 'Relating to', or 'All lines'	The 'None' value is excluded
	<Identifier value>	All	The line identifier value itself if present (absent if 'All lines' subtype is used)
NOTE 1: 'Event multiplicity' can be extended for values up to 16 383 by using the following extension mechanism: If the bit at bit position 8 of the first octet is set to 0 then a second octet will follow, if this bit is set to 1 then no further octet will follow. For values greater than 127 the first octet contains the 7 most significant bits and the bit at bit position 8 is set to 0 whereas the second octet contains the 7 least significant bits and the bit at bit position 8 is set to 1. For values below 128 the first octet contains the 'Event multiplicity' value and the bit at bit position 8 is set to 1 indicating that no second octet will follow. Examples: decimal value 128 is coded as 01H 80H, decimal value 17 is coded as 91H and decimal value 1 is coded as 81H.			
NOTE 2: <<Call information>> only present if list change indication is related to one or more lines.			

7.4.10.2.2 Mandatory notifications

The following text replaces clause 7.4.10.2.2 of TS 102 527-3 [18] and shall apply (see tagged changes).

<<Text changed from TS 102 527-3 [18] (modification):

In order to allow the display of information in idle mode on PP side, notifications shall be sent by the FP for the following lists (but only if the list is implemented):

End of change>>

- Line Settings List (defined in clause 7.4.11.4). As indicated in clause 7.4.10.2.1, changes in an entry of this list shall be notified to all PPs attached to the line identified by the field 'Line id' of that entry. However for fields which are optional or which do not require the PP to update its user interface, notification is optional or irrelevant (see clause 7.4.11.4).

NOTE 1: This allows in particular the PP to immediately update the line name in other lists entries (e.g. if used instead of the line id when the list is presented to the user).

- Internal Names List. A change in this list shall be notified when a PP modifies the name of another PP (if the FP allows it), and the list change notification shall at least be sent to that other PP concerned by the change. Furthermore the FP shall send a list change notification to all PPs when a PP has been added to this list (e.g. as a result of a registration) or removed from this list (e.g. as a result of a de-registration).

<<Text changed from TS 102 527-3 [18] (addition):

- Contact List

NOTE 1a: Thanks to this notification, a PP maintaining a local copy of the common Contact List (caching) may be aware of changes made in the Contact List and retrieve these changes as soon as possible.

- 'All Calls List' (also in the case of a missed call, although the Missed Calls List itself is not handled in clause 7.4.10.2) defined in clause 7.4.10.5.6 of [20]. As indicated in clause 7.4.10.2.1 [21], changes in this list shall be notified to all PPs attached to the line identified by the field 'Line id' of the modified entry (or entries):
  - If the call type is 'missed call', the notification shall be sent each time a 'missed call notification' is sent, and in addition to it (see clause 7.4.1.3).
  - If the call type is 'outgoing call' or 'incoming call', this notification shall be sent in addition to the list change notification for the 'Outgoing Calls List' or 'incoming call list' respectively.
- Outgoing Calls List
- Incoming call list

NOTE 1b: Thanks to call list notifications, the PP is able to give access to the user to up to date call lists immediately after a call was added to them.

EXAMPLE: Where a PP uses the list change notifications to retrieve the call lists most recent entries through batch processing, the PP is able to present an up to date 'Missed Calls List' to the user shortly after (s)he missed a call, and the user is therefore able to re-dial the number immediately.

- Sent SMS List
- Outgoing SMS List
- Draft SMS List

NOTE 1c: Thanks to SMS related notifications, a PP maintaining a local copy of SMS list (caching) may be aware of changes made (by the PP user or from other PPs) immediately after an SMS was added to them.

End of change>>

For all other lists, sending of notifications is left free to the implementor. However, the possibly important extra processing on FP and PP sides necessary for sending and handling notifications (e.g. if sent for each call) shall be carefully taken into account.

<<Text changed from TS 102 527-3 [18] (modification):

NOTE 2: The present 'List change notification' procedure cannot be used for the Missed Calls List and the Line and Diagnostic Statuses List, as stated in clause 7.4.10.2.1.

End of change>>

7.4.10.3 List identifier codings

The following list identifier codings are defined:

<<Text changed from TS 102 527-3 [18] (modification, nine lists inserted before 'Reserved'):

Bits	***8 7 6 5 4 3 2 1***	***Meaning***
	0 0 0 0 0 0 0 0	List of Supported Lists
	0 0 0 0 0 0 0 1	Missed Calls List
	0 0 0 0 0 0 1 0	Outgoing Calls List
	0 0 0 0 0 0 1 1	Incoming Accepted Calls List
	0 0 0 0 0 1 0 0	All Calls List
	0 0 0 0 0 1 0 1	Contact List
	0 0 0 0 0 1 1 0	Internal Names List
	0 0 0 0 0 1 1 1	DECT System Settings List
	0 0 0 0 1 0 0 0	Line Settings List
	0 0 0 0 1 0 0 1	All Incoming Calls List
	0 0 0 0 1 0 1 0	Line and Diagnostic Statuses List
	0 0 0 0 1 0 1 1	SMS Settings List
	0 0 0 0 1 1 0 0	Incoming SMS List
	0 0 0 0 1 1 0 1	Sent SMS List
	0 0 0 0 1 1 1 0	Outgoing SMS List
.	0 0 0 0 1 1 1 1	Draft SMS List
	0 0 0 1 0 0 0 0	DTAM Settings List
	0 0 0 1 0 0 0 1	DTAM Incoming Calls List
	0 0 0 1 0 0 1 0	DTAM Welcome Message List
	1 x x x x x x x	Reserved for proprietary lists
	all other values reserved	

End of change>>

The lists shall be sorted on the FP, using default criteria for each of them. The default sorting criteria are the following:

<<Text changed from TS 102 527-3 [18] (modification):

- The "Missed calls", "Outgoing calls", "Incoming accepted call" lists, "All Incoming Calls List" and more generally all call-related lists shall be sorted by default using the "Date and time" field. This also includes the DTAM Incoming Calls List if the DTAM feature is implemented.

End of change>>

<<Text changed from TS 102 527-3 [18] (addition):

- The DTAM welcome messages list shall be sorted by default using the 'DTAM full identifier', and then using the 'message position index' (criterion 2).

- All SMS lists (except for the SMS Settings List) shall be sorted by default using the "Date and Time" field as well.

End of change>>

- The "Contact" list shall be sorted by default using the "Name" field (first criterion). If the names are equal the list should be sorted using the "First name" field (criterion 2).

- The Internal Names List shall be sorted by default using the "Number" field (terminal id number).

<<Text changed from TS 102 527-3 [18] (modification):

- The Line Settings List, SMS Settings List, and DTAM Settings List shall be sorted by default using the "Line id" field.

End of change>>

- The DECT System Settings List and List of Supported Lists are not sorted by default as they contain only one entry.

<<Text changed from TS 102 527-3 [18] (addition):

- The Line and Diagnostic Statuses List shall be sorted by default using the "Line id" field.

End of change>>

Please refer to the "Start session" command for a definition of the sorting order used for a given field type (this definition applies independently of the position of the field in the sorting process: i.e. whether used as "first criterion", "criterion 2", etc.).

7.4.10.4 List Access Commands

The following text replaces clause 7.4.10.4 of TS 102 527-3 [18] and shall apply (see tagged changes).

The following list access commands are defined:

<<Text changed from TS 102 527-3 [18] (modification, 'read selected entries' and 'write entry' commands are added):

Bits	***8 7 6 5 4 3 2 1***	***Meaning***	***PP -> FP***	***FP -> PP***
	0 0 0 0 0 0 0 0	start session	yes	-
	0 0 0 0 0 0 0 1	start session confirm	-	yes
	0 0 0 0 0 0 1 0	end session	yes	yes
	0 0 0 0 0 0 1 1	end session confirm	yes	yes
	0 0 0 0 0 1 0 0	query supported entry fields	yes	-
	0 0 0 0 0 1 0 1	query supported entry fields confirm	-	yes
	0 0 0 0 0 1 1 0	read entries	yes	-
	0 0 0 0 0 1 1 1	read entries confirm	-	yes
	0 0 0 0 1 0 0 0	edit entry	yes	-
	0 0 0 0 1 0 0 1	edit entry confirm	-	yes
	0 0 0 0 1 0 1 0	save entry	yes	-
	0 0 0 0 1 0 1 1	save entry confirm	-	yes
	0 0 0 0 1 1 0 0	delete entry	yes	-
	0 0 0 0 1 1 0 1	delete entry confirm	-	yes
	0 0 0 0 1 1 1 0	delete list	yes	-
	0 0 0 0 1 1 1 1	delete list confirm	-	yes
	0 0 0 1 0 0 0 0	search entries	yes	-
	0 0 0 1 0 0 0 1	search entries confirm	-	yes
	0 0 0 1 0 0 1 0	negative acknowledgement	-	yes
	0 0 0 1 0 0 1 1	data packet	yes	yes
	0 0 0 1 0 1 0 0	data packet last	yes	yes
	0 0 0 1 0 1 0 1	read selected entries	yes	-
	0 0 0 1 0 1 1 0	read selected entries confirm	-	yes
	0 0 0 1 0 1 1 1	write entry	yes	-
	0 0 0 1 1 0 0 0	write entry confirm	-	yes
	1 x x x x x x x	reserved for proprietary list access commands		
	all other values reserved			

End of change>>

Proprietary list access commands shall have list access command codings with most significant bit set to '1'.

The "read entries", "read entries confirm" and "search entries confirm" commands use a start index as these command may apply to a range of entries within a list.

The "save entry confirm" command uses a position index as this command applies to one entry.

Possible error codes are specified for each command from PP to FP. They use negative acknowledgement command, with exception of negative start session confirm.

Additionally to the general status of a given command and a given list as described in table 9 for feature [NG1.N.16], the **PP** shall follow the following more detailed requirements:

<<Text changed from TS 102 527-3 [18] (modification, 'read selected entries' and 'write entry' commands, nine new lists at the end and three notes are added to the table):

Table 40: PP commands support status per list

List (with status as given in table 9, feature [NG1.N.16])	Command (with status as given in table 9, feature [NG1.N.16])									
	Start/end session (M)	Query supported entry fields (O)	Read entries (M)	Read selected entries (O)	Edit entries (M)	Save entry (M)	Write entry (M)	Delete entry (M)	Delete list (M)	Search entries (M)
Lists of supported lists (O)	M	I	M	O	I	I	I	I	I	I
Missed Calls List (M)	M	O	M	O	I (note 1)	I (note 1)	I	M	M	O
Outgoing Calls List (O)	M	O	M	O	I	I	I	M	M	O
Incoming Accepted Calls List (M)	M	O	M	O	I	I	I	M	M	O
All Calls List (O)	M	O	M	O	I	I	I	M	M	O
Contact List (M)	M	O	M	O	M	M	O	M	O	M
Internal Names List (M)	M	O	M	O	M	M	O	M	I	O
All Incoming Calls List (O)	M	O	M	O	I (notes 1 & 2)	I (notes 1 & 2)	I	M	M	O
DECT System Settings List (M)	M	O	M	O	M	M	O	I	I	I
Line Settings List (M)	M	O	M	O	M	M	O	O	I	I
Line and Diagnostic Statuses List (M)	M	O	M	O	I	I	I	I	I	O
Incoming SMS List (C1303)	M	O	M	O	I (note 1)	I (note 1)	I	M	M	O
Sent SMS List (C1303)	M	O	M	O	I	I	I	M	M	O
Outgoing SMS List (C1303)	M	O	M	O	M	M	O	M	M	O
Draft SMS List (C1304)	M	O	M	O	M	M	O	M	M	O
SMS Settings List (C1303)	M	O	M	O	M	M	O	O	I	I
DTAM Settings List (C1305)	M	O	M	O	M	M	O	O	I	I
DTAM Incoming Calls List (C1306)	M	O	M	O	I	I	I	M (note 3)	M (note 3)	O
DTAM Welcome Message List (C1305)	M	O	M	O	I	I	I	M (note 3)	M (note 3)	O

C1303: IF NG1.N.24 (SMS) THEN "M" ELSE "I".
C1304: IF NG1.N.24 (SMS) THEN "O" ELSE "I".
C1305: IF NG1.N.25 (DTAM) THEN "M" ELSE "I".
C1306: IF NG1.N.25 (DTAM) and Visual DTAM implemented THEN "M" ELSE IF NG1.N.25 THEN "O" ELSE "I".
NOTE 1: The command may however be used for editing the 'Read status' field (and only that field). The 'Read status' field is the only editable field in this list (see Annex H). Other fields of the list may however be present in the edit entry.
NOTE 2: For the All Incoming Calls List, the Read status field is only used (and is only editable) for missed calls.
NOTE 3: The command may however fail for a remote voice oriented DTAM.

End of change>>

EXAMPLE: If the PP implements the 'list of supported list' (optional list), PP shall then implement 'start session', 'end session' and 'read entries' commands, other commands for this list are irrelevant.

Additionally to the general status of a given command and a given list as described in table 9 for feature [NG1.N.16], the **FP** shall follow the following more details requirements.

<<Text changed from TS 102 527-3 [18] (modification, 'read selected entries' and 'write entry' commands and nine new lists at the end are added to the table; notes 5, 6 and 7 are added):

Table 41: FP commands support status per list

List (with status as given in table 9, feature [NG1.N.16])	Command (with status as given in table 9, feature [NG1.N.16])									
	Start/end session (M)	Query supported entry fields (M)	Read entries (M)	Read selected entries (M)	Edit entries (M)	Save entry (M)	Write entry (M)	Delete entry (M)	Delete list (M)	Search entries (M)
Lists of supported lists (M)	M	I (note 1)	M	O (note 2)	I (note 1)	I (note 1)	I (note 1)	I (note 1)	I (note 1)	I (note 1)
Missed Calls List (M)	M	M	M	O (note 2)	I (note 6)	I (note 6)	I (note 1)	M	M	M
Outgoing Calls List (O)	M	M	M	O (note 2)	I (note 1)	I (note 1)	I (note 1)	M	M	M
Incoming Accepted Calls List (M)	M	M	M	O (note 2)	I (note 1)	I (note 1)	I (note 1)	M	M	M
All Calls List (M) (note 5)	M	M	M	O (note 2)	I (note 1)	I (note 1)	I (note 1)	M	M	M
Contact List (M)	M	M	M	O (note 2)	M	M	O (note 2)	M	M	M
Internal Names List (M)	M	M	M	O (note 2)	M (note 4)	M (note 4)	O (note 2)	M (note 4)	I (note 1)	M
All Incoming Calls List (O)	M	M	M	O (note 2)	I (note 6 & 7)	I (note 6 & 7)	I (note 1)	M	M	O (note 2)
DECT System Settings List (M)	M	M	M	O (note 2)	M (note 4)	M (note 4)	O (note 2)	I (note 1)	I (note 1)	I (note 1)
Line Settings List (M)	M	M	M	O (note 2)	M (note 4)	M (notes 3 and 4)	O (note 2)	O (notes 2 and 4)	I (note 1)	I (note 1)
Line and Diagnostic Statuses List (M)	M	M	M	I (note 1)	I (note 1)	I (note 1)	I (note 1)	I (note 1)	I (note 1)	M
Incoming SMS List (C1303)	M	M	M	M	I (note 6)	I (note 6)	I (note 1)	M	M	M
Sent SMS List (C1303)	M	M	M	M	I (note 1)	I (note 1)	I (note 1)	M	M	M
Outgoing SMS List (C1303)	M	M	M	M	M	M	M	M	M	M
Draft SMS List (C1303)	M	M	M	M	M	M	M	M	M	M
SMS Settings List (C1303)	M	M	M	O (note 2)	M	M	O (note 2)	O (note 2)	I (note 1)	I (note 1)
DTAM Settings List (C1304)	M	M	M	O (note 2)	M (note 4)	M (note 4)	O (note 2)	O (notes 2 and 4)	I (note 1)	I (note 1)
DTAM Incoming Calls List (C1305)	M	M	M	O (note 2)	I (note 1)	I (note 1)	I (note 1)	M (note 8)	M (note 8)	M
DTAM Welcome Message List (C1304)	M	M	M	O (note 2)	I (note 1)	I (note 1)	I (note 1)	M (note 8)	M (note 8)	M

C1303: IF NG1.N.24 (SMS) THEN "M" ELSE "I".
C1304: IF NG1.N.25 (DTAM) THEN "M" ELSE "I".
C1305: IF NG1.N.25 (DTAM) and Visual DTAM implemented THEN "M" ELSE IF NG1.N.25 THEN "O" ELSE "I".

NOTE 1: FP shall answer with negative acknowledgement / 'procedure not allowed'.
NOTE 2: If not supported, FP shall answer with negative acknowledgement / 'procedure not allowed'.
NOTE 3: FP shall support the command to offer the possibility to modify a line setting. However, the 'save entry' for creating a new line need not be supported by the FP. See clause 7.4.10.4.5.2.
NOTE 4: Additional requirements apply when a PP is involved in a voice call. FP shall temporarily restrict access to the list during the duration of the voice call. See clause 7.4.10.6 for details.
NOTE 5: Additional requirement as a delta to NG-DECT Part 3 [3]: the 'all calls' list related commands support is mandatory.
NOTE 6: FP shall answer with negative acknowledgement / 'procedure not allowed' unless the command is used to edit the 'Read status' field only. The 'Read status' field is the only editable field in this list (see Annex H). Other fields of the list may however be present in the edit entry.
NOTE 7: For the All Incoming Calls List, the Read status field is only used (and is only editable) for missed calls.
NOTE 8: The command need not be supported for a remote voice oriented DTAM.

End of change>>

7.4.10.4.1 Start and end session

All mandatory requirements as defined in clause 7.4.10.4.1 of TS 102 527-3 [18] shall apply.

7.4.10.4.2 Query supported entry fields

All mandatory requirements as defined in clause 7.4.10.4.2 of TS 102 527-3 [18] shall apply.

7.4.10.4.3 Read entries

All mandatory requirements as defined in clause 7.4.10.4.3 of TS 102 527-3 [18] shall apply.

7.4.10.4.4 Edit entry

All mandatory requirements as defined in clause 7.4.10.4.4 of TS 102 527-3 [18] shall apply.

7.4.10.4.5 Save entry

7.4.10.4.5.1 "Save entry" command

The following text replaces clause 7.4.10.4.5.1 of TS 102 527-3 [18] and shall apply (see tagged changes).

This command from PP requests to save the entry in the list identified by the specified entry identifier, or to add a new entry to the list. Corresponding entry is sent along in data packets.

The list entries which are saved shall have been requested via 'edit' before in the same session, except for creation of a new entry.

Saving of an existing entry:

The 'save' transaction shall contain all fields or a subset of the fields which were submitted in the 'edit' transaction. Other fields (not edited, or edited but not saved) remain unchanged in the FP.

<<Text changed from TS 102 527-3 [18] (addition):

Non-editable fields shall not be present in the save command. This applies to manufacturer-defined and standard defined non-editable fields (see Annex H).

End of change>>

For more information, see clause 7.4.10.1, 'Field instances management' entry.

Best effort mode:

When receiving the data packets following the 'save entry' command, the FP shall work in best effort mode:

- Saving the new value (or instance values) proposed for all fields for which it is possible.
- Not saving the new value (or instance values) proposed for a field if it is not possible, i.e. in the following error cases:
  - 'PIN code required' error case for a PIN protected field without prior correct PIN reception in the current call; or
  - 'content not accepted' error case for a malformed field; or
  - 'procedure not allowed' error case for a non-editable field.

<<Text changed from TS 102 527-3 [18] (deletion, note deleted):

End of change>>

- Sending a negative acknowledgement ('PIN code required', 'content not accepted', 'procedure not allowed') at the end of the command if applicable, even if the command was partially carried out.

NOTE 1: The steps described above for field (instance) modification apply also for:

- field resetting of an editable single instance PIN protected field (this is a kind of field modification);
- field instance deletion or addition of a multiple instance PIN protected field.

NOTE 2: This means that when an error is encountered, all subsequent fields in the command will still be processed by the FP even if the sending of a negative acknowledgement is planned for the command.

- If several error codes apply, the FP shall send one of them.

NOTE 3: Owing to the previous requirements, the FP might send a 'PIN code required' negative acknowledgement even when an unchanged PIN protected field is included in the 'save entry' command (i.e. if the correct PIN was not received before). The PP may avoid this drawback by saving only modified PIN protected fields or e.g. by systematically asking the user for the PIN in the session if the list contains PIN protected fields).

NOTE 4: The "best effort" mode aims at handling several error situations. However in most cases, the FP will successfully save all fields included in the 'save entry' command.

Table 52: Values used within {IWU to IWU} information element for "Save entry" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	03H	List access
	<Command = save entry>	AH	List access command
	<Session identifier>	1..127	Session identifier (see note)
	<Entry identifier>	0..127	Entry identifier (see note)
NOTE: Session identifier' and 'entry identifier' can be extended for values up to 16 383 by using the same mechanism as for 'Event multiplicity'. See note 1 at table 39.			

Content of list entry is transmitted in data packets.

Entry identifier:

Bits	**7 6 5 4 3 2 1**	**Meaning**
	0 0 0 0 0 0 0	not yet assigned entry identifier (new entry proposed by the PP)
	other values	assigned entry identifier (this entry identifier shall already exist in the list)

New entry creation:

If a new entry has to be created, the PP shall indicate this by using the entry identifier 00H. In this case, the end FP shall assign a new entry identifier for the entry and submit it in the following 'save entry confirm'.

For more information, see clause 7.4.10.1, 'Field instances management' entry.

The FP entry identifier assignment method is left free to implementation. However, the FP should not re-assign a previously freed (e.g. because of deletion of an entry) entry identifier before all sessions which were accessing this list at the time of freeing the entry identifier have been closed. By this way, possible inconsistencies in other PPs which have active sessions to the same list are avoided.

The FP may implement the " *re-use if possible method* " described below.

The "re-use if possible method" consists in assigning an entry identifier to a new entry in the interval [1, n] for a given list:

- Assignment starts or restarts at 1 when list is empty.
- For further entries, if only 1 session is opened on the list, the rule "Assigned id = smallest free id" applies. Free id may correspond to a never used or previously freed entry id.

- For further entries, if more than one session is opened on the list, the rule "Assigned id = smallest free id" applies, with the additional requirement that the assigned id shall have remained free (i.e. shall not have been used and then deleted) since the list was in idle the last time.

- This method assumes that n is never reached. n is larger than maximum number of entries in the list.

New or modified entry insertion in the list:

The new or modified entry shall be inserted in the list by the FP taking into account the sorting criteria for this list.

Edit command without modification:

If the previously started edit procedure has to be terminated without changing the list entry, PP shall perform the 'save entry' procedure with only one empty 'last data packet' following the 'save entry' (an example is provided in clause C.5.9).

Field instance reset, emptying or deletion with a save entry command:

A PP may request the reset, emptying or deletion of a field instance by using an *empty* field instance in a "save entry" command (length of the field instance set to 1). Table 53a lists the different cases.

- *Field reset* allows to reset the field in the FP and come back to its default value (defined in the present document or manufacturer defined). When resetting a field instance, the FP shall replace it in the list entry with the (non-empty) default value defined for that field.

  NOTE 5: It has to be noted that for some fields in some lists, resetting can be dangerous and should be carefully controlled by the PP.

- *Field emptying* allows to set an empty value for the field. Applies only to a limited number of fields in the present document.

- *Field deletion* allows to delete one instance of a multiple instance field in the FP. When deleting a field instance, the FP shall respect the order of the remaining instances (as stated in clause 7.4.10.1, "Field instances management"). The deleted instance is removed from the list entry, not replaced with the received empty instance.

  NOTE 6: Empty field instances are defined in clause 7.4.10.5.1.

<<Text changed from TS 102 527-3 [18] (modification, SMS relating fields are added):

Table 52a: FP behaviour when "length=1" in a save entry

Field name (note 1)	FP behaviour	Comment
Fields which may be reset individually by the PP		
Contact List: - Line id	FP shall reset the field to the default value (if editable)	The FP uses the FP defined default value for a contact. For example, it could be the "All lines" value. See also note 2.
Internal Names List: - Name (of handset) - Call interception	FP shall reset the field to the default value (if editable)	The FP uses the FP defined default value. See also note 2
DECT System Settings List: - Clock master - Base reset - Emission mode - New PIN code	FP shall reset the field to the default value (if editable)	The FP uses the FP defined default value. For "base reset", default value is "YES" by standard; this is therefore equivalent to setting the value to "YES" directly (with all consequences defined in clause 7.4.11.3.3) See also note 2
Line Settings List: - Line name - Attached handsets - FP volume - Multiple calls mode - Intrusion call - Permanent CLIR - Call forwarding (CFU, CFNA and CFB)	FP shall reset the field to the default value (if editable)	The FP uses the FP defined default value. For 'SMS validity period', default value is 24 hour by standard; this is therefore equivalent to setting this value directly (see 7.4.11.4.19). See also note 2

Field name (note 1)	FP behaviour	Comment
Fields which may be reset individually by the PP		
SMS Settings List: - Enable SMS - Max SMS size - SMS delivery report - SMS validity period		
Fields which may be emptied by the PP		
Name	FP shall set the field to empty value (length=1)	Empty value is selected because it is an allowed value for the field. Deletion is not applicable to those single instance fields. See also note 3.
First name		
Dialling prefix		
FP IP address / value		
FP IP address / subnet mask		
FP IP address / gateway		
Associated melody		
FP melody		
SMSC Send Server		
SMSC Receive Server		
Fields which are always empty		
Read status	FP shall update the property octet with received bits sent by the PP (if field is editable)	Save entry command can only be used with length=1 on those fields. Deletion is not applicable to those single instance fields.
FP IP address / type		
Fields which may be deleted by the PP (multiple-instance fields)		
Contact number	FP shall remove field instance (if editable) However, if all field instances of a given field are present in the save entry command, and have length=1, all but one instances shall be removed in the FP; for the remaining one, the empty value shall be used (note 4)	The PP may delete all but one instances. See clause7.4.10.1, "Field instance management", for more details
Blocked number		
FP IP address / DNS server		

NOTE 1: Fields that are always uneditable (see Annex H) are not listed here. Such fields shall never appear in a 'save entry' command. Always uneditable fields include: Call type, Date and time, FP version (all subfields), Line name (in a call list), Line id, Number, Number of calls. This also includes the "Current PIN code" which is not modifiable (for this field, the FP answers "incorrect PIN").
NOTE 2: For those fields, an empty value is not allowed in the list entry (as stated in the field definition). As a result, "length = 1" can be used in the save entry command for the purpose of resetting the field.
NOTE 3: Individual field resetting using length=1 is NOT possible here because use of an empty-value field (i.e. with length = 1) in the list entry is allowed. In addition, the PP cannot reset the field directly as it happens that no reset value for this field is defined in the present document. Although not possible for the field individually, a reset value defined by the FP can still be restored through a global reset (base reset).
NOTE 4: This implies that the PP requested all available instances of the field in the previous edit entry command.

End of change>>

Possible error cases:

NOTE 7: When several error cases apply (e.g. for different fields) a negative acknowledgement will be sent; however, the used 'reject reason' may be different from the one indicated below.

NOTE 8: As described in clause 7.4.10.4.9, the negative acknowledgement is sent after the 'data packet last' information is received from the PP.

Invalid session number: If session identifier is wrong the FP shall answer with negative acknowledgement reject reason 'invalid session number'.

Entry not available: If an unknown entry identifier of the list is requested (except 0), the FP shall answer with negative acknowledgement, reject reason 'entry not available'.

Entry format incorrect: If a PP attempts to save an entry with an incorrect format, the FP shall reject the command with a negative acknowledgement, with reject reason "Entry format incorrect".

Content not accepted: If a PP attempts to save an entry with correct format but with a field content which cannot be accepted, (e.g. for a field whose contents are only allowed once in the list like line-id in the Line Settings List or when too many instances of a field are saved in the same entry), the FP shall reject the command with a negative acknowledgement, with reject reason "content not accepted".

List full: If a PP attempts to add a new entry in a list which cannot accept an additional entry, the FP shall reject the command with a negative acknowledgement, with reject reason "list full".

PIN code required: If a PP attempts to perform an operation subject to prior correct PIN entry (e.g. PIN protected field modification, etc. See clause 7.4.11.1, entry 'PIN code' for details), the FP shall send a negative acknowledgement, with reject reason 'PIN code required'.

NOTE 9: As described at the beginning of the present clause and in clause 7.4.10.4.9, error codes 'content not accepted' and 'PIN code required' can be sent even if the 'save entry' command was partially carried out.

Procedure not allowed: The FP shall reject the save entry command with a negative acknowledgement with reject reason 'procedure not allowed' in the following cases:

- the PP inserts a non-editable field (whether actually modified or not);

<<Text changed from TS 102 527-3 [18] (modification):

- the PP attempts to save an unlocked entry. In other words, the 'save entry' command was issued without a previous 'edit entry' locking the entry (or was issued after a another 'save entry' already unlocking that entry).

End of change>>

The FP may reject the save entry command with a negative acknowledgement with reject reason 'procedure not allowed' in the following cases:

- the FP does not allow the saving of new entries for a given list (e.g. for call lists, for the Line Settings List).

NOTE 10: For lists that allow creation of a new entry initiated by the PP, it is supposed that all fields are editable on FP side.

7.4.10.4.5.2 "Save entry confirm" command

All mandatory requirements as defined in clause 7.4.10.4.5.2 of TS 102 527-3 [18] shall apply.

7.4.10.4.6 Delete entry

All mandatory requirements as defined in clause 7.4.10.4.6 of TS 102 527-3 [18] shall apply.

7.4.10.4.7 Delete list

All mandatory requirements as defined in clause 7.4.10.4.7 of TS 102 527-3 [18] shall apply.

7.4.10.4.8 Search entries

All mandatory requirements as defined in clause 7.4.10.4.8 of TS 102 527-3 [18] shall apply.

7.4.10.4.9 Negative Acknowledgement

This command from the FP rejects the previous command with a reject reason, and is sent instead of the regular command confirmation.

<<Text changed from TS 102 527-3 [18] (modification, 'write entry' command added):

The FP shall wait until the erroneous command is completely received from the PP before replying with a negative acknowledgement. For commands containing data (i.e. for the save and write commands), this implies waiting until the 'data packet last' information is received.

End of change>>

For the 'save entry' command, a negative acknowledgement with reject reason 'content not accepted' or 'PIN code required' may only mean *partial* rejection of the command. See clause 7.4.10.5.1 for more information.

7.4.10.4.10 Data packet / Data packet last

7.4.10.4.11 Read selected entries

7.4.10.4.11.1 "Read selected entries" command

This command from PP requests to read a series of (not necessarily consecutive) entries in the list, or only a subset of the fields of these entries. This command is similar to 'Read entries', but uses a selection type and a selection description as input instead of a start index and counter.

Table 63a: Values used within {IWU to IWU} IE for " Read selected entries" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	03H	List access
	<Command =Read selected entries>	15H	List access command
	<Session identifier>	1..127	Session identifier (see note)
	<Mark entries request>	00H, 7FH, FFH	Flag for requesting resetting (or setting) of the 'Read status' field for all read entries
	<Number of entry field identifiers>	0..255	Number of requested fields
	<List entry field identifier 1>	0..255	Requested field
	...		
	<List entry field identifier n>	0..255	Requested field
	Selection type	1..127	Type of selection (see note)
	Selection description		The selection description depends on the selection type
NOTE: 'Session identifier' and 'entry identifier' can be extended using the most significant bit up to 16 383. If more than one byte is used for the value, the highbyte shall be send before the lowbyte (e.g. '1' is coded as 0x81, '128' is coded as 0x01 0x80).			

Mark entries request (octet):

See clause 7.4.10.4.3 ('Read entries').

List entry field identifier:

See clause 7.4.10.4.3 ('Read entries'). Note however the additional 'Number of entry field identifiers' here.

Selection type:

The selection type describes the type of entry selection that the FP shall make in order to build the 'Read selected entries confirm' command.

Bits	**7 6 5 4 3 2 1**	**Meaning**
	0 0 0 0 0 0 1	selection from entry id with range
	0 0 0 0 0 1 0	selection from entry identifiers
	Other values reserved	

Selection description

For selection type 'selection from entry identifiers'. The purpose of this selection type is to allow the PP to read a subset of entries in the list by submitting the corresponding series of entry ids to the FP. For this selection type the following table shall be used:

Table 63b: Selection description for selection type "selection from entry identifiers"

Selection description within IE	Field within the information element	Standard values within the field/IE	Normative action/comment
	<Number of requested entries>	0..255	Number of requested entries
	<entry identifier 1>	1..127	Requested entry (see note 1)
	…		
	<entry identifier n>	1..127	Requested entry (see note 1)
NOTE 1: 'Entry identifier' can be extended using the most significant bit up to 16 383. If more than one byte is used for the value, the highbyte shall be send before the lowbyte (e.g. '1' is coded as 0x81, '128' is coded as 0x01 0x80). NOTE 2: (**Best effort mode**) When some of the requested entries are no longer available on FP side, the FP shall skip the unexisting entries and only provide the existing entry ids in the data packets following the 'Read selected entries confirm'. However, when NONE of the requested entries is available, a negative acknowledgement shall be sent (see 'possible error cases' below).			

For selection type 'selection from entry id with range'. The purpose of this selection type is to allow the PP to read a single entry in the list, and, for one of the requested entry fields, to specify a range of content bytes that will be returned (truncated field).

NOTE 1: Using this selection type, the PP is able to limit the size of the response if one of the requested fields would be too large. The PP may retrieve the whole field by using the command several times.

EXAMPLE: The SMS content field of the Draft SMS List may be read by low-end PPs through several uses of this command. The SMS content total size is known a priori by the PP thanks to the SMS size field.

Lower and upper bounds. The requested range within the content bytes is specified in the command through the *lower bound* and *upper bound* values. For a content of n bytes, there are (n+1) bounds, numbered 0, 1, …, n, such that:

- bound 0 is the place before all content bytes,
- bounds 1 .. n-1 are the n-1 places between two consecutive content bytes,
- bound n is the place after all content bytes.

Truncated field format. The returned truncated field format shall use the following rules:

- The truncated field shall contain the same *field id* value and *property octet(s)* values as those of the original (non-truncated) field.
- The truncated field content (from octet 4 on) shall contain the requested range in the original field content (from octet 4 on, in the original field). Range bound value 0 shall correspond to the bound before octet 4 in the original field.
- The length of the truncated field (octet 2) shall contain the actual truncated field length (i.e. "range_upper_bound – range_lower_bound +1" if the whole requested range is available, and less than that otherwise).
- If the requested range is empty, the returned truncated field shall be empty (length=1). This may happen if both lower and upper bounds are equal, or if the lower bound is equal to the number of available bytes in the read field (see also note 2 in table 29).

For this selection type, the following table shall be used. See also table 63c for examples of use.

Table 63c: Selection description for selection type "selection from entry id with range"

Selection description within IE	Field within the information element	Standard values within the field/IE	Normative action/comment
	<Entry identifier>	1..127	Concerned entry identifier (see note 1)
	<Field identifier>	0..255	Concerned field id within entry
	<Byte range lower bound>	0..127	The range starts from the indicated lower bound (see note 1)
	<Byte range upper bound>	0..127	The range ends with the indicated upper bound (see notes 1 and 2)
NOTE 1: This field can be extended using the most significant bit up to 16 383. If more than one byte is used for the value, the highbyte shall be sent before the lowbyte (e.g. '1' is coded as 0x81, '128' is coded as 0x01 0x80). NOTE 2: *Byte range upper bound* shall be greater or equal to *Byte range lower bound* but should be strictly greater than it. *Byte range upper bound* may exceed the number of available bytes in the read field (in that case the FP automatically replaces it with this number of available bytes). The *Byte range lower bound* shall NOT exceed the number of available bytes in the read field.			

Table 63d: Example of returned truncated field with selection type "selection from entry id with range"

Subfield	Value	Encoding
Field 'SMS content' stored in the draft list		
SMS content field id in SMS draft list	08H	08
Length	11 (decimal)	0B
Properties	'1100 0000'B	C0
Content		AA BB CC DD EE FF 00 11 22 33
Truncated 'SMS content' field returned to PP with command 'Read selected entries' with range 2-8 (decimal) requested for that field		
SMS content field id in SMS draft list	08H	08
Length	7 (=8-2+1)	07
Properties	'1100 0000'B	C0
Content		CC DD EE FF 00 11
and with range 2-12 (decimal) requested for that field (only available range returned, no error returned)		
SMS content field id in SMS draft list	08H	08
Length	9 (=10-2+1)	09
Properties	'1100 0000'B	C0
Content		CC DD EE FF 00 11 22 33

Possible error cases:

For all selection types.

Invalid session number: If the session identifier is wrong the FP shall answer with negative acknowledgement reject reason 'invalid session number'.

If an unknown list entry field identifier is requested, the FP shall ignore this field and continue with the next requested field.

For selection type 'selection from entry identifiers'.

Entry not available: When NONE of the requested entry identifiers are available on FP side, the FP shall answer with negative acknowledgement, reject reason 'entry not available'. In that case, no data packet shall follow.

NOTE 2: In contrast to that, if at least one of the requested entries is available, the FP works in best effort mode.

For selection type 'selection from entry id with range'.

Entry not available: If the requested entry identifier is not available on FP side, the FP shall answer with negative acknowledgement, reject reason 'entry not available'. In that case, no data packet shall follow.

Invalid range: In the following cases:

- the *Byte range lower bound* is strictly greater than the number of available bytes in the read field;
- the *Byte range upper bound* is strictly smaller than the *Byte range lower bound*;

the FP shall answer with negative acknowledgement, reject reason 'invalid range'. In that case, no data packet shall follow.

7.4.10.4.11.2 " Read selected entries confirm" command

This command from FP confirms the "Read selected entries confirm" command with the corresponding entry/entries with one or several specified fields. Corresponding entry/entries are sent along in data packets in the order they were requested.

NOTE: It is similar to the "Read entries' command, except that the start index is absent here.

Table 63e: Values used within {IWU to IWU} IE for "Read selected entries confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	03H	List access
	<Command =read selected entries confirm>	16H	List access command
	<Session identifier>	1..127	Session identifier (see note)
	<Partial delivery (bit 8)> <Counter> (bits 1 to 7)	0..1 0..127	Partial delivery owing to FP memory limitation Number of actually delivered entries
NOTE: 'Session identifier' can be extended for values up to 16 383 by using the same mechanism as for 'Event multiplicity'. See note 1 at table 39.			

'Partial delivery' and 'Counter' (octet):

See clause 7.4.10.4.3.2, "Read entries confirm" command (similar requirements).

In the case of partial delivery, the delivered entries shall correspond to the first entries requested, in the order they were requested.

7.4.10.4.12 Write entry

7.4.10.4.12.1 "Write entry" command

This command shall only be used between an 'edit entry' and a 'save entry' commands.

The 'write entry' command makes it possible for the PP to write a locked entry step by step without removing the lock. The final save entry command shall unlock the entry.

This command format is similar to that of 'Save entry', but uses a *write type* and a *write description* as additional input. However, the "Write entry' command does not remove the lock put on the entry by the preceding 'Edit entry' command.

Table 63f: Values used within {IWU to IWU} IE for the " Write entry" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	03H	List access
	<Command =Write entry>	17H	List access command
	<Session identifier>	1..127	Session identifier (see note)
	Write type	1..127	Type of writing (see note)
	Write description		The write description depends on the write type
NOTE: This field can be extended using the most significant bit up to 16 383. When more than one byte is used for the value, the highbyte shall be sent before the lowbyte (e.g. '1' is coded as 0x81, '128' is coded as 0x01 0x80).			

Write type:

The write type describes the kind of writing that is used by this instance of the 'write entry' command.

Bits 7 6 5 4 3 2 1 Meaning
0 0 0 0 0 0 1 write from entry id with range
Other values reserved

Write description

For write type 'write from entry id with range'. The purpose of this write type is to allow the PP to write a single field in a single entry of the list, and, for this written entry field, to specify the range of existing bytes in the written field (considered before the write operation) that shall be replaced by the written bytes (i.e. a replacement field is sent containing the bytes to be written).

A range is defined with lower and upper bounds, as for command 'Read selected entries' with selection type '*selection from entry id with range*' (see 7.4.10.4.11). The specified range in the original written field may be of length 'zero'; in .

The replacement field may be of length '1' (empty field). In that case the specified range is removed from the written entry field.

In general, the number of written bytes (replacement field length -1) may be smaller, equal, or greater than the replaced range length in the original written field.

NOTE 1: Using this write type, the PP is able to modify one of the entry fields step by step (through several uses of the command), instead of modifying in one step using the 'Save entry' command only.

Replacement field format. The replacement field format sent to the FP shall use the following rules:

- The replacement field shall contain the same *field id* value and *property octet(s)* values as those of the target field.
- The replacement field content (from octet 4 on) shall contain the bytes to be written in the target field content (starting from octet 4 on, in the targeted field). Range bound value 0 shall correspond to the bound before octet 4 in the targeted field.
- The length of the replacement field (octet 2) shall contain the actual replacement field length (i.e. number of replacement bytes +1).

For this selection type, the following table shall be used:

Table 63g: Selection description for selection type "selection from entry id with range"

Selection description within IE	Field within the information element	Standard values within the field/IE	Normative action/comment
	<Entry identifier>	1..127	Concerned entry identifier (see note 1)
	<Field identifier>	0..255	Concerned field id within entry
	<Byte range lower bound>	0..127	The range starts from the indicated lower bound (see note 1)
	<Byte range upper bound>	0..127	The range ends with the indicated upper bound (see notes 1 and 2)
NOTE 1: This field can be extended using the most significant bit up to 16 383. When more than one byte is used for the value, the highbyte shall be sent before the lowbyte (e.g. '1' is coded as 0x81, '128' is coded as 0x01 0x80). NOTE 2: *Byte range upper bound* shall be greater or equal to *Byte range lower bound*. Equality indicates that an insertion is performed (instead of a replacement). *Byte range upper bound* may exceed the number of available bytes in the original written field (in that case the FP automatically replaces it with this number of available bytes).			

Table 63h: Example of write operations with selection type "selection from entry id with range"

Subfield	Value	Encoding
Original 'SMS content' stored in the draft list		
SMS content field id in SMS draft list	08H	08H
Length	14 (decimal)	0EH
Properties	'1100 0000'B	C0H
Content		'48 65 6C 6C 6F 20 47 C3 BC 6E 74 65 72'H
Content decoded as UTF-8 string		'Hello Günter'
'SMS content' field written with range 5-5 (insertion)		
Replacement field	08H	08H
Length	1	06H
Properties	'1100 0000'B	C0H
Content		'20 44 65 61 72'H
New SMS content		'48 65 6C 6C 6F **20 44 65 61 72** 20 47 C3 BC 6E 74 65 72'H
New SMS content UTF-8 decoded		'Hello Dear Günter'
'SMS content' field written with range 10-18 (shortening) (range e.g. 10-127 also works)		
Replacement field	08H	08H
Length	1	01H
Properties	'1100 0000'B	C0H
Content		*<nothing>*
New SMS content		'48 65 6C 6C 6F 20 44 65 61 72'H
New SMS content UTF-8 decoded		'Hello Dear'
'SMS content' field written with range 1-5 (replacement)		
Replacement field	08H	08H
Length	1	02H
Properties	'1100 0000'B	C0H
Content		69H
New SMS content		'48 **69** 20 44 65 61 72'H
New SMS content UTF-8 decoded		'Hi Dear'
NOTE: This example uses an SMS content encoded in UTF-8: however, the write entry command works at byte level and is therefore encoding agnostic.		

Possible error cases.

NOTE 2: As described in clause 7.4.10.4.9, the negative acknowledgement is sent after the 'data packet last' information is received from the PP.

Invalid session number: If the session identifier is wrong the FP shall answer with a negative acknowledgement, with reject reason 'invalid session number'.

Entry not available: If an unknown entry identifier of the list is present in the write description, the FP shall answer with a negative acknowledgement, with reject reason 'entry not available'.

Entry format incorrect: If a PP attempts to write an entry field using an incorrect field format, the FP shall reject the command with a negative acknowledgement, with reject reason "Entry format incorrect".

Content not accepted: If a PP attempts to write an entry field using a correct field format but with an unacceptable field content, the FP shall reject the command with a negative acknowledgement, with reject reason "content not accepted".

Invalid range: The FP shall reject the write entry command with write type 'write from entry id with range' with reject reason 'Invalid range' in the following case:

- The PP uses a *Byte range upper bound* strictly smaller than the *Byte range lower bound*.

PIN code required: If a PP attempts to perform an operation subject to prior correct PIN entry (e.g. PIN protected field modification, etc. See clause 7.4.11.1, entry 'PIN code' for details), the FP shall send a negative acknowledgement, with reject reason 'PIN code required'.

Procedure not allowed: The FP shall reject the write entry command with a negative acknowledgement with reject reason 'procedure not allowed' in the following cases:

- the PP attempts to write a non-editable field (whether actually modified or not);
- the PP attempts to write a field of an unlocked entry. In other words, the 'write entry' command was issued without a previous 'edit entry' locking the entry, or was issued after the 'save entry' unlocking the entry again.

7.4.10.4.12.2 " Write entry confirm" command

This command from FP confirms the write of one entry in a list and returns the position index of the written entry.

Table 63i: Values used within {IWU to IWU} information element for "Write entry confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	03H	List access
	<Command = write entry confirm>	18H	List access command
	<Session identifier>	1..127	Session identifier (see note)
	<Entry identifier>	1..127	Entry identifier (see note)
	<Position index>	1..127	Position index (see note)
	<Total number of available entries>	0..127	Number of available entries in list after writing (see note)
NOTE: This field can be extended using the most significant bit up to 16 383. When more than one byte is used for the value, the highbyte shall be sent before the lowbyte (e.g. '1' is coded as 0x81, '128' is coded as 0x01 0x80).			

The position index indicates the (possibly new) index of the entry in the list.

The 'Total number of available entries' reflects the updated number of entries in the list after the write is performed.

7.4.10.5 Lists and entry fields

All mandatory requirements as defined in clause 7.4.10.5 of TS 102 527-3 [18] until start of clause 7.4.10.5.1 shall apply.

7.4.10.5.1 Fields description

For the fields described in the following clauses:

Field identifier octet:

This field value depends on the list the field is used in, and is indicated for each list in the list definition.

Length octet and related extension bit:

The extension bit of the length octet of a field shall be set to 1 if the length is inferior to 128. If the length is equal or superior to 128, more than one byte is used for the field length, the highbyte shall be send before the lowbyte (e.g. '1' is coded as 81H, '128' is coded as 01H 80H).

The length value (bits 1 to 7 if extension bit is set) shall be the set to the number of octets in the field starting immediately after the last length octet. In particular, it shall include the properties octet defined below.

Empty field (instance):

An empty field instance is defined as a field instance with no value, that is, as a field instance with a length set to '1' (accounting for the 'properties' octet).

NOTE 1: The 'value' of the field is defined here as the set of all octets of the field from octet 4 on. This should not be confused with the 'Value' subfield included in some field definitions.

NOTE 2: Use of an empty field instance in a "save entry" command for field instance deletion or resetting is described in clause 7.4.10.4.5.1.

Properties octet and related extension bit:

The extension bit shall be used to extend the 'properties octet' from 1 to several octets if needed (usual DECT extension bit mechanism). This bit shall be set to 1 if the property bits are coded on 1 octet.

For some fields, an "editable" property bit exists. The "editable" property bit is set to "1" by the FP to indicate to the PP if the field of this entry can be further modified by the PP during a save command. If so, the PP may modify the value (octet 4 and more) **and/or** the property bits (octet 3) of the field in a further save command.

The "editable" bit itself cannot be modified by the PP (even if set to '1'). Any modification of this bit shall be disregarded by the FP. When creating a new entry (with a save command from PP to FP), the PP may set the "editable" property to any value ('0' or '1'). The FP will ignore this value and set it to the desirable value.

NOTE 3: The "editable" bit should be set to '1' by the FP only when strictly necessary. For example call related lists entry fields should not be editable. Contact List entry fields should be editable.

The "editable" property bit does not restrict the set of fields that can be requested in the 'edit' command itself, which is provided for editing an entry as a whole. *Any field (editable or not) can be included in an 'edit entry' command*.

PP requirement: The PP should prevent edition of non-editable fields (i.e. with "editable" property reset), to avoid misleading the user, and shall not insert a non-editable field in the following save entry command (see clause 7.4.10.4.5).

NOTE 4: For some fields, the "editable" property is liable to change over the lifetime of the FP (see "FP requirements" below and annex H); the PP should be carefully implemented in order to take this flexibility into account.

FP requirement: Annex H summarises for each field, if it shall be editable, if it shall not be editable, or if the editable field value is left free to the implementer. In the latter case:

- the "editable" field value may vary with time (or not) within the lifetime of the FP;
- the "editable" field value may even vary from entry to entry for the same field (see annex H, Contact List case).

The "PIN protected" property bit allows the FP to protect the field against unauthorised modification by mandating PIN code entering before performing a save command on the field. See clause 7.4.11.1 for details.

The "PIN protected" property bit itself cannot be modified by the PP (even if set to '1'). Any modification of this bit shall be disregarded by the FP. When creating a new entry (with a save command from PP to FP), the PP may set the "PIN protected" property to any value ('0' or '1'). The FP will ignore this value and set it to the desirable value.

NOTE 5: Only editable fields (with "editable" property set to 1) may need to be 'PIN protected'.

Other property bits shall be set correctly by the PP when using the 'save' command.

Error cases are described for each command in dedicated clauses (see clause 7.4.10.4).

7.4.10.5.1.1 Field 'List identifiers'

All mandatory requirements as defined in clause 7.4.10.5.1.1 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.2 Field 'Number'

See table 63j below.

Table 63j: 'Number' Field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = Number								1
	0/1	Length (L)							2
	0/1	editable	internal	own	x	x	x	PIN protected	3
	1st digit								4
	2nd digit								
	…								

Each digit shall be out of 30H…39H, 23H, 2AH, 05H, 15H.

For octet 3, each bit indicates whether a property of the field is given (1) or not (0). In the case of 'x', the value is reserved for future use.

Length: In the call lists, for incoming accepted calls, if the number information is not provided by the network to the FP (e.g. no CLIP or restricted CLIP received), the FP shall set the length to 1.

'Internal' property: The 'Internal' property is used to identify internal phone numbers. It shall be set to 1 when the Number represents a Terminal identity number (see clause 7.4.10.5.1.2.1). It shall be set to 1 in all entries of the Internal Names List.

NOTE 1: As the call related lists do not include internal calls, this property is only set for the Internal Names List (see clause 7.4.10.5.8).

'Own' property: The 'Own' property is used to indicate its own entry to the PP which consults the Internal Names List. The FP shall set the 'Own' property to '1' for the PP's own entry, and to '0' for all other entries in that list. It is not used in other lists (set to 0 in other lists).

The PP should prevent the user from using the entry with 'Own' property set to '1' in the Internal Names List for placing a call, so that the user will not attempt an internal call towards its own PP.

If a call is nevertheless attempted by a PP towards itself, the FP shall release the call properly.

NOTE 2: The Contact List does not use the 'Number' field, but the specific 'Contact number' field (see clause 7.4.10.5.1.11).

NOTE 3: 'Editable' property is set to "0" by the FP when the field is used in the Internal Names List.

'PIN protected' property: The 'PIN protected' property shall be set to '0', unless the field 'Number' is used:

- as 'Dialling Prefix' field in the Line Settings List (see clause 7.4.11.4.4);
- as 'Blocked number' field in the Line Settings List (see clause 7.4.11.4.7);
- as 'Terminal id number' field in the Internal Names List (see clauses 7.4.10.5.8 and 7.4.10.5.1.2.1).

<<Text changed from TS 102 527-3 [18] (addition):

- or as 'DTAM Number' field in the 'DTAM Settings List (see clause 7.4.36.5.2);

End of changes>>

In which cases, this property can be set to '0' or '1' by the FP depending on its security policy on those lists. See clause 7.4.11.1, 'PIN code' clause, for more information.

7.4.10.5.1.3 Field 'Name'

All mandatory requirements as defined in clause 7.4.10.5.1.3 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.4 Field 'Date and time'

All mandatory requirements as defined in clause 7.4.10.5.1.4 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.5 Field 'Read status'

All mandatory requirements as defined in clause 7.4.10.5.1.5 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.6 Field 'Line name'

All mandatory requirements as defined in clause 7.4.10.5.1.6 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.7 Field 'Line id'

All mandatory requirements as defined in clause 7.4.10.5.1.7 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.8 Field 'Number of calls'

All mandatory requirements as defined in clause 7.4.10.5.1.8 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.9 Field 'Call type'

All mandatory requirements as defined in clause 7.4.10.5.1.9 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.10 Field 'First name'

All mandatory requirements as defined in clause 7.4.10.5.1.10 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.11 Field 'Contact number'

All mandatory requirements as defined in clause 7.4.10.5.1.11 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.12 Field 'Associated melody'

All mandatory requirements as defined in clause 7.4.10.5.1.12 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.13 Field 'Call interception'

All mandatory requirements as defined in clause 7.4.10.5.1.13 of TS 102 527-3 [18] shall apply.

7.4.10.5.1.14 Proprietary fields

All mandatory requirements as defined in clause 7.4.10.5.1.14 of TS 102 527-3 [18] shall apply.

7.4.10.5.2 "List of Supported Lists" entry fields

All mandatory requirements as defined in clause 7.4.10.5.2 of TS 102 527-3 [18] shall apply.

7.4.10.5.3 "Missed Calls List" entry fields

All mandatory requirements as defined in clause 7.4.10.5.3 of TS 102 527-3 [18] shall apply.

7.4.10.5.4 "Outgoing Calls List" entry fields

All mandatory requirements as defined in clause 7.4.10.5.4 of TS 102 527-3 [18] shall apply.

7.4.10.5.5 "Incoming Accepted Calls List" entry fields

All mandatory requirements as defined in clause 7.4.10.5.5 of TS 102 527-3 [18] shall apply.

7.4.10.5.6 "All Calls List" entry fields

All mandatory requirements as defined in clause 7.4.10.5.6 of TS 102 527-3 [18] shall apply.

7.4.10.5.7 "Contact List" entry fields

All mandatory requirements as defined in clause 7.4.10.5.7 of TS 102 527-3 [18] shall apply.

7.4.10.5.8 "Internal Names List" entry fields

All mandatory requirements as defined in clause 7.4.10.5.8 of TS 102 527-3 [18] shall apply.

7.4.10.5.9 "DECT System Settings List" entry fields

See clause 7.4.11.3.

7.4.10.5.10 "Line Settings List" entry fields

See clause 7.4.11.4.

7.4.10.5.11 "All Incoming Calls List" entry fields

All mandatory requirements as defined in clause 7.4.10.5.11 of TS 102 527-3 [18] shall apply.

7.4.10.5.12 "Line and Diagnostic Statuses List" entry fields

See clause 7.4.34.3.

7.4.10.6 List access service call and interactions with voice calls

All mandatory requirements as defined in clause 7.4.10.6 of TS 102 527-3 [18] shall apply.

7.4.10.7 Generic sequence charts for list access

All mandatory requirements as defined in clause 7.4.10.7 of TS 102 527-3 [18] shall apply.

7.4.10.8 Use case examples for list access

All mandatory requirements as defined in clause 7.4.10.8 of TS 102 527-3 [18] shall apply.

7.4.10.9 Extended list change notification

7.4.10.9.1 General requirements

The present 'Extended list change notification' procedure describes the use of the <<List change details>> IE accompanying a list change notification (see clause 7.4.10.2). a missed call notification (see clause 7.4.1.3) and an SMS Message waiting notification (see clause 7.4.1.6).

NOTE 1: The <<List change details>> IE is described in clause 7.7.57 of EN 300 175-5 [5]).

NOTE 2: The information conveyed by an 'Extended list change indication' is therefore a superset of the information contained in a 'list change indication'.

Caching. The <<List change details>> IE allows the PP to maintain a local copy of a list (caching) while limiting its accesses to the corresponding list on FP side.

NOTE 3: A full resynchronisation of the list, although still necessary in some cases (especially when the PP is out of range or switched-off for some time and misses notifications), will be however needed less frequently.

In order to update its local copy of the list, the PP may retrieve the changed entries (i.e. added and/or modified) by use of the '*Read selected entries*' command with selection type '*selection from entry identifiers*' (see clause 7.4.10.4.11). The PP may request changed entries with one or several uses of the command.

NOTE 4: The PP should not request deleted entries. However, if it does so, the FP answers in best effort mode. Additionally, if *all* requested entries do not exist (anymore) in the list, the FP answers with a negative acknowledgement (see Read selected entries, in clause 7.4.10.4.11).

When using "extended list change notifications":

- requirements of clause 7.4.10.2.1 (list change notifications/General rules in TS 102 527-3 [18]) are superseded by clause 7.4.10.9.2 below; this also applies in the few cases where the <<List change details>> IE is not used;

NOTE 5: Clause 7.4.10.9.2 remains compatible with former clause 7.4.10.2.1 but gives more specific requirements.

- while clause 7.4.10.2.2 (in TS 102 527-3 [18]) about mandatory notifications still applies.

NOTE 6: In other words, as soon as both the PP and the FP implement extended list change indications extended list change notifications are mandatory for the same lists.

Simple list change indication. For the sake of clarity, list change indications as described in clauses 7.4.1.4 and 7.4.10.2 are called here *simple list change indications*.

NOTE 7: Simple list change indications are still used in the context of the present procedure, and are considered as a FP suggestion for a full resynchronisation of the list, sent to the PP. As indicated below (see table 70c in clause 7.4.10.9.2.2), events such as 'base reset' and 'location registration' always trigger a simple list change indication. Other events may trigger a simple list change indication in some cases (see clause 7.4.10.9.2.3).

Extended list change indication. In addition to simple list change indication, an extended list change indication contains a <<LIST CHANGE DETAILS>> IE in the same message, with the following additional data:

- the *originating PP* field. This field shall always be fulfilled if all changes specified are originating from the same PP. If changes originate from several PPs and/or from the FP, the field value shall be set to '0' (see EN 300 175-5 [5], clause 7.7.57).

- *two series of entry ids* (one for "added and/or modified entries", and the other one for "deleted" entries).

Use of the extended list change indication. Towards PPs that support the Extended list change indication, the FP shall use this extended indication format instead of the *Simple list change indication* format, unless the FP wants to suggest a full resynchronisation of the list.

If the PP implements the 'extended list change indication' (i.e. to be able to perform list caching), it shall set the corresponding <<TERMINAL-CAPABILITY>> bit: "Support of the extended list change indication".

Notifications shall be sent by the FP by use of the "generic event notification" procedure, together with the current procedure. For the indication of a list change and the values to be used in <<Events notification>>, <<List change details>>, and <<Call information>> information elements, consider table 70a.

Table 70a: Values used within {FACILITY} (or other) message for extended list change indication

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<Events notification>>	<Event type>	3	List change indication
	<Event sub type> *<List identifier>*	All	List identifier (see clause 7.4.10.3)
	<Event multiplicity >	0..16 383 (note 1)	Total number of entries in the list (and with the specified line id if applicable; see note 2)
<<List change details>>			
	<Originating PP>	All 0	- Terminal id number of the PP (when all changes originate from a single PP - Otherwise '0' (changes from several PPs and/or the FP)
	<Identifiers of added and/or modified entries> *<Entry id>*	*1..16 383*	A first series of entry identifiers An entry id cannot be 0
	<Identifiers of deleted entries> *<Entry id>*	*1..16 383*	A second series of entry identifiers
<<Call Information>>			**Optional**. See note 2
	<Identifier type>	0	Line identifier
	<Identifier sub type>	'Line identifier for external call', 'Relating to', or 'All lines'	'None' value is excluded
	<Identifier value>	All	The line id value itself if present (absent if 'All lines' subtype is used)
NOTE 1: 'Event multiplicity' is coded on one or two octets. See note 1 at table 39. NOTE 2: <<Call information>> IE shall be present if and only if the list contains a line id field. This only excludes the three following lists: 'List of Supported Lists', 'Internal Names List, and 'DECT System Settings List'.			

7.4.10.9.2 Sending rules

This clause supersedes clause 7.4.10.2.1 (in TS 102 527-3 [18]) for the case an extended list change indication is used. Clause 7.4.10.9.1 indicates when the PP or FP can assume that extended list change indication is used.

If extended notification is used, the present clause precises the meaning of a notification with no <<List change details>> IE. In the context of the present clause, such a notification indicates that the FP suggests a full resynchronisation of the list (see clause 7.4.10.9.2.3).

The present clause also gives more specific requirements e.g. as to when a notification is sent (see clause 7.4.10.9.2.2).

7.4.10.9.2.1 Aggregation of notifications

Aggregation of notifications. The notifications of several consecutive events can be aggregated in only one notification for all these events.

When using the 'Extended list change indication', the FP may perform aggregation of notifications according to the following rules:

Rule 1. Aggregation shall only be possible for events concerning the same list and the same line.

Rule 2. Aggregation shall not cause an event to be notified outside of the time periods defined in clause 7.4.10.9.2.2 ('Sending times'). In other words, clause 7.4.10.9.2.2 applies event by event whether aggregation is used or not.

Rule 3. Whether aggregation is used or not, notification for an entry-specific event (addition, modification and deletion) shall always include the corresponding entry id, except if a request for full resynchronisation of the list is used by the FP (see clause 7.4.10.9.2.3). In other words, when a notification is sent for given line and list, and if full resync is not used, all concerned entry ids shall be sent to the PP, in one or several messages.

Rule 4. If several successive events concern the same entry and are notified together, the corresponding entry id shall be specified only once in the <<List change details>> IE. The event type to be used in the aggregated notification can be determined thanks to the following event type composition table:

Table 70b: Event type composition table for aggregation of events concerning the same entry

Previous aggregated event type (or 1st event type)	Additional event type	Resulting aggregated event type (note 1)
Add and/or modify	Add and/or modify	Add and/or modify
Add and/or modify	Delete	Delete
Delete	Add and/or modify	Add and/or modify (note 2)
Delete	Delete	N/A
NOTE 1: Entry addition and modifications of an entry are not distinguished in the notification and are called "Add and/or modify" events, as well as allowed combinations of such events. NOTE 2: This combination of successive events indicates reuse of the entry id after deletion of the entry. It should not occur with careful handling of entry ids (cycle buffering).		

NOTE: Rule 4 is consistent with rule 3 because rule 3 only requires the presence of the entry id for individual events, and rule 4 requires this presence with multiplicity '1' if several events share the same entry id.

7.4.10.9.2.2 Sending time

The following table describes the event types that shall trigger an extended list change notification from the FP and their sending time.

Table 70c: Event types triggering a 'list change indication' with or without list change details

Event type	Specified line in <<CALL-INFORMATION>> IE		Targeted PPs	*Optional aggregation (note 1)*	*Mandatory sending time*
Entry created, modified, or deleted by PP in any list	list with line id field	line id subtype and value (if any value) of the concerned entry (note 2)	At least all PPs attached to the line id (notes 3, 4)	Over the session, only for entries sharing the same list id and line id	Any time from beginning of session until end of session + <CC.NG.02>
	list with no line id field	None (no <<CALL-INFO>> IE)	All PPs (note 3)	Over the session	
Incoming, outgoing, or missed call (note 5)	Line where the call occurred		At least all PPs attached to the line where the call occurred (notes 3, 4)	Possible if calls where on the same line and their time intervals allow a common sending time (see sending time rules)	Any time from beginning of call until end of call + <CC.NG.02>
Entry created, modified, or deleted by FP in any list (note 12)	list with line id field	line id subtype and value (if any value) of the concerned entry (note 2)	At least all PPs attached to the line id (notes 3, 4)	Only for entries sharing the same list id and line id	Any time from event time to event time + <CC.NG.02>
	list with no line id field	None (no <<CALL-INFO>> IE)	All PPs (note 3)	Possible for entries of the same list	
Base reset (notes 6, 7)	list with line id field	Line for which the notification is sent (note 9)	At least all PPs attached to the line (note 4)	No aggregation No details (note11)	When FP reset is completed
	list with no line id field	None (no <<CALL-INFO>> IE)	All PPs		
Location registration (note 8)	list with line id field	Line for which the notification is sent (note 10)	The PP performing location registration only	No aggregation No details (note 11)	When location registration is successfully completed
	list with no line id field	None (no <<CALL-INFO>> IE)			

Event type	Specified line in <<CALL-INFORMATION>> IE	Targeted PPs	*Optional aggregation (note 1)*	*Mandatory sending time*

NOTE 1: As indicated in clause 7.4.10.9.2.1, aggregation is optional and e.g. may therefore cover only part of a LiA session changes.
NOTE 2: If several events are notified together (aggregation), they shall have the same line id subtype and value, or the same subtype only if 'All lines' subtype is used (value field is then absent).
NOTE 3: The PP may ignore the <<LIST-CHANGE-DETAILS>> IE if it does not cache the list.
NOTE 4: FP is allowed to send it to all PPs, independently of attachments. If the PP is not attached to the specified line, it may ignore the notification.
NOTE 5: These events correspond to a special case of FP initiated entry creation.
NOTE 6: This event triggers notifications for each list for which notification is mandatory (see clause 7.4.10.2.2).
NOTE 7: If a list is lost (i.e. erased from memory) as a result of the base reset, a 'list change indication' is sent with <Event multiplicity> field set to '0'.
NOTE 8: E.g. after PP getting into range again or PP switched on again.
NOTE 9: One notification is issued per line and broadcasted to at least all PPs attached to the line.
NOTE 10: One notification is issued per line the PP is attached to.
NOTE 11: No <<List change details>> IE is sent here to the PP, so that a full resynchronisation of the list is systematically suggested (in the case where the PP caches the list).
NOTE 12: This excludes the case of entry addition in call lists (handled in the previous row). This includes list management from a web interface (e.g. DECT settings management), subscription registration and de-registration of a PP (also impacting the Internal Names List), etc.

7.4.10.9.2.3 Full resynchronisation of a list

By sending a list change indication with no associated <<List change details>> IE, the FP suggests a full resynchronisation of a list to the PP. However, depending on PP implementation or on the current circumstances, the PP can ignore this suggestion from the FP.

The FP shall at least suggest a full resynchronisation in the following cases:

- Location registration of a PP (full resynchronisation systematically suggested to the concerned PP).
- Base reset (full resynchronisation systematically suggested to all PPs).

The FP may suggest a full resynchronisation in the following cases:

- Too many entries have been changed in the meantime. FP shall only use this possibility if:
  - either the number of changed entries would necessarily require more than one {FACILITY} message;
  - or the number of changed entries exceeds 50 % of the total number of entries in the list.

EXAMPLE: If 2 entries out of 4 have changed, the second criterion does not apply.
If 3 entries out of 4 have changed, the second criterion applies.

7.4.11 DECT system and line settings

7.4.11.1 DECT system and line settings considerations

All mandatory requirements as defined in clause 7.4.11.1 of TS 102 527-3 [18] shall apply.

7.4.11.2 Interactions between registration, attachments of handsets and lists

All mandatory requirements as defined in clause 7.4.11. of TS 102 527-3 [18] shall apply.

7.4.11.3 DECT System Settings List

The following text replaces clause 7.4.11.3 of TS 102 527-3 [18] and shall apply (see tagged changes).

The following entry fields are defined for the (singular) DECT system list entry.

<<Text changed from TS 102 527-3 [18] (modification, Field "Base manual transmit power control" is added):

Table 71: Entry fields for the (singular) DECT System Settings list entry

Field identifier	Field	Length constraint	Default value (note 1)	Base reset impacted	Normative action/comment	Clause
01H	Current PIN code	= 5	YES/MD	MD	Before a PIN protected field (i.e.: a new PIN code) can be saved an edit/save of the current PIN code is required	7.4.11.3.1
02H	Clock master	= 2	YES/MD	MD	Defines the entity which sets date an time for the DECT system (PP or FP)	7.4.11.3.2
03H	Base reset	= 2	YES	YES	Sets settings back to default factory values	7.4.11.3.3
04H	FP IP address / type	= 1	MD	MD	DHCP or static	7.4.11.3.4
05H	FP IP address / value	≥ 1	MD	MD	Editable only for static IP address	7.4.11.3.5
06H	FP IP address / subnet mask	≥ 1	MD	MD	Editable only for static IP address	7.4.11.3.6
07H	FP IP address / gateway	≥ 1	MD	MD	Only for static IP address	7.4.11.3.7
08H	FP IP address / DNS server	≥ 1	MD	MD	Only for static IP address 'FP IP address / DNS server is a multiple instance field	7.4.11.3.8
09H	FP version / Firmware version	≥ 2, ≤ 20	YES/MD	NO	Software version of the FP	7.4.11.3.9
0AH	FP version / Eeprom version	≥ 1, ≤ 20	MD (note 2)	NO	Eeprom version of the FP	7.4.11.3.10
0BH	FP version / Hardware version	≥ 2, ≤ 20	YES/MD	NO	Hardware version of the FP	7.4.11.3.11
0CH	Emission mode	≥ 2 (note 3)	YES/MD	MD	Bitmap for activating/deactivating the 'No Emission mode', etc.	7.4.11.3.12
0DH	New PIN code	= 5	YES/MD	MD	Allows modification of the PIN code	7.4.11.3.13
0EH	Base manual transmit power control	= 2	MD	MD	Bitmap for activating/deactivating the Part 5 'Base manual transmit power control' mode	7.4.11.3.14

NOTE 1: For optional or conditional fields, the default value only applies when the field is implemented.
NOTE 2: The field "Eeprom version" is mandatory but may be empty (length = 1) if the system does not use EEPROM.
NOTE 3: For the present revision of the present document, the length is always 2 (extensible field).

End of changes>>

Field identifiers from 0EH to 80H are reserved for further standardization and shall not be used.

Field identifiers from 81H to FFH are reserved for proprietary fields and may be freely used by implementers for coding of proprietary features.

Default value: it is the value of the setting when product is manufactured:

- "YES" means that a default value is standardized. See corresponding setting clause definition.
- "MD" means that a default value shall be provided by the manufacturer (could also be empty by setting the length to 1).
- "YES/MD" means that a default value shall be provided by the manufacturer, which shall not be empty.

"Base reset" impacted: describes the impact of the "Base reset" setting on this particular setting:

- "YES" means setting is reset to default value when "Base reset" setting is activated.

- "NO" means setting is not impacted by "Base reset" setting.
- "MD" means manufacturer defines if the setting is impacted or not by the "Base reset" setting.

7.4.11.3.1 Field 'Current PIN code'

All mandatory requirements as defined in clause 7.4.11.3.1 of TS 102 527-3 [18] shall apply.

7.4.11.3.2 Field 'Clock master'

All mandatory requirements as defined in clause 7.4.11.3.2 of TS 102 527-3 [18] shall apply.

7.4.11.3.3 Field 'Base reset'

All mandatory requirements as defined in clause 7.4.11.3.3 of TS 102 527-3 [18] shall apply.

7.4.11.3.4 Field 'FP IP address / type'

All mandatory requirements as defined in clause 7.4.11.3.4 of TS 102 527-3 [18] shall apply.

7.4.11.3.5 Field 'FP IP address / value'

All mandatory requirements as defined in clause 7.4.11.3.5 of TS 102 527-3 [18] shall apply.

7.4.11.3.6 Field 'FP IP address / subnet mask'

All mandatory requirements as defined in clause 7.4.11.3.6 of TS 102 527-3 [18] shall apply.

7.4.11.3.7 Field 'FP IP address / gateway'

All mandatory requirements as defined in clause 7.4.11.3.7 of TS 102 527-3 [18] shall apply.

7.4.11.3.8 Field 'FP IP address / DNS server'

All mandatory requirements as defined in clause 7.4.11.3.8 of TS 102 527-3 [18] shall apply.

7.4.11.3.9 Field 'FP version / Firmware version'

All mandatory requirements as defined in clause 7.4.11.3.9 of TS 102 527-3 [18] shall apply.

7.4.11.3.10 Field 'FP version / Eeprom version'

All mandatory requirements as defined in clause 7.4.11.3.10 of TS 102 527-3 [18] shall apply.

7.4.11.3.11 Field 'FP version / Hardware version' field

All mandatory requirements as defined in clause 7.4.11.3.11 of TS 102 527-3 [18] shall apply.

7.4.11.3.12 Field 'Emission mode'

All mandatory requirements as defined in clause 7.4.11.3.12 of TS 102 527-3 [18] shall apply.

7.4.11.3.13 Field 'New PIN code'

All mandatory requirements as defined in clause 7.4.11.3.13 of TS 102 527-3 [18] shall apply.

7.4.11.3.14 Field 'Base manual transmit power control'

The 'Base manual transmit power control' field allows to activate or deactivate the 'Green Features' on the FP from one of the PPs. It shall be coded as in table 71a.

Table 71a: Base manual transmit power control' field

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = Base manual transmit power control							1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	X	PIN protected	3
	0/1	reserved						BTPC	4

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect the 'Base manual transmit control' field against unauthorised modification, depending on its security policy.

Bits 2 to 6 of octet 3 are reserved for further standardization and shall be set to "0".

Base manual transmit control mode bitmap (octet 4):

This field is a bitmap octet group.

Bits	7 6 5 4 3 2 1	Meaning
	x x x x x x 0	'Base manual transmit power control' mode deactivated
	x x x x x x 1	'Base manual transmit power control' mode activated

Bit 1: 'Base manual transmit power control' mode (BTPC). If bit 1 is set, the FP shall activate the 'Base manual transmit power control' mode MAC service [NG1.A.4]. Otherwise the FP shall deactivate it.

Bits 2 to 7 of octet 4 are reserved for further standardization and shall be set to "0".

7.4.12 Calling line identity restriction (CLIR)

All mandatory requirements as defined in clause 7.4.12 of TS 102 527-3 [18] shall apply.

7.4.13 Call forwarding (external calls)

All mandatory requirements as defined in clause 7.4.13 of TS 102 527-3 [18] shall apply.

7.4.14 DTMF handling

All mandatory requirements as defined in clause 7.4.14 of TS 102 527-3 [18] shall apply. See ITU Q.23 [i.8] and ITU Q.24 [i.9] for further information.

7.4.15 Tones provision

All mandatory requirements as defined in clause 7.4.15 of TS 102 527-3 [18] shall apply. See ITU E.180 [i.10] and ITU E.180 Supplement 2 [i.11] for further information.

7.4.16 Headset management

All mandatory requirements as defined in clause 7.4.16 of TS 102 527-3 [18] shall apply.

7.4.17 UTF-8 CNIP

All mandatory requirements as defined in clause 7.4.17 of TS 102 527-3 [18] shall apply.

7.4.18 Location registration after re-lock

All mandatory requirements as defined in clause 7.4.18 of TS 102 527-3 [18] shall apply.

7.4.19 PT alerting using pattern signalling

All mandatory requirements as defined in clause 7.4.19 of TS 102 527-3 [18] shall apply.

7.4.20 Date and Time recovery

All mandatory requirements as defined in clause 7.4.20 of TS 102 527-3 [18] shall apply.

7.4.21 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.22 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.23 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.24 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.25 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.26 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.27 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.28 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.29 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.30 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.31 Void

NOTE: Descriptions of new features and procedures specific to NG-DECT part 5 start at clause 7.4.32. This leaves room for features and procedures that may be designed in the future but which are not specific to Part 5. That is, the new features that will apply to both Part 3 and Part 5, because they are considered important to both parts, will not be interleaved but will be in contiguous subclauses.

7.4.32 Contact number and name matching on outgoing call

7.4.32.1 Contact number and name matching on outgoing call

The present procedure applies to a PP and the FP involved in any external outgoing voice calls (first or parallel). This procedure shall be used by the FP in order to inform the PP of the remote party number and name in the following cases:

- **Case 1 (Contact List matching):** the dialled digits sent by the PP correspond to an existing entry of the Contact List.
- **Case 2 (contact provision by network):** the remote party is forwarded or re-routed by the network to another number with possible associated name (e.g. the remote party activated a call forwarding).

NOTE 1: This procedure may also be used for internal calls, especially to indicate the remote party handset number and name in the case of an internal general call. But this out of the scope of the present document.

Case 1: Contact List matching

When proceeding an outgoing call (first or parallel), the FP shall search in the Contact List if the dialled digits match an entry in this list. If so, the FP shall send to the PP within any applicable CC message (see below):

- a <<Called Party Name>> IE filled with the contact 'name' and 'first name'.

If the 'Name' and 'First name' fields of Contact List entry found are both empties, no <<Called Party Name>> IE shall be sent at all.

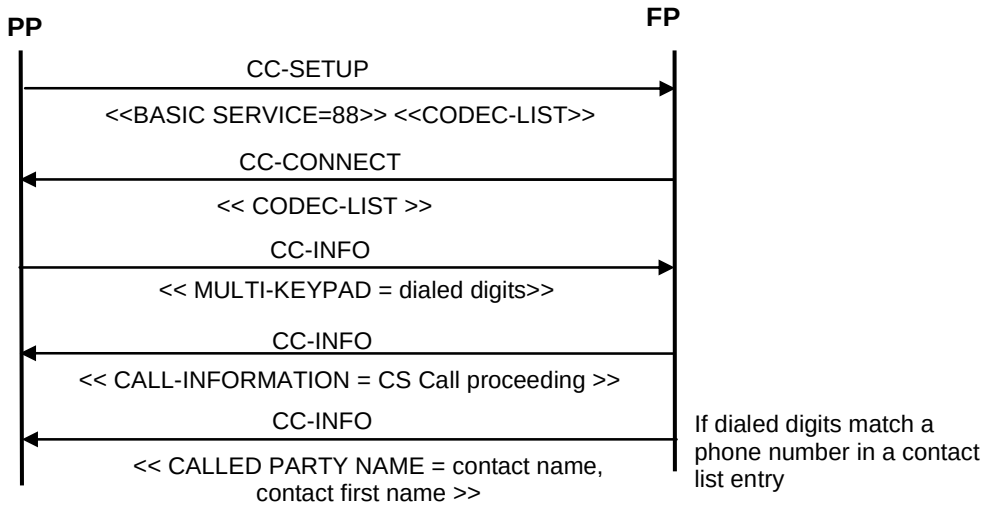


Figure 80-1: Contact List matching on outgoing call (early {CC-CONNECT} use case)

NOTE 2: The Call Control message sequence in figure 80-1 should be understood as an example. The real sequences may also contain different Call Control messages, or Call Control messages in another order, or Call Control messages with other contents.

For the contact name indication, the format to be used in all messages is shown in following table 75-1:

Table 75-1: Values added within any applicable CC message when Contact List matching

<<Called party name>>			
	<Used alphabet>	UTF-8	
	<Screening indicator>	User-provided	
	<Called party name>	All	Name of Contact List entry
	<Called party first name>	All	First name of Contact List entry

Case 2: contact provision by network

When proceeding an outgoing call (first or parallel), if the call is forwarded or re-routed by the remote party to an other party, the FP shall send to the PP within any applicable CC message (see below):

- A <<Called Party Number>> IE filled with the "forwarded-to" number provided by the network (number to which the remote party has been forwarded to).
- Additionally, if provided by the network, a <<Called Party Name>> IE with the name corresponding to this new number. <Screening indicator> shall be set to 'Network provided' to indicate the called party name origin.

NOTE 3: The current use case 2 may apply after case 1 occurred, for a first call or for a second outgoing call. In other words, the PP will be ready to receive twice remote party information for any outgoing call.

NOTE 4: In the very specific case where the forwarded-to number matches a phone number in a Contact List entry, a <<Called Party Name>> IE with the name corresponding to this new number will be used as in use case 1. The <Screening indicator> field will be set to 'User provided'.

NOTE 5: According to Generic Access Profile (GAP) (see EN 300 444 [11] clause 8.10), the << Called Party Number >> information element is no longer used to send en-bloc dialling in the PP to FP direction. It can be used in combination with the << Called Party Name >> information element to send called party details in the FP to PP direction.

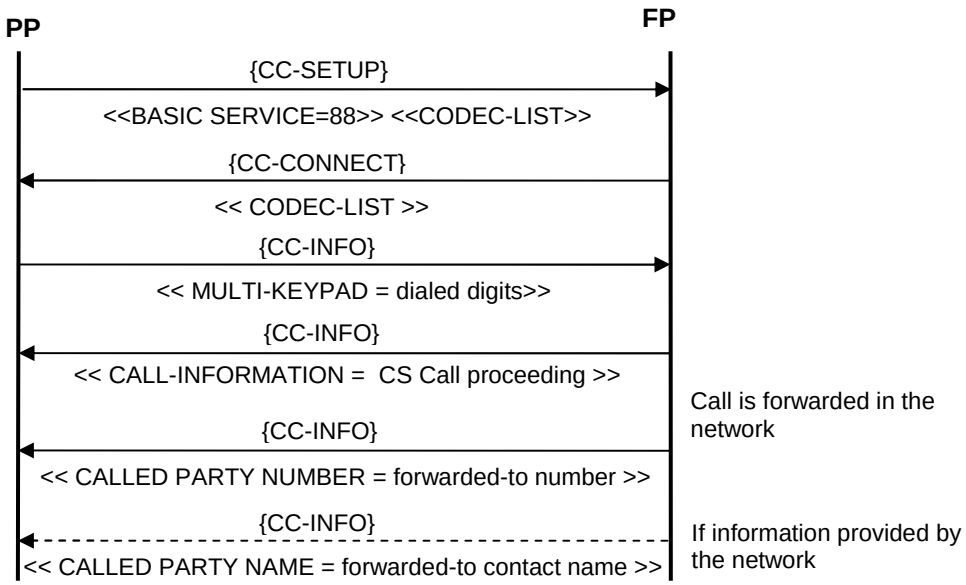


Figure 80-2: Contact provision by the network (early {CC-CONNECT} use case)

NOTE 6: The Call Control message sequence in figure 80-2 should be understood as an example. The real sequences may also contain different Call Control messages, or Call Control messages in another order, or Call Control messages with other contents.

For number and name indications, the format to be used in all messages is shown in following tables 75-2 and 75-3.

Table 75-2: Values added within any applicable CC message for the number when provided by the network

Information element	Field within the information element	Standard values within the field/information element	Normative action/comment
<<Called party number>>			
	<Number Type>	Unknown	
	<Numbering plan identification>	Unknown	
	<Called party address>	All	"Forwarded-to" number transmitted by the network

Table 75-3: Values added within any applicable CC message for the name when provided by the network

<<Called party name>>			
	<Used alphabet>	UTF-8	
	<Screening indicator>	Network provided	Called party name information provided by the network
	<Called party name>	All	Name provided by the network
	<Called party first name>	All	First name provided by the network (if any)

Common requirements to both cases:

These IEs shall be sent together with the call id of the concerned call:

- For a 'non early {CC-CONNECT}' implementation of the FP: either included in the {CC-CALL-PROC}, {CC-ALERTING}, {CC-CONNECT}, or {CC-INFO} message.
- For an 'early {CC-CONNECT}' implementation of the FP: in a {CC-INFO} message following the {CC-CONNECT}.

Therefore, called party name and number shall be sent by the FP in one of the following stages:

- between 'CS call proc' status indication and 'CS call alerting' status indication; *or*
- between 'CS call alerting' status indication and 'CS call connect' indication; *or*
- after 'CS call connect' status indication.

When both number and name are sent to the PP, on PP side it is sufficient to display the name. It is optional to display both.

NOTE 7: Called party name and number might not fit in a single message; in that case one or more additional {CC-INFO} message(s) are used.

7.4.33 Contact number and name matching on incoming call

The present procedure applies to a PP and the FP involved in an external incoming voice call (first or parallel), for which at least a CLIP is received from the network. This procedure shall be used by the FP in order to populate the CNIP directed to the PP with data from a matching Contact List entry.

Matching Contact List entry. A matching Contact List entry is an entry for which one of the included telephone numbers matches the CLIP received from the network during an incoming call.

FP requirements. In the case of an incoming call for which at least a CLIP value is received, the FP shall behave as follows:

- If a matching entry exists in the Contact List, the FP shall use the 'Name' and 'Firstname' field values in order to create an artificial CNIP and send it to the PP. This requirement only applies if the 'Name' and 'Firstname' fields are not both empty. The artificial CNIP shall be preferred over the CNIP received from the network (if any). See table 75-4 for the parameters used for an artificial CNIP.
- If there is no matching entry in the Contact List, or if there is one, but both the 'Name' and 'Firstname' fields are empty, the FP shall use the CNIP received from the network (if any), with all received parameters used 'as is'.
- Otherwise, the FP shall not send any CNIP to the PP.

PP requirements. The PP shall handle the artificial CNIP as any other CNIP. In other words, all PP requirements applicable for a regular CNIP that are stated in other related procedures (see clause 6.10, GAP.N.34 feature) shall also apply for the artificial CNIP.

Table 75-4: Values used for an artificial CNIP populated by the FP with the Contact List

Information element	Field within the information element	Standard values within the field/information element	Normative action/comment
<<Calling party name>>			
	<Presentation indicator>	Presentation allowed	(note)
	<Screening indicator>	User provided, verified and passed	(note)
	<Calling party name>	All	(note)
NOTE: If a CNIP is received from the network, this network originating CNIP and its parameters shall be ignored, as the CNIP sent to the PP is constructed here from the CLIP and a matching Contact List entry.			

7.4.34 Line and diagnostic information

7.4.34.1 General requirements

The 'Line and diagnostic information' feature allows the FP to inform PPs of the status (and status changes) of 'elements' located on FP side, by modifying entries in the Line and Diagnostic Statuses List, and by sending notifications to the PPs about these changes.

The 'Line and diagnostic statuses' list shall always contain the current value of a status, and shall not store former values of this status. The Line and Diagnostic Statuses List is read-only.

Status change notification. A 'Generic events notification' shall be used for the purpose of notifying the PP of any status change. Details about this notification are given in clause 7.4.1.5.

Related line. A status may relate (or not) to a line.

- When relating to a line, the status value shall be stored in the list entry with corresponding line id field value. When notifying a line relating status change, the corresponding line-id shall be indicated in the <Event multiplicity> field included in the <<EVENTS-NOTIFICATION>>IE.
- When not relating to a line, the status value shall be stored in the list entry with line id field value 'None'. When notifying a non line relating status change, the <Event multiplicity> field value is don't care.

PP side requirements:

A diagnostic information may target the end-user, the PP, or the after-sales service.

Diagnostic information display. When a line or diagnostic information is directed at the end-user, the PP should—after consultation of the 'Line and diagnostic information' list if needed— display it on the screen of the handset (especially in idle mode), in order to inform the user as directly as possible. The exact information displayed is out of the scope of the present document. It may for example take the form of a displayed text or icon.

The diagnostic information that is mandatory to display is listed in table 75-5 of clause 7.4.34.2.

The PP does not need to store any diagnostic information for other purposes than displaying it.

EXAMPLE: A PP with display constraints could keep in memory more (still valid) information than it is able to display at a given time.

Remote consultation (list access mode). The PP shall give access to all supported fields of the Line and Diagnostic Statuses List. In other words, the user (or after-sales service) is able to retrieve all available information. MMI presentation of the information is left up to the implementer.

Virtual Line and Diagnostic Statuses List. The PP may implement a virtual Line and Diagnostic Statuses List by hiding from the user the entries concerning lines the PP is not attached to. However, the default behavior is that all the diagnostic information is shared among all PPs independently of PP's attachments to lines.

NOTE: On the contrary, displayed icons should only concern lines the PP is attached to.

FP side requirements:

The FP shall implement diagnostic information for all mandatory elements (see clause 6.10 and 7.4.34.2). More specifically, the FP shall provide:

- one list entry for every line existing in the system;
- an additional list entry for statuses relating to the system and not to a specific line. For this entry:
  - Line id value 'None' shall be used.
  - Only the 'Line id', 'OK status' and 'Diagnostic error status' fields are relevant. Therefore, for the other fields, the FP shall use the smallest allowed length (see clause 7.4.34.3, table 75-6, 'length constraint') and the PP shall ignore the field value.

Events triggering notification. The FP shall send diagnostic indications to the PP at times described in table 75-5, column 'Status change triggered by/at' (see clause 7.4.18.2).

Targeted PPs. The subset of PPs receiving the diagnostic indication is described in clause 7.4.1.5.

Sorting of the list: The Line and Diagnostic Statuses List shall be sorted by default using the "Line id" field (see clause 7.4.10.3). If default sorting is used, the non line relating list entry (with line id='None' = '127') shall therefore be the last entry in the list.

Commands: The 'Edit entry', 'Save entry', 'Delete entry', 'Delete list' commands shall not be invoked by any PP on the read-only 'Line and Diagnostic Statuses List, and the FP shall answer them with negative acknowledgement with reject reason "procedure not allowed" (see clause 7.4.10.4.9).

PIN code: In the scope of the present document, no field of the list is PIN protected.

7.4.34.2 Exposed diagnostic information

The elements managed by the 'Line and diagnostic information' feature are summarized in the following table 75-5.

Table 75-5: List of diagnosed elements, diagnostic info and PP display status

Field (status type)	Status change triggered by/at	Notification type (note 6)	PP Display Status (note 1)	FP status
Line use status (see also clause 7.4.1.5.2.1)	- at the beginning of the first external incoming or outgoing call on that line - at the end of the last external call on that line	Line use indication	O (note 2)	M
Handset use status (see also clause 7.4.1.5.2.2)	- when any handset becomes in-use for an external call on the considered line or no longer in-use on that line	Handset use indication	O	M
Call Forwarding statuses (CFU, CFNA, and/or CFB) (see also clause 7.4.1.5.2.3)		Diagnostic indication (line related)	O (note 5)	M
OK status (line related) (see also clause 7.4.1.5.2.3)	- each time an error occurs (or ceases to occur) on the considered line	Diagnostic indication (line related) (see note 4)	O (notes 2, 3)	M
Diagnostic error status, line related (see also clause 7.4.1.5.2.3)	- an error on a specific line for which a cause has been identified - the error ceases to occur			
OK status (non line related) (see also clause 7.4.1.5.2.3)	- each time an error occurs (or ceases to occur) on the system	Diagnostic indication (non line related) (see note 4)	O	M
Diagnostic error status, non line related (see also clause 7.4.1.5.2.3)	- an error occurring on the system for which a cause has been identified - the error ceases to occur			

NOTE 1: This status for PP corresponds to the on-screen display in idle mode. The referenced notes specify display recommendations or other requirements.
NOTE 2: If this field is supported by PP: in a multiple line environment, the immediately displayed information should represent a combination of the statuses of the lines the PP is attached to.
NOTE 3: If this field is supported by PP: at a minimum, a global 'Down' icon should be displayed if *none* of the lines the PP is attached to is in status 'line is up'. The user can however access (e.g. via an advanced settings menu) the exact status of each of the lines the PP is attached to.
NOTE 4: Only diagnostic indications may be either line related or non-line related. A line related diagnostic indication is sent at least to all PPs attached to the line for which the status changes. The PP may ignore a notification concerning a line it is not attached to.
NOTE 5: If this field is supported by PP, at a minimum, a global 'Activated' icon should be displayed if at least one CF type (CFU, CFNA, CFB) is activated on at least one of the line.
NOTE 6: Line related diagnostic indications are also sent at PP location registration and in the case of a new PP attachment to a line (see clause 7.4.1.5.2.3) independently of any status change.

7.4.34.3 Line and Diagnostic Statuses List

The Line and Diagnostic Statuses List is a read-only list used to inform the PP of the current status of various 'elements' on FP side.

The following entry fields are defined for a Line and Diagnostic Statuses List entry in table 75-6.

Table 75-6: Entry fields for a Line and Diagnostic Statuses List entry

Field identifier	Field	Length constraint	Default value	Normative action/comment	Clause
01H	Line id	>= 2	YES/MD	Concerned line 'None' value is used for a non line related (or 'system') diagnostic error (see note)	7.4.34.3.1
02H	OK status	>= 2	YES/MD	Working status of the indicated line or of the system. Changes relating to this status are only *partially* notified	7.4.34.3.2
03H	Line use status	>= 2	YES/MD	Change *and* value of the status are notified	7.4.34.3.3
04H	Handset use status	>= 2	YES/MD		7.4.34.3.4
05H	Call Forwarding status	>= 2	YES/MD	Includes statuses for CFU, CFNA, CFB	7.4.34.3.5
06H	Diagnostic error status	>= 2	YES/MD	Line-relating or non-line relating status. If non line related, the status is repeated for each line for convenience	7.4.34.3.6
NOTE:	For the list entry using 'None' value, fields with ids 03H, 04H and 05H are not relevant and shall be ignored (and possibly not requested) by the PP. The FP shall use the smallest allowed length for these fields, as indicated by the 'Length constraint' column.				

7.4.34.3.1 Field 'Line id'

See 'Line id' field in "List access service" feature, clause 7.4.10.5.1.7. This field shall always contain a specific line id.

7.4.34.3.2 Field 'OK status'

The 'OK status' field indicates whether the considered entity (i.e. a line, or the system) is working ('up') or not working ('down').

- When used for a line, the 'OK status' down value indicates that an error is occurring and that this line is not working as a result.
- When used for the system, the 'OK status' down value indicates that an error is occurring that affects the use of a service usually provided by the system, but distinct from the use of a line.

EXAMPLE 1: If a Wide Area Network error prevents access to data related services such as firmware upgrade (see TS 102 527-4 [i.5], firmware upgrade might be impossible, while all lines are still working.

EXAMPLE 2: If some lists (e.g. the Contact List) is located in a network and this network becomes inaccessible, the system OK status might be down, while all lines are still working.

NOTE 1: If a single event affects both the use of one or of several lines, and of a system service, both types of OK status (line related and system related) could be 'down' at the same time (with the same or possibly different diagnostic error type and number).

The 'OK status' field shall be coded as in table 75-7.

Table 75-7: 'OK status' field

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = OK status							1
	0/1	Length (L)							2
	0/1	Editable =0	x	x	x	x	x	x	3
	0/1	OK status							4

OK status (octet 4):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	down
	0 0 0 0 0 0 1	registering
	0 0 0 0 0 1 0	initializing
	0 0 0 0 0 1 1	up

The FP shall only notify status changes to and from 'up' value to the PP. All other status transitions shall not be notified by the FP. The values 'registering' and 'initializing' are provided for possibly detailing transient states of a line being setup on network side (i.e. they are not to be used for the system OK status).

NOTE 2: The OK status and diagnostic error status fields are related. When the line (resp. system) is not working, the 'diagnostic error status' possibly informs the PP of the error cause if the FP could identify it. See clause 7.4.34.3.6 for more information and examples.

7.4.34.3.3 Field 'Line use status'

The 'Line use status' field shall be coded as in table 75-8.

Table 75-8: 'Line use status' field

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = Line use status							1
	0/1	Length (L)							2
	0/1	Editable =0	x	x	x	x	x	x	3
	0/1	Line use status							4

Line use status (octet 4):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	Line is idle (no active call at all)
	0 0 0 0 0 0 1	Line is in-use (but additional calls can be placed) (note 1))
	0 0 0 0 0 1 0	Line or system is busy (note 2)

NOTE 1: 'Line is in-use' indicates that the user is still able to place a call on the line. The line is 'in-use', but it supports more than one call simultaneously (and the line is not in 'single call mode', see TS 102 527-3 [18], clause 7.4.11.4.8), but neither the line nor the system is busy.

NOTE 2: A line is busy if the user is not able to place a call on it because the maximum number of calls that can be placed simultaneously on the line has been reached. However, the system may be busy before this maximum is reached (because of internal calls or of calls on other lines).

EXAMPLE: Handset 1 if engaged in call 1 and handset 2 in call 2 on line 1 in multiple call mode, and octet 4 is '10'B (as the system or the line only support two simultaneous calls). When handset 1 hangs up, octet 4 becomes '01'B. When handset 2 hangs up, octet 4 becomes '00'B.

7.4.34.3.4 Field 'Handset use status'

The 'Handset use status' field shall be coded as in table 75-9.

Table 75-9: 'Handset use status' field

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = Handset use status							1
	0/1	Length (L)							2
	0/1	Editable =0	x	x	x	x	x	x	3
	1	Number of handsets using the line							4
	0/1	Handset use bitmap							5
	0/1	..							
	1	Handset use bitmap (continued)							5n

Number of handsets using the line (octet 4)

This field contains the number of handsets using the line.

NOTE 1: This number may be greater or equal to two for a multiple call line.

Handset use bitmap (octet group 5)

This bitmap octet group contains one flag per handset (flag for handset number 1 is in bit position '1', etc.), indicating when set that the handset is using the line.

NOTE 2: The structure of this bitmap is similar to the 'Attached handsets' field (see 102 527-3 [18], clause 7.4.11.4.3).

NOTE 3: In principle, a handset using a line is attached to this line. However, this may not be true for call transfer, call deflection, etc.

NOTE 4: Internal calls are not taken into account for the handset use bitmaps.

The 'handset use status' only takes into account external calls, and, when set, means that the handset is engaged in at least one external call on the specified line.

NOTE 5: If all 'handset use status' bitmaps are considered together (one for each line), all these bitmaps allow to draw the complete handset to line *use relationship*. However, the *use multiplicity* (if one handset uses the same *multiple call* line several times) is not given.

7.4.34.3.5 Field 'Call Forwarding status'

The 'Call Forwarding status' field shall be coded as in table 75-10.

Table 75-10: 'Call Forwarding status' field

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = Call Forwarding status							1
	0/1	Length (L)							2
	0/1	Editable =0	x	x	x	x	x	x	3
	0/1	CFU status							4
	0/1	CFNA status							5
	0/1	CFB status							6

'Call Forwarding Unconditional' status subfield (octet 4):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	'Call Forwarding Unconditional' is 'deactivated'
	0 0 0 0 0 0 1	'Call Forwarding Unconditional' is 'activated'

'Call Forwarding on No Answer' status subfield (octet 5):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	'Call Forwarding on No Answer' is 'deactivated'
	0 0 0 0 0 0 1	'Call Forwarding on No Answer' is 'activated'

'Call Forwarding on Busy subscriber' status subfield (octet 6):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	Call Forwarding on Busy subscriber is 'deactivated'
	0 0 0 0 0 0 1	Call Forwarding on Busy subscriber is 'activated'

The field is related to a specific line.

7.4.34.3.6 Field 'Diagnostic error status'

The 'Diagnostic error status' field shall be used in relationship with the 'OK status', in order to indicate a cause identified by the FP for the occurring error.

The yes/no bit of the 'diagnostic error status' shall indicate whether a cause is identified or not for the error indicated by the 'down' value of the 'OK status'. More generally, the allowed combinations of this bit with the 'OK status' up/down bit value are shown in table 75-11 below.

Table 75-11: Relationship between 'OK status' and 'Diagnostic error status'

OK status up/down bit	Diagnostic error status yes/no bit	Comment
up	yes	Forbidden
up	no	No error occurring
down	yes	Occurring error with identified cause
down	no	Occurring error with no identified cause

As indicated in clause 7.4.34.3.2 (Field 'OK status'), the 'OK status' and related 'Diagnostic error status' both either relate to a specific line or to the system. The defined diagnostic error type and error number values may be used for lines as well as for the system.

When the OK status and diagnostic error status fields are used for the system:

- These statuses refer to the working status of *services* (e.g. data related services) normally rendered by the FP.
- The working status of these services is *in principle* independent of the working status of the lines themselves.
- There is a single instance of these statuses for all services rendered by the system. The *system OK status* should therefore be down as soon as one of these services is down.

The 'Diagnostic error status' field shall be coded as in table 75-12.

Table 75-12: 'Diagnostic error status' field

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = Diagnostic error status							1
	0/1	Length (L)							2
	0/1	Editable =0	no/yes	x	x	x	x	x	3
	0/1	Diagnostic error type							4
	0/1	Diagnostic error number							5

No/ yes bit (bit 6 of octet 3):

Bit 6 of octet 3 shall indicate when set to 'yes' that a cause has been identified for the error.

- When set to 'no' (no error or no cause identified for the error), the diagnostic error type and error number shall both be '0' ('Unknown error').

- When set to 'yes', the error type shall be either 'Network error' or 'Local error'; however, the error number may still be '0' (i.e. respectively either 'Unknown network error' or 'Unknown local error') indicating that no further information is available.

NOTE 1: When bit is reset from 'yes' to 'no', it is not allowed to continue indicating the previous error type and number.

Bits	7 6 5 4 3 2 1	Meaning
	x 0 x x x x x	No error or no identified cause (no)
	x 1 x x x x x	Identified cause for the occurring error (yes)

NOTE 2: 'No error or no identified cause (no)' is used in two cases: if the 'OK status' for the corresponding entity is 'up' (no error) or if it is 'down' but with no identified cause.

Diagnostic error type subfield (from octet 4):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	Unknown error (note)
	0 0 0 0 0 0 1	Network error
	0 0 0 0 0 1 0	Local error
	All other values reserved	

NOTE 3: The 'Unknown error' value is only used if the 'No/yes' bit is set to 'No' (no error or no identified cause). In that case the error number is also set to 'Unknown error' as indicated below.

Diagnostic error number subfield for error type 'Unknown error' (from octet 5):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	Unknown error
	All other values reserved	

Diagnostic error number subfield for error type 'Local error' (from octet 5):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	Unknown local error (note)
	0 0 0 0 0 0 1	Local Area Network (LAN) error
	0 0 0 0 0 1 0	Local Area Network (LAN) level 2 error (e.g. Ethernet error)
	0 0 0 0 0 1 1	Local Area Network (LAN) level 3 error (e.g. IP error)
	0 0 0 0 1 0 0	Cable error
	0 0 0 0 1 0 1	Modem or Home Gateway error
	All other values reserved	

NOTE 4: 'Unknown local error' value is used if the only available information is that the error is local.

Diagnostic error number subfield for error type 'Network error' (from octet 5):

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	Unknown network error (note)
	0 0 0 0 0 0 1	Wide Area Network (WAN) error
	All other values reserved	

NOTE 5: 'Unknown network error' value is used if the only available information is that the error is on network side.

PP requirements:

The PP shall support all error numbers (i.e. not crash as a result of receiving any of them). When an error occurs, the PP:

- should at least be able to display the *error type* in idle with no user intervention;
- may display the error number or should otherwise refer the user to the 'Line and Diagnostic Statuses List' for more information.

The PP should inform the user about whether the error is line related or not. For line related errors, the PP should indicate the concerned line to the user.

FP requirements:

The FP shall store the last occurring error in this field.

The FP should support as many error numbers as possible. The FP shall at least support the 'Unknown error', 'Network error' and 'Local error' error types.

NOTE 6: A network error as well as a local error may be line related or not.

For the interpretation of the error number the FP may then refer the user to the 'instructions for use' document and/or after-sales service.

See table 75-13 for examples of combined uses of the 'OK status' and 'Diagnostic error status' fields.

Table 75-13: Examples of combined uses of the 'OK status' and 'Diagnostic error status' fields

Example with a system with 3 lines (line 0, line 1 and line 2) (see note)			
FP implementation specific breakdown (example)		**Comment**	
N°	**Example Line and diagnostic list contents**	**Use (note)**	**Comment**
-	**System: OK status, (yes/no, type, number)** **Line 0: OK status, (yes/no, type, number)** **Line 1: OK status, (yes/no, type, number)** **Line 2: OK status, (yes/no, type, number)**	-	Line and diagnostic list extract format used in the examples below. Content of *OK status* and *diagnostic error status* is shown for the system and for each line.
1	System: up, (no, 0,0) Line 0: **up**, (**yes, network, WAN**) Line 1: up, (no,0,0) Line 2: up, (no,0,0)	forbidden	Forbidden because if a diagnostic exists for the line, then the line is necessarily down.
2	System: up, (no, 0,0) Line 0: **down**, (**yes, 0, 0**) Line 1: up, (no,0,0) Line 2: up, (no,0,0)	forbidden	Forbidden because for a 'yes' diagnostic error status the value for (type,number)= (0,0)=(unknown, unknown) cannot be used. Only the error number can be possibly 0 in that case, but the type shall be either 'network' or 'local'.
3	System: up, (no,0,0) Line 0: **down**, (**yes, network, WAN**) Line 1: up, (no,0,0) Line 2: up, (no,0,0)	allowed	Line 0 is down because of a WAN error. Everything else is working.
4	System: up, (no,0,0) Line 0: **down**, (**yes, network, WAN**) Line 1: **down**, (**yes, network, WAN**) Line 2: **down**, (**yes, network, WAN**)	allowed	Line related WAN error occurs on every line. No error is diagnosed at system level: if the FP offers non line related services, these services are working.
5	System: up, (no,0,0) Line 0: **down**, (**yes, network, WAN**) Line 1: **down**, (no,0,0) Line 2: up, (no,0,0)	allowed	Line 0 is down because of a WAN error. Line 1 is down for an unknown reason (undiagnosed error). Everything else is working.
6	System: **down**, (**yes, network, WAN**) Line 0: up, (no,0,0) Line 1: up, (no,0,0) Line 2: up, (no,0,0)	allowed	A system error occurs that affects a service offered by the system, but no line is affected by the error.
7	System: **down**, (**yes, network, WAN**) Line 0: **down**, (**yes, network, unknown**) Line 1: up, (no,0,0) Line 2: up, (no,0,0)	allowed	- At least one service offered by the system is not working and the reason for this error is known (WAN error). - Line 0 is down because of a network error that is not further specified (error number='unknown network error'). - Everything else is working.
8	System: **down**, (**yes, network, WAN**) Line 0: **down**, (no,0,0) Line 1: **down**, (no,0,0) Line 2: **down**, (no,0,0)	allowed	- At least one service offered by the system is not working and the reason for this error is known. - None of the lines are working, but the reason for this is unknown.
9	System: **down**, (**yes, local, Cable error**) Line 0: **down**, (**yes, network, WAN**) Line 1: up, (no,0,0) Line 2: **down**, (**yes, local, LAN level 2**)	allowed	- At least one service offered by the system is not working and the reason for this error is known. - Line 0 and 2 are down for various reasons.
NOTE: The allowed or forbidden status is related to the FP choice made above (except for example n° 1).			

7.4.34.4 Diagnostic indication

When sending a diagnostic related notification to the PP, the FP shall use a 'Generic events notification' of type 'diagnostic indication'. Diagnostic indications are described in clause 7.4.1.5 (see also EN 300 175-5 [5], clause 7.7.55).

7.4.35 Short Message Service

7.4.35.1 General requirements

The purpose of the "Short Message Service" feature is to allow the use on a DECT system of a network-side short message service. It allows the PP to receive notifications for incoming SMS messages, to send SMS messages, to store SMS messages on the FP and to browse them from the PP.

For a DECT system with multiple lines, there can be one SMS service per line. The parsing of SMS messages received from the network (i.e. from a given line) is out of scope of the feature.

The "Short Message Service" feature uses several lists on the FP to store SMS messages, and relies on the "List Access" feature for allowing the PP to manage messages. Incoming SMS are handled using one list (the Incoming SMS List, while the outgoing SMSs are handled using three lists

Incoming SMSs. The handling of incoming SMSs uses the Incoming SMS List only. See clause 7.4.35.2 for more details.

Outgoing SMSs. The handling of outgoing SMSs makes use of three lists. See clause 7.4.35.3 for more details.

When a FP implements the "Short Message Service" feature, it shall support at least one entry per list.

SMS settings. The SMS settings shall be available per SMS service, and shall be stored in the "SMS Settings List".

NOTE 1: The SMS Settings List indicates the line on which an SMS service is available.

Incoming SMS content encoding. The FP shall always store incoming SMSs in UTF-8. See clause 7.4.35.2 for more information.

PP control over network side outgoing SMS content encoding. The PP may control the SMS content encoding used on network side if several encodings are available for the SMS service. This allows the PP to control the SMS size on the network especially for pricing purposes. See 7.4.35.3 (outgoing SMS encoding) for more information.

Local outgoing SMS content encoding. The local encoding used for an outgoing SMS in the SMS lists (SMS content field) may differ from the network encoding. In that case, only UTF-8 may be used locally. See clause 7.4.35.3.

FP SMS capability. If the FP implements the SMS feature, the SMS lists shall appear in the List of Supported Lists (see clause 7.4.10.5.2). To check whether a FP is supporting SMS, a PP shall check if the SMS lists are supported or not.

Private SMS boxes. Some networks allow the creation of up to 10 SMS boxes within the DECT system. Such boxes are attached to a line and are addressable thanks to the addition of one digit at the end of the line number. This additional digit is a kind of *box id* that may be used for sending or receiving SMSs from/to that box on the given line. The "Short Message Service" feature does not cover the use of private SMS boxes but does not prevent it.

Private SMS boxes could be implemented on FP side by exposing only the relevant entries to the used PP during the Read entries, Search entries and Edit entry commands.

NOTE 2: Private SMS boxes could imply implementation of a proprietary user authentication mechanism. A FP implementing private SMS boxes should therefore allow authentication deactivation by configuration so that the SMS feature can still be used from non compatible PPs implementing the SMS feature.

NOTE 3: In a one to one relationship between PPs and boxes, user authentication might be avoided.

NOTE 4: A master PP or user could possibly access all entries by authenticating itself as a master.

Short and long SMS messages. On some networks, the length limitation of SMSs could be worked around by concatenating short messages (see concatenated short messages in TS 123 040 [i.14]). On such networks, so-called 'long SMSs' are made up of several short messages (also known as the message 'parts' in the present document) that may arrive independently at the FP. From the present standard perspective however, there is no distinction between short and long SMSs: every entry in the incoming messages list shall contain a complete SMS message (short or long).

NOTE 5: In other words, the collection and management of short messages at the FP-to-network interface for rebuilding the so-called long SMSs is out of scope of the present document.

NOTE 6: This explains the terminology of a 'partially arrived SMS' used in the present document for the case the message parts of a long SMS do not arrive at the same time.

Reading of SMS content. As the text payload of a single SMS message might take up to 640 bytes, it will be impossible for low cost PPs to read the entire field in a single read request.

NOTE 7: When a PP displays an SMS message to the user, it could read an amount of bytes which more or less corresponds to the size of the screen (i.e. possibly much less than the actual SMS content size).

The PP may limit the size of the 'SMS content' field received, by using several times the 'Read selected entries' command (using selection type 'selection from entry id with range') instead of the plain 'Read entries' command. When using this command, the PP is able to request only a range of the content bytes within the SMS content field.

Read status. The Incoming SMS List has a 'Read status' field. It is the PP responsibility to update this field thanks to the 'mark entries request' field value of the 'Read entries'/'Search entries' commands.

7.4.35.2 Incoming SMS handling

Incoming SMSs are handled using the following single list:

- **Incoming SMS List**. Messages arriving from the line to the FP, and from there to the PPs

Incoming SMS content encoding. The FP shall always use UTF-8 for the local encoding of an incoming SMS. The FP shall therefore perform a translation of the SMS content into UTF-8 (if not used in the network) before storing it in the Incoming SMS List.

Reading a partially received SMS. If the FP stores a partially received SMS in the Incoming SMS List, and therefore makes them available to the PP, the 'Read status' field shall nevertheless remain 'unread' until the SMS is fully received.

If a PP happens to read such a partially received SMS, the FP shall ignore the 'mark entries request' field value of the used 'Read entries' command. The 'mark entries request' shall only be taken into account if the command is received at a time where the SMS is fully received.

7.4.35.3 Outgoing SMS handling

Outgoing SMSs are handled using the following three lists:

- **Draft SMS List**. Messages being edited and not sent yet to the line.
- **Outgoing SMS List**. Messages pending to be sent to the line. A message remains in this list until the FP successfully sends it to the line.
- **Sent SMS List**. Messages sent from one of the PPs to the FP, and already sent to the line

PP control over network side outgoing SMS content encoding. The PP may control the SMS content encoding used on network side if several encodings are available for the SMS service (but may alternatively leave this control to the FP). This allows SMS size control by PP especially for pricing purposes. The PP is informed about the available encodings by the FP through the SMS Settings List ('Allowed SMS character encodings and variants' field).

More specifically:

- The PP chooses the encoding and encoding variant used for the new outgoing SMS using field 'Network side SMS encoding' of the 'Draft SMS' or 'Outgoing SMS' lists (depending on which list is used to create the SMS).
    - The PP possibly leaves the choice to the FP by using the 'Unknown' value as indicated in clause 7.4.35.5.1.1.

- The FP uses the encoding and encoding variant chosen by the PP towards the network or uses the most appropriate one if the PP did not make the choice.

NOTE 1: By choosing the encoding and encoding variant used on network side itself, the PP is able to control the size of the SMS on the network side. When TS 123 038 [19] encoding is used, this ability can be used to warn the user about the number of short SMSs needed to encode the outgoing SMS on network side, especially for pricing purposes.

Local outgoing SMS content encoding. The local encoding used for an outgoing SMS in the SMS lists (and therefore over the air) shall be chosen as follows:

- if the PP selects an encoding to be used on network side in the ' Network side SMS encoding field' (i.e. if 'Unknown' value is NOT used), the local encoding shall be equal to that network side encoding;

- if the PP leaves control over network side encoding to the FP (i.e. 'Unknown' value is used), the local encoding shall be UTF-8.

Requesting translation of an outgoing SMS local encoding. A PP may request translation of an SMS local encoding by editing the 'Network side SMS encoding' field (using edit/save entry). The allowed new values usable in the translation request are described in the following table 75-14.

NOTE 2: A PP may do so prior to reading the SMS content (e.g. in the 'Sent SMS List'), or in order to further edit it (e.g. in the 'Draft SMS List').

NOTE 3: Requesting translation of the local SMS encoding also modifies the PP selection of a network side encoding.

In order to request SMS encoding translation, the PP shall only insert the ' Network side SMS encoding' field (and no other field of the list) in the save entry command.

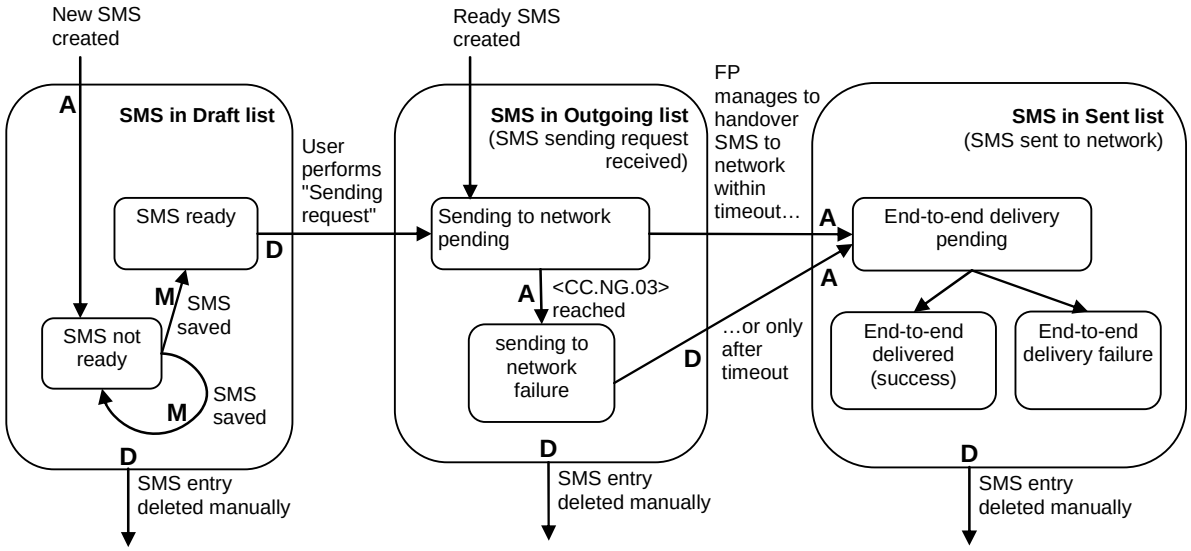
The FP shall then modify the SMS content field of the corresponding list accordingly.

Table 75-14: SMS encoding translation possible requests

Network side SMS encoding before translation	Inserted 'Network side SMS encoding' (translation request)	Action taken by FP
Unknown	PP selection (not 'Unknown', not UTF-8)	SMS content translated from UTF-8 into PP selected encoding
Unknown	PP selection =UTF-8	Nothing done
PP selection (not 'Unknown', not UTF-8)	Unknown	SMS content translated from PP selected encoding into UTF-8
PP selection =UTF-8	Unknown	Nothing done
PP selection 1 (not 'Unknown', not UTF-8)	PP selection 2 (not 'Unknown', not UTF-8), different from PP selection 1	'Procedure not allowed' returned (note)
Any value	Same value as before translation	'Procedure not allowed' returned
NOTE: The FP is only required to be able to perform an encoding translation to or from UTF-8.		

Writing of an SMS. When writing an SMS in the draft list, and especially for storing intermediate versions of the SMS in the draft list, the PP may use the 'write entry' command with write type '*write from entry id with range*' (see clause 7.4.10.4.12). This command allows the PP to write only a range of bytes in the 'SMS content' field, leaving other parts of the SMS content untouched. The write entry command can only be used between the 'edit entry' command (locking the entry) and the save command (unlocking the entry) and leaves the entry locked.

Outgoing SMS lifecycle. For the successive outgoing SMS states (including the concerned SMS list, and events triggering state transitions), and related notifications to the PPs, the following diagram (Figure 80-3) and table (Table 75-15) apply.



NOTE 1: An SMS is at the same time in a high-level state (SMS in xyz list) and in one of the related sub-states. Manual deletion of an SMS may occur from any sub-state in principle (this is why the corresponding arrow starts at high-level state).
NOTE 2: Events relating to SMS lifecycle (entry addition, modification, or deletion) are represented with arrows.
NOTE 3: "A", "M", and "D" annotation of an event means that the event triggers a list change notification towards the PP (for an entry addition, modification, and deletion, respectively). The annotation is included in the higher-level state relating to the list for which the notification is sent. All but one events trigger only one notification. See table 75-15 below for more information.
NOTE 4: For the Outgoing SMS List, no notification is sent if the SMS is sent within the "sending to network" timeout (<CC.NG.03>). If the SMS can be sent after the timeout, two notifications are sent (Outgoing SMS List entry deletion+Sent SMS List addition).
NOTE 5: No "list change notification" is sent for end-to-end failure/success events (SMS remains unchanged in the Sent SMS List). A "notification SMS" may be added to the Incoming SMS List for the purpose of informing the user.

Figure 80-3: Outgoing SMS successive states

SMS entering the Outgoing SMS List (user sets the 'SMS sending request' flag). When the PP user makes the decision to sent a ready SMS message:

- If the ready SMS is stored in the 'Draft SMS List', the PP shall set the 'SMS sending request' flag of the corresponding entry to 'send' value, in order to indicate to the FP that the message shall be sent.

- If the ready SMS is NOT stored in the 'Draft SMS List' (i.e. the SMS was edited outside of the draft list on a PP side editing tool), the PP shall add the ready SMS to the 'Outgoing SMS List' directly.

Upon reception of the save command setting the flag, the FP shall immediately move the SMS from the 'Draft SMS List' to the 'Outgoing SMS List'.

SMS entering the Sent SMS List. Upon successful sending of the message to the network, the FP shall move the SMS entry from the 'Outgoing SMS List' to the 'Sent SMS List'.

NOTE 4: Successful sending of the message to the network does not mean end to end successful sending to the targeted end user, but only that the FP could handover the SMS to the network.

Sending of list change notification for outgoing SMS. The following table 75-15 shall be taken into account.

Table 75-15: Sending of list change indication

List change notification	Draft SMS List	Outgoing SMS List	Sent SMS List
Entry addition	**YES**	**NO** (note 2)	**YES** (note 4)
Entry modification	**YES**	**NO** (read only list)	**NO** (read only list)
Entry deletion	**YES** (see note 1)	**NO** (note 2)	**YES** (note 5)
Sending to network timeout (<CC.NG.03>) reached (failure)	**N/A**	**YES** (as if added; see note 3)	**N/A**
Sending to network success after timeout	**N/A**	**YES** (as if deleted; see note 3)	**N/A**
End to end delivery success	**N/A**	**N/A**	**NO** (note 6)
End to end delivery failure	**N/A**	**N/A**	**NO** (note 6)

NOTE 1: Two types of events cause an entry deletion from the Draft SMS List: a manual deletion of the draft SMS before it is sent, or an "SMS sending request" moving the SMS to the Outgoing SMS List.
NOTE 2: Entry addition and deletion in the Outgoing SMS List are not notified if SMS is successfully sent within "sending to network timeout" (transient entry).
NOTE 3 If the FP fails to send the SMS to the network (timeout reached), a list change notification is sent as if the entry was added to the list; this does not exclude however that the FP later on succeeds in sending the SMS; in that case, the entry deletion is also notified.
NOTE 4: List change indication indicates here that the SMS was successfully handed over to the network (SMS enters the Sent SMS List).
NOTE 5: List change indication indicates here that the SMS was *manually* deleted from the Sent SMS List.
NOTE 6: End to end success or failure do not change the entry in the Sent SMS List. The FP may notify these events (if it is aware of them) by creating a dedicated "notification SMS" in the Incoming SMS List, or by any other means.

7.4.35.4 SMS settings

7.4.35.4.1 SMS Settings List

The entry field identifiers as from Table 75-16 are defined for the SMS Settings List.

Table 75-16: Entry fields for an SMS Settings List entry

Field identifier	Field	Length constraint	Default value (note)	Base reset impacted	Normative action/comment	List change notification FP status	Clause
01H	SMS service id	≥ 3	YES/MD	NO	SMS service identifier	M	7.4.35.4.2.1
02H	Line id	≥ 3	YES/MD	NO	Line used by the SMS service	M	7.4.10.5.1.7
03H	Enable SMS	≥ 2	YES/MD	NO	Enables the SMS feature (YES / NO)	M	7.4.35.4.2.2
04H	Max SMS size	≥ 2	YES/MD	NO	Maximum SMS message size supported by the FP	M	7.4.35.4.2.3
05H	SMSC Send Server	≥ 1	MD	NO	Short Message Service Centre Send Server	M	7.4.35.4.2.4
06H	SMSC Receive Server	≥ 1	MD	NO	Short Message Service Centre Receive Server	M	7.4.35.4.2.5
07H	SMS delivery report	≥ 2	YES/MD	NO	SMS delivery report (YES or NO)	M	7.4.35.4.2.6
08H	SMS validity period	= 2	YES	NO	SMS validity period chosen by user; default value is 24 hours	M	7.4.35.4.2.7
09H	Allowed SMS character encodings and variants	≥ 2	YES/MD	NO	SMS character encoding used for that SMS service	M	7.4.35.4.2.8

NOTE: For optional or conditional fields, the default value only applies when the field is implemented.

7.4.35.4.2 SMS settings fields

7.4.35.4.2.1 Field 'SMS service id'

The SMS service identifier allows the PP and FP to associate an outgoing SMS to the service it is intended to be sent to, or an incoming SMS to the service is was received from. See table 75-17 below.

Table 75-17: 'SMS service id' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = SMS service id								1
	0/1	Length (L)							2
	0/1	editable	x	x	x	x	x	PIN protected	3
	0/1	SMS service id value							

For octet 3, each bit indicates whether a property of the field is given (1) or not (0). In the case of 'x', the value is reserved for future use.

'**PIN protected' property:** The 'PIN protected' property allows the FP to protect (or not) the 'SMS service id' field against unauthorized modification, depending on its security policy.

7.4.35.4.2.2 Field 'Enable SMS'

The 'Enable SMS' field shall be coded as in table 75-18.

Table 75-18: 'Enable SMS' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = Enable SMS								1
	0/1	Length (L)							2
	0/1	Editable	X	x	x	x	x	PIN protected	3
	Value								4

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'Enable SMS' field against unauthorized modification, depending on its security policy.

'**Value' octet** (octet 4). The 'Value' octet shall be 30H or 31H. 30H stands for SMS feature Disabled, 31H for SMS feature enabled.

7.4.35.4.2.3 Field 'Max SMS size'

The 'Max SMS size' field shall be coded as in table 75-19.

Table 75-19: 'Max SMS size' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = Max SMS size								1
	0/1	Length (L)							2
	0/1	Editable	X	x	x	x	x	PIN protected	3
	Value								4

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'Max SMS size' field against unauthorized modification, depending on its security policy.

'**Value' octet** (octet 4). The 'Value' subfield shall contain the maximum SMS size (in octets) supported by the FP. It may be coded on several octets. In that case octet 4 shall be the most significant byte.

7.4.35.4.2.4 Field 'SMSC Send Server'

The 'SMSC Send Server' field is numeric field which hold the SMS send server number and shall be coded as in table 75-20.

Table 75-20: Field 'SMSC Send Server'

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = SMSC Send Server								1
	0/1	Length (L)							2
	0/1	Editable	X	x	x	x	x	PIN protected	3
	1^{st} digit 2^{nd} digit …								4 5

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'SMSC Send Server' field against unauthorized modification, depending on its security policy.

'**Digit' octets** (start from octet 4) hold the SMSC Send server number. The SMSC Send server field is number field and can have the digits in ASCII format, each digit shall be out of 30H…39H, 23H, 2AH, 05H, 15H**.**

7.4.35.4.2.5 Field 'SMSC Receive Server'

The 'SMSC Receive Server' field shall be coded as in table 75-21.

Table 75-21: 'SMSC Receive Server' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = SMSC Receive Server								1
	0/1	Length (L)							2
	0/1	Editable	X	x	x	x	x	PIN protected	3
	1^{st} digit 2^{nd} digit …								4 5

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'SMSC Receive Server' field against unauthorized modification, depending on its security policy.

'**Digit' octets** (start from octet 4) hold the SMSC Receive server number. The SMSC receive server field is number field and can have the digits in ASCII format, each digit shall be out of 30H…39H, 23H, 2AH, 05H, 15H**.**

7.4.35.4.2.6 Field 'SMS delivery report'

The 'SMS delivery report' field shall be coded as in table 75-22.

Table 75-22: Field 'SMS delivery report'

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier =SMS delivery report								1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	x	PIN protected	3
	Value								4

'**Length' octet** (octet 2): the value of the length (L) indicator shall be ≥ '2'. The field shall always contain the property bits octet and the 'Value' octet.

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'SMS delivery report' field against unauthorised modification, depending on its security policy.

'**Value' octet** (octet 4). The 'Value' octet shall be 30H or 31H:

- Value '30H' stands for 'Delivery report NOT requested'. If 'Value' is 30H, the FP shall not inform PPs of any delivery report received from the SMSC. The FP may, however, choose to request a delivery report anyway from the SMSC for other internal purposes.
- Value '31H' stands for 'Delivery report requested'. If 'Value' is 31H, the FP shall request a delivery report from the SMSC when sending the outgoing message. On receipt of any delivery report from the SMSC the FP shall inform PPs of the SMS delivery success or failure by inserting a dedicated *report SMS* in the 'Incoming SMS List'. In the case of failure, the report SMS shall indicate the failure cause.

If the PP supports the SMS feature, the PP shall make the 'Value' accessible to the user.

7.4.35.4.2.7 Field 'SMS validity period'

The 'SMS validity period' field shall be coded as in table 75-23.

Table 75-23: 'SMS validity period' field

Bit:	8	7	6	5	4	3	2	1	Octet:
Field identifier =SMS validity period									1
0/1	Length (L)								2
0/1	Editable	x	x	x	x	x	PIN protected		3
Validity period encoding value									4

Length octet (octet 2): The value of the length (L) indicator shall be equal to '2'. The field shall always contain property bits octet and the 'Validity period value' octet.

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'SMS validity period' field against unauthorised modification, depending on its security policy.

'**Validity period encoding value' octet** (octet 4). The 'Validity period encoding value' octet shall be set according to the following table 75-24 (see also ES 201 912 [i.15], clause B.2.2.19).

Table 75-24: Validity period encoding

Octet 4 range (value)	Encoded validity period	Unit	Validity period granularity
0 to 143	(value + 1) x 5	minute	5 minutes intervals up to 12 hours
144 to 167	12 × (value -143) × 0,5	hour	Half an hour intervals up to 24 hours
168 to 196	value - 166	day	One-day intervals up to 30 days
197 to 255	value - 192	week	One-week intervals up to 63 weeks

The FP shall use the value set by the PP user when sending any outgoing SMS to the SMSC.

If the PP supports the SMS feature, the PP shall allow the user to select the desired validity period.

Default value: The default value shall be 167 (representing 24 hours).

7.4.35.4.2.8 Field 'Allowed SMS character encodings and variants'

The purpose of the 'Allowed SMS character encodings and variants' field is to inform the PP of the allowed encoding(s) and variants (if any) that are allowed on the network side for the given SMS service.

The PP shall use this information only when it wants to have control over the encoding used for an outgoing SMS when sent to the network (see also clause 7.4.35.3, section 'PP control over network side outgoing SMS content encoding').

This field shall be coded as follows in table 75-25 below.

Table 75-25: 'Allowed SMS character encodings and variants' field

Bit:	8	7	6	5	4	3	2	1	Octet:
Field identifier = Allowed SMS character encodings and variants									1
0/1	Length (L)								2
0/1	Editable	x	x	x	x	x	PIN protected		3
0/1	Length of allowed encoding 1 and variants (L1)								4
0/1	SMS character encoding value								4+1
0/1	Allowed encoding variant 1								
0/1	…								
0/1	Allowed encoding variant m_1								4+L1
…									
0/1	Length of allowed encoding n and variants (Ln)								L+2-Ln
0/1	SMS character encoding value								L+3-Ln
0/1	Allowed encoding variant 1								
0/1	…								
0/1	Allowed encoding variant m_n								L+2

'PIN protected' property (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'SMS character encoding' field against unauthorised modification, depending on its security policy.

'SMS character encoding value' octet (octet 4). Any instance of the 'SMS character encoding value' subfield indicates to the PP an encoding that can be used for outgoing SMSs using the given SMS service.

Bits	7 6 5 4 3 2 1	Meaning
	0 0 0 0 0 0 0	Reserved (see note 1)
	0 0 0 0 0 0 1	TS 123 038 / GSM 7 bit (see note 2)
	0 0 0 0 0 1 0	TS 123 038 / GSM 8 bit (see note 2)
	0 0 0 0 0 1 1	TS 123 038 / UCS-2, big-endian (see note 2)
	0 0 0 0 1 0 0	UTF-8

All other values reserved.

NOTE 1: This value can only be used by the PP in field 'Network side SMS encoding' and cannot be used in the present field. See clause 7.4.35.5.1.1.

NOTE 2: When this encoding is used, the PP should be aware that outgoing SMSs could be split by the network into short SMSs of 140 bytes. It may also warn the user for pricing reasons.

The FP shall at least support TS 123 038 / GSM 7 bit default character encoding (i.e. with the "default alphabet table" and the "default alphabet extension table" defined in TS 123 038 [19]). See below 'Allowed encoding variant for SMS character encoding TS 123 038 / GSM 7 bit' for more information.

'Allowed encoding variant' for SMS character encoding TS 123 038 / GSM 7 bit. Any instance of this subfield indicates to the PP a language supported by the FP. The PP uses this information to build a TS 123 038 [19] compliant GSM 7 bit encoding variant as a combination of two language specifications: one for the 'alphabet table' and the other one for the alphabet extension table (see clause 7.4.3.5.1.1). See table 75-26 below.

Table 75-26: "Allowed encoding variant" encoding

Value	Meaning
0	GSM 7 bit, default (note 1)
1H	GSM 7 bit, Turkish (notes 2, 3)
2H	GSM 7 bit, Spanish (notes 2, 3)
3H	GSM 7 bit, Portuguese (notes 2, 3)
4H	GSM 7 bit, Bengali (notes 2, 3)
5H	GSM 7 bit, Gujarati (notes 2, 3)
6H	GSM 7 bit, Hindi (notes 2, 3)
7H	GSM 7 bit, Kannada (notes 2, 3)
8H	GSM 7 bit, Malayalam (notes 2, 3)
9H	GSM 7 bit, Oriya (notes 2, 3)
10H	GSM 7 bit, Punjabi (notes 2, 3)
11H	GSM 7 bit, Tamil (notes 2, 3)
12H	GSM 7 bit, Telugu (notes 2, 3)
13H	GSM 7 bit, Urdu (notes 2, 3)
14H to FFH	Reserved by TS 123 038 [19], clause 6.2.1.2.4. (note 4)
≥ 100H	Reserved (note 4)

NOTE 1: Support of this variant is mandatory; it indicates that the FP supports both the default alphabet table (see TS 123 038 [19], clause 6.2.1) and the default alphabet extension table (Ibid., clause 6.2.1.1).
NOTE 2: The value indicates that the FP supports both the alphabet table and the alphabet extension table defined in TS 123 038 [19] for this language.
NOTE 3: Bit 8 is 1 indicating that a single octet is used for coding the supported language.
NOTE 4: Values over 7FH are coded with more than one octet, using DECT extension mechanism. For instance value 80H is coded with two octets as 0180H.

'Allowed encoding variant' for encoding TS 123 038 / GSM 8 bit.

No encoding variant is currently defined. Corresponding subfield(s) are absent.

'Allowed encoding variant' for encoding TS 123 038 / UCS-2, big-endian.

No encoding variant is currently defined. Corresponding subfield(s) are absent.

'Allowed encoding variant' for encoding UTF-8.

No encoding variant is currently defined. Corresponding subfield(s) are absent.

7.4.35.5 SMS related entry fields and lists

7.4.35.5.1 SMS related entry fields

7.4.35.5.1.1 Field 'Network side SMS encoding'

The PP shall use this field to inform the FP of the character encoding and encoding variant that shall be used for a given outgoing SMS when sent to the network (see clause 7.4.35.3, section 'PP control over outgoing SMS encoding on network side' for more information).

This field shall be coded as in table 75-27.

Table 75-27: 'Network side SMS encoding' field

Bit:	8	7	6	5	4	3	2	1	Octet:
Field identifier = Network side SMS encoding									1
0/1	Length (L)								2
0/1	Editable	x	x	x	x	x	PIN protected		3
0/1	Used network side SMS character encoding value								4
0/1	Used encoding variant 1								5
0/1	Used encoding variant 2								6

Octets 4, 5 and 6 shall always be present. In order to leave control over the used encoding and encoding variants (if any) to the FP, the PP shall use the value 'Unknown' (0) in all three octets (4, 5 and 6).

'**Used network side SMS character encoding value' octet** (octet 4). The 'SMS character encoding' value indicates to the FP the encoding that shall be used for the outgoing SMS.

Bits	**7 6 5 4 3 2 1**	**Meaning**
	0 0 0 0 0 0 0	Unknown (see note 1)
	0 0 0 0 0 0 1	TS 123 038 / GSM 7 bit
	0 0 0 0 0 1 0	TS 123 038 / GSM 8 bit
	0 0 0 0 0 1 1	TS 123 038 / UCS-2, big-endian
	0 0 0 0 1 0 0	UTF-8

NOTE 1: This value is used for leaving to the FP control over the used encoding.

'**Used encoding variant 1 and 2**' (octets 5 and 6). These subfields indicate to the FP the encoding variant that shall be used together with the 'Used SMS character encoding' for the outgoing SMS. See table 75-28 below.

NOTE 2: For convenient handling of the GSM 7 bit encoding variants, the encoding variant is divided into two subfields.

Table 75-28: Coding of 'Used encoding variant' subfields

Used encoding variant 1	Comment	Used encoding variant 2	Comment
For encoding 'Unknown'			
0	Unknown (see note 1)	0	Unknown (see note 1)
For encoding 'TS 123 038 / GSM 7 bit' (notes 2, 3)			
0	- GSM-7bit default alphabet table	0	- GSM-7bit default alphabet extension table
1..127	- National language identifier used for locking shift mechanism	1..127	- National language identifier used for single shift mechanism
Other values	Reserved	Other values	Reserved
For encoding 'TS 123 038 / GSM 8 bit'			
0	Reserved	0	Reserved
For encoding 'TS 123 038 / UCS-2'			
0	Reserved	0	Reserved
For encoding 'UTF-8'			
0	Reserved	0	Reserved

NOTE 1: This value is only used if the 'SMS character encoding value' is also 'Unknown' (i.e. the PP shall either entirely specify the network side SMS encoding, or not at all).

NOTE 2: The *locking shift mechanism* uses the indicated language specific alphabet table instead of the GSM 7 bit default alphabet table. The *single shift mechanism* uses the indicated language specific extension table instead of the GSM 7 bit default alphabet extension table. Each *mechanism* may be used or not, independently of the other, with the same or possibly a different language.

NOTE 3: The present document does not allow the PP to specify a different encoding for each short message used on the network side if more than one are needed for the same long SMS (as would be in principle allowed by TS 123 038 [19]). For national language identifier values, see clause 7.4.35.4.2.8.

7.4.35.5.1.2 Field 'SMS size'

The 'SMS size' field describes the SMS size in bytes.

The field shall be coded as in table 75-29.

Table 75-29: 'SMS size' field

Bits	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Octet**
	Field identifier = SMS size								**1**
	0/1	Length (L)							**2**
	0/1	Editable	x	x	x	x	x	x	**3**
	0/1	Size value							**4**

'**Size value' octet** (octet 4). The 'Size value' octet(s) contains the whole SMS content size in bytes.

7.4.35.5.1.3 Field 'SMS content'

The list entry shall contain the whole SMS content as shown in table 75-30.

Table 75-30: 'SMS content' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = SMS content								1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	x	x	3
	SMS content 1st character byte								4
	...								
	SMS content last character byte								

For octet 3, each bit indicates whether a property of the field is given (1) or not (0). In the case of 'x', the value is reserved for future use.

Content encoding. The SMS content characters be encoded as follows:

- for an incoming SMS, always in UTF-8 (as specified in clause 7.4.35.2);
- for an outgoing SMS, as specified in the 'Local outgoing SMS content encoding' section of clause 7.4.35.3.

7.4.35.5.1.4 Field 'Read status'

The FP shall set the 'read status' field to 'unread' at entry creation.

The 'read status' field shall be set to 'read' (or 'unread' again) according to the 'mark entries request' field value used by the PP in the 'Read entries' (or 'Search entries') command (see also 'Read status' and 'Reading a partially received SMS' in clause 7.4.35.1 for more information).

The 'Read status' field format is indicated in clause 7.4.10.5.1.5.

7.4.35.5.1.5 Field 'Sending request'

This field is used in the 'Draft SMS List' only, and allows the PP to request sending of the SMS. See table 75-31.

Table 75-31: 'Sending request' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = Sending request								1
	0/1	Length (L)							2
	0/1	editable	send	x	x	x	x	x	3

For octet 3, each bit indicates whether a property of the field is given (1) or not (0). In the case of 'x', the value is reserved for future use.

Bit 6 of octet 3 ('send' bit) may take the value 'send' (1), or 'do not send' (0). The PP sets the bit to 'send' in order to request sending of the SMS (following the user request from MMI). After receiving such a request, the FP shall immediately remove the corresponding entry from the 'Draft SMS List' and add a new entry in the 'Outgoing SMS List' with the same contents.

7.4.35.5.1.6 Field 'Date and Time'

The field format shall be that of clause 7.4.10.5.1.4 in TS 102 527-3 [18] ('Field 'Date and Time').

- For the 'Draft SMS' list, the FP shall use as 'Date and Time' field value of a given entry the date and time of the last 'save entry confirm' command relating to that entry.
- For other outgoing SMS relating lists, the 'Date and Time' field value shall be the date/time value of the time when the SMS entered the 'Outgoing SMS List'.

- For the Incoming SMS List, the 'Date and Time' field value shall correspond to the SMS arrival date/time. If an SMS arrives in several parts, the 'Date and Time' field shall be updated each time a new part arrives.

7.4.35.5.2 Incoming SMS List entry fields

This list contains all the incoming SMS messages stored on any SMS service of the DECT system. See table 75-32.

Table 75-32: "Incoming SMS List" entry fields

Field identifier	Field	Length constraint	Normative action/comment	Clause
01H	Number	≥ 1	Number of the sender	7.4.10.5.1.2
02H	Name	≥ 1	Name of the sender	7.4.10.5.1.3
03H	Date and Time	≥ 5	Date and Time of the message arrival	7.4.10.5.1.4
04H	Read status	= 1	Indicates whether entry is shown first time	7.4.10.5.1.5 and 7.4.35.5.1.4
05H	SMS service id	≥ 2	Identifier of the SMS service on which the message was received	7.4.35.4.2.1
06H	SMS size	≥ 2	Size of the whole SMS content in bytes. Useful for PPs not reading the whole SMS in one read command	7.4.35.5.1.2
07H	SMS content	≥ 1	Whole SMS text content	7.4.35.5.1.2

7.4.35.5.3 Sent SMS List entry fields

This list contains all the sent SMS messages stored on any SMS service of the DECT system. See table 75-33.

Table 75-33: "Sent SMS List" entry fields

Field identifier	Field	Length constraint	Normative action/comment	Clause
01H	Number	≥ 1	Number of the receiver	7.4.10.5.1.2
02H	Name	≥ 1	Name of the receiver	7.4.10.5.1.3
03H	Date and Time	≥ 5	Date and Time of the message sent	7.4.10.5.1.4
04H	SMS service id	≥ 2	Identifier of the SMS service on which the message was sent	7.4.35.4.2.1
05H	Network side SMS encoding	≥ 3	Encoding chosen by the PP for the outgoing SMS on network side	7.4.35.5.1.1
06H	SMS size	≥ 2	Size of the whole SMS content in bytes. Useful for PPs not reading the whole SMS in one read command	7.4.35.5.1.2
07H	SMS content	≥1	Whole SMS text content	7.4.35.5.1.3

7.4.35.5.4 Outgoing SMS List entry fields

This list contains all the outgoing SMS messages stored on any SMS service of the DECT system. See table 75-34.

Table 75-34: "Outgoing SMS List" entry fields

Field identifier	Field	Length constraint	Normative action/comment	Clause
01H	Number	≥ 1	Number of the receiver	7.4.10.5.1.2
02H	Name	≥ 1	Name of the receiver	7.4.10.5.1.3
03H	Date and Time	≥ 5	Date and Time of the message sent	7.4.10.5.1.4
04H	SMS service id	≥ 2	Identifier of the SMS service on which the message is to be sent	7.4.35.4.2.1
05H	Network side SMS encoding	≥ 3	Encoding chosen by the PP for the outgoing SMS on network side	7.4.35.5.1.1
06H	SMS size	≥ 2	Size of the whole SMS content. Useful for PPs not reading the whole SMS in one read command	7.4.35.5.1.2
07H	SMS content	≥ 2	Whole SMS text content	7.4.35.5.1.3

7.4.35.5.5 Draft SMS List entry fields

This list contains all the draft SMS messages stored on any SMS service of the DECT system. See table 75-35.

Table 75-35: "Draft SMS List" entry fields

Field identifier	Field	Length constraint	Normative action/comment	Clause
01H	Number	≥ 1	Number of the receiver	7.4.10.5.1.2
02H	Name	≥ 1	Name of the receiver	7.4.10.5.1.3
03H	Date and Time	≥ 5	Date and Time when the message was last saved	7.4.10.5.1.4
04H	SMS service id	≥ 2	Identifier of the SMS service on which the message is to be sent	7.4.35.4.2.1
05H	Sending request	= 1	set to 1 to indicate intention of the PP user to send the message	7.4.35.5.1.5
06H	Network side SMS encoding	≥ 3	Encoding chosen by the PP for the outgoing SMS on network side	7.4.35.5.1.1
07H	SMS size	≥ 2	Size of the whole SMS content. Useful for PPs not reading the whole SMS in one read command	7.4.35.5.1.2
08H	SMS content	≥ 2	Whole SMS text content	7.4.35.5.1.3

7.4.36 (Digital) Telephone Answering Machine (DTAM)

7.4.36.1 DTAM description

7.4.36.1.1 General requirements

The purpose of the DTAM feature is to allow the PP user to control a local or remote DTAM and to manage the recorded messages.

DTAM (Digital Telephone Answering Machine). Entity answering incoming calls if not answered by the user within a configured timeout.

If a line has an associated DTAM (i.e. the DTAM 'handles' the line), and an external incoming call on that line is received but not answered by the local user within DTAM timeout, the DTAM (if activated) picks up the call and plays a pre-recorded *welcome message* inviting the remote user to leave a message in that DTAM instead.

A DTAM holds two ordered series of messages: the welcome messages (possibly only 1), described in clause 7.4.36.1.4 and the DTAM incoming messages, described in clause 7.4.36.1.3. The DTAM allows the local user to manage both series.

Local or remote DTAM. A DTAM may be either located on the FP (local DTAM) or in the network (remote DTAM), e.g. located either in a PSTN or VoIP network. Whether local or remote, the DTAM role is to answer calls presented to the *local* system after DTAM timeout.

Voice-oriented DTAM. A local or remote DTAM that does NOT allow random access to DTAM incoming messages. Voice oriented DTAMs are handled in clause 7.4.36.2.1.

Visual DTAM. A local or remote DTAM that allows random access to DTAM incoming messages. Visual DTAMs are handled in clause 7.4.36.2.2.

DTAM number. Some remote DTAMs need to be called through a DTAM number (e.g. Voice oriented DTAMs) when a 'DTAM consulting call' (see clauses 7.4.36.1.3 and 7.4.36.3) is placed.

When required, the DTAM number is either provided by the PP as keypad information (e.g. dialled by the user) or provided in the 'DTAM number' field of the DTAM Settings List. See clause 7.4.36.5.1.2 for more information.

NOTE 1: If the PP does not provide any keypad information, the <<MULTIKEYPAD>> IE is still sent but remains empty.

NOTE 2: In the case of double specification (i.e. as keypad information *and* DTAM setting), the FP may either override the setting with the received keypad information, or ignore the keypad information.

NOTE 3: In all cases the FP identifies the concerned DTAM through the 'line id' provided by the PP in the same {CC-INFO} message.

DTAM multiplicity. The DTAM feature allows the control of a maximum of 64 local or remote DTAMs associated with the DECT system (see clause 7.4.36.5.1.1).

Screening. Ability for the local user to listen to a message while it is being recorded by the remote user and to possibly pick up the call (and talk with the remote user) before recording has ended. Screening is only possible with a local DTAM.

7.4.36.1.2 DTAM settings management

Line-DTAM association. One DTAM at most may be associated with a given line. Conversely, several lines may be associated with the same DTAM.

DTAM settings. DTAM settings are described in the DTAM Settings List (see clause 7.4.36.5.2). This list contains one entry per line-DTAM association, so that line-specific settings may be defined.

If a DTAM does not allow the definition of line-specific values for a given setting, the FP shall ensure that the setting value is the same for every entry describing an association of this DTAM with a line.

EXAMPLE: If a PP modifies a non-line specific setting for line 0, whereas the DTAM handles lines 0 and 1, the FP shall copy the setting value in the entry for line 1.

NOTE: Some fields contain several settings, that could be not all line-specific, or not all non-line specific.

Default entry for a non-associated DTAM. A temporarily not (or not yet) associated DTAM shall be represented in the DTAM Settings List with a default entry, with the line id field set to 'None' (value 127). As a result, the following applies:

For creating an association with a DTAM:

- If this is the DTAM first association, no new entry in the DTAM Settings List shall be created, but the default entry shall be used, with the 'None' value for the line id replaced with the associated line id.

- If this is not the DTAM first association, a new entry in the list shall be created, with that DTAM id and the associated line id.

Voice-oriented DTAMs associations with lines are also subject to restrictions with regard to PP attachments to lines for preserving message confidentiality (see clause 7.4.36.2.1). These restrictions do not apply for Visual DTAMs.

For deleting an association wih a DTAM:

- If this is the DTAM last association, the line id of that association shall be replaced with the 'None' value, thus recreating the default entry of the DTAM.
- If this is not the DTAM last association, the entry of that association shall be removed from the list.

7.4.36.1.3 DTAM incoming and welcome messages management

DTAM incoming message. A DTAM incoming message is a message present in the DTAM following an external incoming call. It may be:

- a message left by the remote user if the DTAM answered the incoming call after DTAM timeout;
- (*for DTAMs managing missed calls*) an artificial message created by the DTAM to report a missed call.

NOTE: When a DTAM is activated on a line, a missed call occurs if the remote user hangs up before DTAM timeout. Some (especially remote) DTAMs also manage missed calls.

DTAM incoming call. A DTAM incoming call is an incoming external call for which a DTAM message exists in the DTAM (i.e. either a DTAM answered call, or a missed call if managed).

DTAM Incoming Calls List. The list accessible with the List Access feature, containing an entry for each DTAM call. Visual DTAMs use this list as a base for displaying the list of calls to the user for message listening and management.

Welcome messages. A DTAM may manage one or several welcome messages. The DTAM Welcome Message List shall contain one entry per available position in the DTAM for recording a welcome message.

The number of positions (number of entries in the list with corresponding DTAM id) shall always correspond to the maximum number of welcome messages supported by the DTAM and should remain stable over time. If a position is not used (empty message), the message time duration field of the corresponding list entry shall be zero.

The PP user shall use the DTAM Settings List ('Welcome message parameters' field) in order to select the welcome message to be used for a given line. The PP user may use the same welcome message for several lines. The FP shall ensure that the selected welcome message is owned by the DTAM handling the line (via the 'DTAM full identifier' field of the 'DTAM Welcome Message List').

If several welcome messages are recorded for a DTAM, the one used by the DTAM when answering an incoming call:

- could be selected by the user depending on the time of the day, etc.;
- and could also be configured to depend on the line of the answered external incoming call if the DTAM supports it.

DTAM consulting call. A DTAM consulting call is an outgoing call performed by the local user in order to:

- listen to and manage DTAM incoming messages;
- create and manage DTAM welcome messages.

These operations are performed though the use of DTAM commands (as a complete exchange) sent within a DTAM session. See clause 7.4.36.3 for more information.

DTAM status information. DTAM status information is also sent from FP to PP for some of these DTAM commands (as a complete exchange), in the form of a 'DTAM status command' (as a message). The DTAM status information is sent some time after the command confirmation to indicate the completion status of this command.

A DTAM command is sent asynchronously with respect to PP sending of subsequent commands. For example, the PP might have already issued a new command when the DTAM status information for the previous command arrives.

See clause 7.4.36.4.13 for more information about the DTAM status information.

Message index used in DTAM commands. Some DTAM commands use a message index. DTAM incoming messages and welcome messages use different kinds of indices:

- For welcome messages, a *position index* is used, as described in clause 7.4.36.5.4. This position index is a specific field of the 'DTAM welcome messages list' that represents an available position in the DTAM and is stable over time.
- For DTAM incoming messages, the corresponding entry index in the DTAM incoming messages list is used.

7.4.36.2 DTAM profiles

There are two types of DTAMs, that differ in the way they reference DTAM incoming calls, and in their use (or not) of the DTAM Incoming Calls List.

NOTE: A DTAM allowing both approaches can be considered as two separate DTAMs in the DECT system.

See annex G for some DTAM service use case examples.

7.4.36.2.1 Voice oriented DTAM

Voice-oriented DTAMs use the notion of *current DTAM incoming message* and do NOT make use of the DTAM Incoming Calls List.

NOTE 1: Use of the 'Voice oriented' DTAM profile is only beneficial if the DTAM provides feedback when DTAM commands are forwarded to it.

EXAMPLE 1: Voice-oriented *local* DTAMs should always provide feedback for DTAM commands and therefore benefit from the present profile.

EXAMPLE 2: Some existing voice oriented *remote* DTAMs (e.g. based on DTMF signalling) only provide voice-based feedback and therefore will not find a real benefit in the present profile.

A FP shall indicate that a DTAM is *Voice oriented* by use of the 'Voice/visual' property of the DTAM full identifier of the DTAM Settings List (see clause 7.4.36.5.1.1).

By definition, a voice oriented DTAM shall handle a single stream of messages for all lines associated with it.

EXAMPLE 3: A voice oriented DTAMs that would be able to handle separate streams of messages for different lines shall use one DTAM id per stream.

Line-DTAM association restrictions. For a voice-oriented DTAM, and in order to preserve message confidentiality, a PP shall either be attached to all lines handled by that DTAM (i.e the PP has access to the DTAM), or to none of them (i.e. the PP has no access to the DTAM). This implies that the following rules shall be respected:

- If case of new attachment: all lines handled by a voice-oriented DTAM shall be attached together to the PP, or none of them.
- In the case of detachment: all lines handled by a voice-oriented DTAM shall be detached together from the PP, or none of them.
- In the case of new association of a line with a voice-oriented DTAM: all PPs having access to the DTAM shall also be newly attached to the line (if not already attached to it).
- In the case of de-association: there is no restriction. A line not handled by a voice-oriented DTAM may be freely attached/detached to/from any PP.

Message playing. The user of a voice-oriented DTAM does not explicitly request the playing of a DTAM incoming message (i.e. it is the DTAM itself that starts the playing of such a message when it becomes current). Therefore the 'Play message' command with play mode=0 is not used for the management of DTAM incoming messages (see table 75-36 below).

NOTE 2: However the user may explicitly request which message becomes current by using the 'Select neighbour message' command.

Current message for a voice oriented DTAM. When a DTAM session is open with a voice-oriented DTAM, a *current message* is defined at DTAM level for most of the session duration.

NOTE 3: At DTAM session start, the current message should be the first message in the DTAM stream of messages.

NOTE 4: When a message is being played, the current message is the message being played. When no message is played, *current message* definition depends on the voice oriented DTAM implementation.

Current message change. A voice oriented DTAM changes the current message by itself, i.e. with no user or DECT system intervention, when the current message processing ends and the next message becomes the new current message.

The user may also change the current message:

- by using the 'Select neighbour message' command. In that case, the message placed after or before the current message becomes the new current message;
- by using the 'Delete message' command. In that case, the *next* message in the list of DTAM incoming messages should become the new current message.

DTAM commands for DTAM incoming messages. When a DTAM incoming *current message* is defined in a voice-oriented DTAM, the user is able to send successful commands to the FP (see clause 7.4.36.4). In other words, for the management of DTAM incoming messages:

- all commands shall refer to the current message;
- the *current message based* variant of the'Delete message' command, (i.e. with message index '0' indicating '*current message*') shall always be used.

NOTE 5: Such restrictions do not apply to the management of welcome messages (see clause 7.4.36.1.3).

Paused message playing. When a message playing is paused, the paused message is still considered as being played and therefore continues to be the current message. In particular, the 'Stop playing message' command may apply to paused messages.

Table 75-36: DTAM commands statuses for Voice oriented DTAMs

Command nb	Command name	Applies to		FP status (note 1)	Comment
		Current message	Indicated index		
00H	Start DTAM session	-	-	M	Common to all DTAMs
01H	Start DTAM session confirm	-	-	M	
40H	Negative acknowledgement	-	-	M	FP answer when there is an error
41H	DTAM status	-	-	M	Asynchronous status information from FP
04H	Select neighbour message	-	-	I	Select next or previous message - for the management of Welcome messages
		YES	-	M	- for the management of DTAM incoming messages
05H	Select neighbour message confirm	-	-	M	
08H	Play message	-	YES	M	if **play mode=0** ('play indicated message') - for the management of Welcome messages
		-	-	I	- for the management of DTAM incoming messages
		YES	-	M	If **play mode=1** ('restart/rewind playing of currently played message') - for local DTAMs (Welcome and DTAM incoming messages)
		YES	-	M	- for remote DTAMs (Welcome and DTAM incoming messages)

Command nb	Command name	Applies to		FP status (note 1)	Comment
		Current message	Indicated index		
09H	Play message confirm	-	-	M	
0AH	Delete message	YES	-	M	- for deleting DTAM incoming messages
		-	YES	M	- for deleting welcome messages
0BH	Delete message confirm	-	-	M	
0CH	Pause/resume playing of message	YES	-	M	
0DH	Pause/resume playing of message confirm	-	-	M	
10H	Stop playing message	YES	-	M	
11H	Stop playing message confirm	-	-	M	
12H	Record welcome message	-	YES	M	Specific to welcome message management (note 2)
13H	Record welcome message confirm	-	-	M	
14H	Stop recording welcome message	YES	-	M	Specific to welcome message management (note 2)
15H	Stop recording welcome message confirm	-	-	M	
≥80H	Reserved for proprietary DTAM commands all other values reserved				
NOTE 1: For remote voice oriented DTAMs, a mandatory status only applies if the underlying remote DTAM supports the command. Otherwise, the FP shall work in best effort mode. NOTE 2: *Record welcome message* command is always *index based (i.e. even for voice oriented DTAMs)*, while *Stop recording welcome message*' is not (stops current recording).					

7.4.36.2.2 Visual DTAM

Visual DTAMs display message lists to the user and manage messages with DTAM commands using an explicit *message index* for referring to messages.

A FP shall indicate that a DTAM is a *Visual* DTAM by use of the 'Voice/visual' property of the DTAM full identifier of the DTAM Settings List (see clause 7.4.36.5.1.1).

Message management through DTAM commands. For managing a visual DTAM, the PP shall setup a DTAM consulting call, open a DTAM session within that call and issue DTAM commands within that session, as described in clause 7.4.36.3.

Use of call/message lists. Within the DTAM consulting call, one of more LiA sessions in parallel to the DTAM session shall be opened with the DTAM Incoming Calls List and/or the Welcome messages list.

These lists are retrieved so that the corresponding lists of messages may be presented to the user, and in order to get access to the message indices to be used within some DTAM commands (see below 'Commands using a message index').

Current message for a visual DTAM. For visual DTAMs, the notion of *current message* is limited to time intervals where a message is played (or for which message playing is paused).

NOTE: This is in contrast to the case of a Voice oriented DTAM where a *current message* is defined at DTAM level for most of the session duration.

Commands applying to current message. When a *current message* is defined, the user is able to send commands applying to the current message (for the list of such commands, see clause 7.4.36.4.1, table 75-37).

If no current message is defined at the time when the command is received, the FP shall return a negative acknowledgement (the negative acknowledgement error value depends on the command).

Commands using a message index. Commands not applying to the current message shall specify the targeted message through a message index. The used message index depends on the type of message (DTAM incoming or Welcome) and

is described in clause 7.4.36.1.3 ('Message index used in DTAM commands' subsection). In both cases, an LiA session with the corresponding list is needed, but the index definition varies.

Delete message command. The 'Delete message' command has two variants. For a Visual DTAM, it shall always use a message index based variant, as indicated in the following table 75-37 (the current message based variant of the command is reserved for voice oriented DTAMs).

Within a DTAM consulting call, the 'Delete entry' LiA command and the 'Delete message' DTAM command shall have the same result on both the 'DTAM incoming call' list and the DTAM itself.

EXAMPLE: This implies that the PP, when using the 'Delete message' DTAM command, shall update the result of any previously used 'Read entries' command, as if a 'Delete entry' command had been used.

Table 75-37: DTAM commands statuses for Visual DTAMs

Command nb	Command name	Applies to		FP status (note 1)	Comment
		Current message	Indicated index		
00H	Start DTAM session	-	-	M	Common to all DTAMs
01H	Start DTAM session confirm	-	-	M	
40H	Negative acknowledgement	-	-	M	FP answer when there is an error
41H	DTAM status	-	-	M	Asynchronous status information from FP
04H	Select neighbour message	-	-	I	Select next or previous message
05H	Select neighbour message confirm	-	-	I	
08H	Play message	-	YES	M	if **play mode=0** ('play indicated message')
		YES	-	M	If **play mode=1** ('restart/rewind playing of currently played message')
09H	Play message confirm	-	-	M	
0AH	Delete message	-	YES	M	- for DTAM incoming messages
		-	YES	M	- for Welcome messages
0BH	Delete message confirm	-	-	M	
0CH	Pause/resume playing of message	YES	-	M	
0DH	Pause/resume playing of message confirm	-	-	M	
10H	Stop playing message	YES	-	M	
11H	Stop playing message confirm	-	-	M	
12H	Record welcome message	-	YES	M	Specific to welcome message management (note 2)
13H	Record welcome message confirm	-	-	M	
14H	Stop recording welcome message	YES	-	M	Specific to welcome message management (note 2)
15H	Stop recording welcome message confirm	-	-	M	
≥80H	Reserved for proprietary DTAM commands all other values reserved				

NOTE 1: For remote visual DTAMs, a mandatory status only applies if the underlying remote DTAM supports the command. Otherwise, the FP shall work in best effort mode. For example, if a remote visual DTAM offers a message *downloading* interface, commands only requiring a local message file management on FP side shall be implemented (i.e. 08H in modes 0 and 1, 0CH, 10H); if a remote visual DTAM offers a message ***uploading*** interface, commands only requiring a local message file creation on FP side shall be implemented (i.e. 12H and 14H).

NOTE 2: Record welcome message command is index based, while Stop recording welcome message' is not (stops current recording).

7.4.36.3 DTAM consulting call

7.4.36.3.1 General description

A DTAM consulting call allows the user to open a session with the DTAM (called a *DTAM session*) in order to control the messages (i.e. DTAM incoming messages and welcome messages) through the use of commands, and to listen to these messages.

DTAM session multiplicity.

FP requirements:

- The FP shall not allow two simultaneous DTAM sessions with the same DTAM in the DECT system (whether from the same or different PPs):
  - If a DTAM session is already open with a DTAM, the FP shall answer any attempt to start a session with that DTAM with a negative acknowledgement (reject reason 'DTAM unavailable').
- The FP may (but is not forced to) allow several simultaneous DTAM sessions (with different DTAMs and from different PPs) in the DECT system:
  - However, if the FP does not support an additional DTAM session, it shall answer any attempt to start a new DTAM session in the DECT system with a negative acknowledgement (reject reason 'not enough resources').

NOTE 1: If both reject reasons apply, the FP implementer may use either of them.

PP requirements:

- A PP shall only start a single DTAM session at the same time (whether with the same or different DTAMs).
- When attempting to start a DTAM session with a 'start DTAM session' command, the PP shall be prepared to receive a negative acknowledgement as indicated above.

When sending a {CC-SETUP} message for establishing a DTAM consulting call, the values used for the <<BASIC SERVICE>> IE shall be as follows.

<Basic service> field. A DTAM consulting call shall use the 'DTAM wideband speech default setup attributes' value for the <basic service> field

This value indicates that the established call behaves like a regular TS 102 527-3 [18] outgoing voice call as to listening of messages, but that a DTAM session will also be started within that call for the sending of controlling commands to the DTAM.

NOTE 2: However, the DTAM feature restricts the commands that may be issued within a DTAM consulting call. For example, it is not allowed to initiate an outgoing parallel call when a first DTAM consulting call is established.

Call class field. The used <call class> field value shall depend on the DTAM location as follows:

- For a local DTAM, the 'Internal call setup' value shall be used.
- For a remote DTAM, the 'Normal call setup' value shall be used.

LiA session within DTAM consulting call.

FP requirements:

- The FP shall always allow the PP to start at least one list access session (in addition to the DTAM session) within the DTAM consulting call as for any voice call (see clause 7.4.10.6.5).
- The FP shall ensure that any LiA session started with either the 'DTAM Incoming Calls List' or the 'DTAM welcome messages list' may result in a DTAM consulting call with the concerned DTAM. In other words:
  - If the PP starts the LiA session within an LiA service call, the FP shall check that it has enough resources to allow the transformation of that call into a DTAM consulting call (including the new DTAM session), as described in clause 7.4.36.5.5. Otherwise, it shall answer with a negative acknowledgement 'not enough resources'.
  - If the PP starts the LiA session within an existing voice call, the FP shall answer with a negative acknowledgement 'list not supported'.

NOTE 3: Commands (as a message) from LiA session and DTAM session use different protocol discriminators and therefore may be easily distinguished.

PP requirements:

- The PP shall start a list access session within the DTAM consulting call in the following cases:
  - for visual DTAMs, for the management of DTAM incoming messages;
  - for all DTAMs (i.e. whatever the DTAM profile) for the management of Welcome messages.

NOTE 4: Both lists do not need to be accessed simultaneously. An additional LiA session with the DTAM Settings List may be needed for PIN management.

- The PP shall not use an existing voice call in order to start an LiA session with the 'DTAM Incoming Calls List' or the 'DTAM welcome messages list', as such a call cannot be transformed into a DTAM consulting call.

DTAM consulting call release. The procedure for releasing a DTAM consulting call is identical to the release a regular voice call, and is performed by sending a {CC-RELEASE} message. The DTAM consulting call release also terminates the included DTAM session. See the following figure 80-4 for an example.

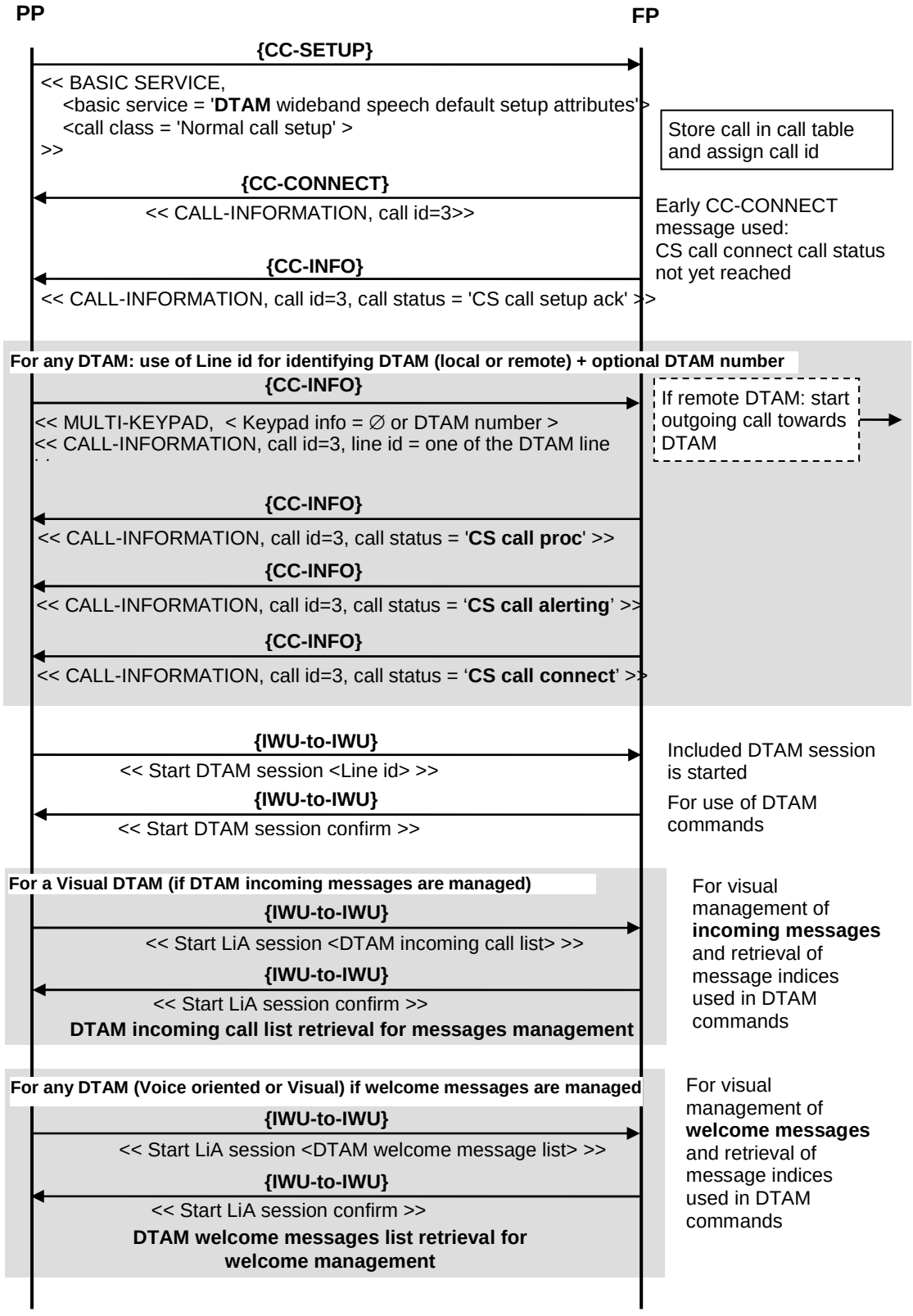


Figure 80-4: DTAM consulting call of a local or remote DTAM (early CC-CONNECT version}

7.4.36.3.2 Parallel call during active DTAM consulting call

Support of parallel call procedures when a first DTAM consulting call is active is detailed in the following table 75-38.

Only the support of a regular parallel call is considered in this table. A PP shall not be involved in several DTAM consulting calls at the same time whether with the same or different DTAMs.

Table 75-38: Supported parallel call procedure after first DTAM consulting call

Procedure name	PP Support	FP Support
Outgoing parallel call initiation (external or internal)	O	M
Call waiting indication (external or internal)	M	M
Call waiting acceptance	M	M
Call waiting rejection	M	M
Active call release with replacement (from PP to FP)	O	M
Call toggle request (external or internal)	O	M
Negative acknowledgement	M	M
Putting a call on-hold	O	M
Resuming a call put on-hold	O	M
Intrusion call request indication (only internal)	O	O
3-party conference call request (external or internal)	O	O
Call transfer request (external or internal)	O	O
Explicit call intrusion	O	O

7.4.36.4 DTAM commands

7.4.36.4.1 DTAM commands general requirements

DTAM commands (as a message) are based on a {IWU-INFO} message containing the <<IWU to IWU>> IE with dedicated protocol discriminator '15'H.

The general structure of a DTAM command (as a message) is indicated in the following table 75-39.

Table 75-39: Values used within the {IWU-INFO} message

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM access
	<Command >	0 .. 127	DTAM command (see note)
	<Command specific byte 0>		
	…		
	<Command specific byte L-2>		
NOTE: Values from 128 on are reserved for proprietary list access commands.			

For the purpose of managing DTAM incoming messages and welcome messages within a DTAM consulting call, the following list access commands are defined. See table 75-40.

Table 75-40: DTAM commands and their direction

Cmd nb	Command name	PP ->FP	FP ->PP	Applies to	
				Current message	Indicated index
00H	Start DTAM session	YES	-	-	-
01H	Start DTAM session confirm	-	YES	-	-
40H	Negative acknowledgement	-	YES	-	-
41H	DTAM status	-	YES	-	-
04H	Select neighbour message	YES	-	YES	-
05H	Select neighbour message confirm	-	YES	-	-
08H	Play message	YES	-	YES (note 1)	YES (note 2)
09H	Play message confirm	-	YES	-	-
0AH	Delete message	YES	-	YES (note 3)	YES (note 4)
0BH	Delete message confirm	-	YES	-	-
0CH	Pause/resume playing of message	YES	-	YES	-
0DH	Pause/resume playing of message confirm	-	YES	-	-
10H	Stop playing message	YES	-	YES	-
11H	Stop playing message confirm	-	YES	-	-
12H	Record welcome message	YES	-	-	YES
13H	Record welcome message confirm	-	YES	-	-
14H	Stop recording welcome message	YES	-	YES	-
15H	Stop recording welcome message confirm	-	YES	-	-
≥80H	Reserved for proprietary DTAM commands all other values reserved				

NOTE 1: For play mode = 1 (i.e. 'restart/rewind playing of currently played message') only.
NOTE 2: For play mode = 0 (i.e. 'play indicated message') only.
NOTE 3: For a voice oriented DTAM *and* if message type is DTAM incoming message.
NOTE 4: For a visual DTAM *or* if message type is Welcome message.

7.4.36.4.2 Start DTAM session

7.4.36.4.2.1 Start DTAM session command

See table 75-41 below.

Table 75-41: Values used within {IWU-INFO} message to request the starting of a DTAM session

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Start DTAM session >	00H	DTAM command
	<DTAM id>	0..63	DTAM id

7.4.36.4.2.2 Start DTAM session confirm command

See table 75-42 below.

Table 75-42: Values used within {IWU-INFO} message to confirm or reject the starting of a DTAM session

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Start DTAM session confirm >	01H	DTAM command
	<DTAM id>	0..63	DTAM id
	<DTAM session identifier>	0..127	Session identifier (see note 1)
	<Discriminator type>	00H, 01H	Undefined, EMC (see note 2)
	<Discriminator>	00H..FFH	EMC value high byte
	<Discriminator>	00H..FFH	EMC value low byte
	<DTAM start session reject reason>	0..FFH	Reject reason in the case of reject
NOTE 1: This field can be extended for values up to 16 383. See note 1 at table 39. NOTE 2: Discriminator type set to '1' (= EMC) indicates the support of proprietary DTAM commands. For distinguishing proprietary elements from different manufacturers, the EMC is given in the following two octets. If the discriminator type is set to '0', the following two octets are do not care. The PP shall not use proprietary elements if either the Discriminator type is '0' (= Undefined) or the EMC is different from the own one. Proprietary elements shall have identifiers with the most significant bit set to '1'.			

Possible error cases:

If start session is rejected, the session identifier shall be set to 0, and the field reject reason shall indicate the appropriate reason.

DTAM start session reject reason:

Bits	***8 7 6 5 4 3 2 1***	***Meaning***
	0 0 0 0 0 0 0 0	not enough resources
	0 0 0 0 0 0 0 1	unknown DTAM id
	0 0 0 0 0 0 1 0	DTAM unavailab le
	0 0 0 0 0 0 1 1	maximum number of DTAM sessions supported by the FP reached
	0 0 0 0 0 1 0 0	PIN code required
	all other values	reserved

7.4.36.4.3 Select neighbour message

7.4.36.4.3.1 'Select neighbour message' command

This command allows the PP to select the next (or previous) message in the list of DTAM incoming messages. If successful, the newly selected message becomes the new 'current message' in the DTAM.

EXAMPLE 1: A voice oriented DTAM may require an explicit request from the user for processing the previous or next message. In that case, use of the command is essential for consulting all messages.

EXAMPLE 2: Some voice oriented DTAMs could process messages one after the other without any user intervention. However, even in this case the command could be used to request an anticipated processing of the next message, or the processing of the previous message instead of the next one.

NOTE: This command cannot be used for managing welcome messages.

See table 75-43 below.

Table 75-43: Values used within {IWU-INFO} message for the "Select neighbour message" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Select neighbour message>	04H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
	<select previous/next>	0 1	- select previous message - select next message
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

Possible error cases:

The FP shall answer the 'Select neighbour message' command with a negative acknowledgement (see clause 7.4.36.4.10) with one of the following reject reasons, in the indicated cases:

- ***Message list empty***, if the DTAM incoming message list is empty.
- ***No current message defined***, if no current message was defined at command reception time.
- ***Beginning of message list reached***, if the current message is the first message of the list, and the previous message is selected, but the DTAM does not automatically select the last message of the list as a result.
- ***End of message list reached***, if the current message is the last message of the list, and the next message is selected, but the DTAM does not automatically select the first message of the list as a result.
- ***Command not implemented***, if the DTAM is a Visual DTAM which does not implement the command.

7.4.36.4.3.2 'Select neighbour message confirm' command

This command from FP confirms the next or previous DTAM incoming message selection. See table 75-44 below.

Table 75-44: Values used within {IWU-INFO} message for the "Select neighbour message confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Select neighbour message confirm>	05H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

7.4.36.4.4 Play message

7.4.36.4.4.1 'Play message' command

The 'Play message' command allows the PP:

- If play mode = 0, to request the playing of the indicated DTAM incoming message or welcome message. In that case the command shall always be index based.

NOTE 1: Voice oriented DTAMs (for which no index is available) do not use the 'Play message' command, except for replaying a message (see below).

- If play mode=1, to request that the current playing of a message (DTAM incoming or welcome) be either restarted at the beginning, or 'rewinded' for the indicated number of seconds.

NOTE 2: A paused message may also be resumed with play mode=1, if resuming is desired at a playtime position different from the current one.

See table 75-45 below.

Table 75-45: Values used within {IWU-INFO} message for the "Play message" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Play message>	08H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note 1)
	<Messages type>	0 1	DTAM incoming messages Welcome messages
	<Message index>	0	(*for play mode = 1 only*) current message is targeted
		1..127	(*for play mode = 0 only*) Index of the message to be played (see notes 1,2 and 3)
	<Play mode>	0 1	- play indicated message - restart/rewind playing of currently played message (note 4)
	<Number of seconds>	0	(*for play mode = 0 only*) Reserved (note 5)
		0	(*for play mode = 1 only*) Restart playing from the beginning
		1..255	(*for play mode = 1 only*) Rewind playing this number of seconds from current playtime
NOTE 1: This field can be extended for values up to 16 383. See note 1 at table 39. NOTE 2: When play mode=0, the command is always index based and cannot be used with *Message index* value '0' (indicating use of the *current message*). On the contrary, when play mode=1, the command is always current message based. See 'Possible error cases' below and clause 7.4.36.2 for more information. NOTE 3: For DTAM incoming messages, the message entry index in the list is used. For welcome messages, the message position index (specific field of the list) is used. NOTE 4: For a remote DTAM, the effect of a request for restarting or rewinding the playing of a message depends on the actual implementation of this functionality in the DTAM: it may be fully, partially, or not at all implemented. Partial support means for instance that the specified number of seconds might be only roughly respected. NOTE 5: If play mode = 0, <Number of seconds> shall be 0 and ignored by the FP.			

Possible error cases:

The FP shall answer the 'Play message' command with a negative acknowledgement (see clause 7.4.36.4.10) with one of the following reject reasons, in the indicated cases:

- ***Message list empty***, if play mode = 0 and 'Message type' is 'DTAM incoming message' and the DTAM incoming message list is empty (the Welcome message list is never empty).

- ***Message index too big***, if play mode = 0 and the message index value exceeds the number of available messages (either DTAM incoming or welcome messages, depending of 'Messages type').

- ***Message index 0 not allowed***, if play mode = 0 and the PP attempts to use the 'Play message' command with an index of 0 indicating 'current message'.

- ***No message was being played***, if play mode = 1, but no message was being played at command reception time.

7.4.36.4.4.2 'Play message confirm' command

See table 75-46 and figure 80-5 below for details.

Table 75-46: Values used within {IWU-INFO} message for the "Play message confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Play message confirm>	09H	DTAM command
	<DTAM Session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

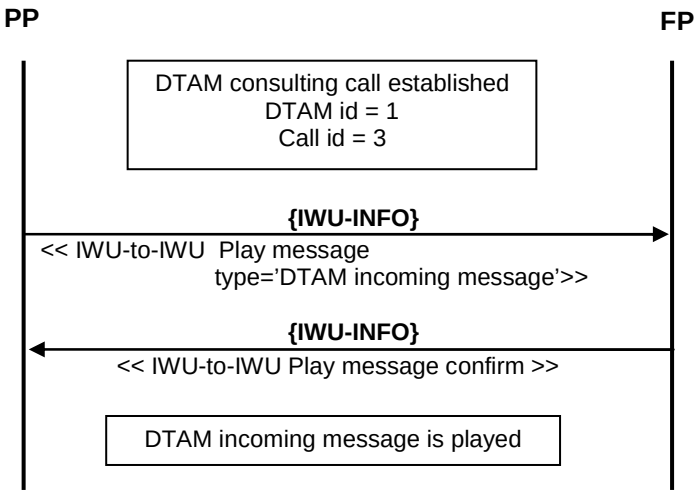


Figure 80-5: Use of the 'Play recorded message' command

7.4.36.4.5 Delete message

7.4.36.4.5.1 'Delete message' command

The 'Delete message' command allows to delete the indicated DTAM incoming message or welcome message. See table 75-47 below.

Table 75-47: Values used within {IWU-INFO} message for the "Delete message" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Delete message>	0AH	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note 1)
	<Messages type>	0 1	DTAM incoming messages Welcome messages
	<Message index>	0 1..127	Current message should be deleted (see note 2) Index of the message that should be deleted (see note 1)
NOTE 1: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39. NOTE 2: *Message index* value '0' indicates use of the *current message based* variant of the command.For a safe use of the command, use of this variant is only allowed if no index is defined for the message (i.e. only for a voice oriented DTAM and if message type is DTAM incoming message). See 'Possible error cases' clause below, and clause 7.4.36.2 for more information.			

Possible error cases:

The FP shall answer the 'Delete message' command with a negative acknowledgement (see clause 7.4.36.4.10) with one of the following reject reasons, in the indicated cases:

- ***Message list empty***, if 'Message type' is 'DTAM incoming message' and the DTAM incoming message list is empty (the Welcome message list is never empty).
- ***Message index too big***, if the message index value exceeds the number of available messages (either DTAM incoming or welcome messages, depending of 'Messages type').
- ***Message index 0 not allowed***, if *Message index* value is 0 while:
  - the DTAM profile is 'Visual DTAM' (whatever the message type);
  - or the DTAM profile is 'Voice oriented' and the message type is 'Welcome message'.
- ***No current message defined***, if *Message index* value is 0 while the DTAM profile is 'Voice oriented' and message type is 'DTAM incoming message', but no current message was defined at command reception time.

7.4.36.4.5.2 'Delete message confirm' command

See table 75-48 below.

Table 75-48: Values used within {IWU-INFO} message for the "Delete message confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Delete message confirm>	0BH	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

7.4.36.4.6 Pause/resume playing of message

7.4.36.4.6.1 'Pause/resume playing of message' command

This command from PP requests that the current playing of a message (DTAM incoming or welcome) be paused or resumed, depending on the current state of the playing (active or paused).

NOTE: A paused message is still considered as being played. Playing may therefore still be stopped in *paused* state.

See table 75-49 below.

Table 75-49: Values used within {IWU-INFO} message for the "Pause/resume playing of message" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command =Pause/resume playing of message>	0CH	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

Possible error cases:

The FP shall answer the 'Pause/resume playing of message' command with a negative acknowledgement (see clause 7.4.36.4.10) with one of the following reject reasons, in the indicated cases:

- ***No message was being played***, if no message was being played at command reception time.

7.4.36.4.6.2 'Pause/resume playing of message confirm' command

This command from FP confirms the pausing/resuming of current message playing. See table 75-50 below.

Table 75-50: Values used within {IWU-INFO} message for the "Pause/resume playing of message confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Pause/resume playing of message confirm>	0DH	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

7.4.36.4.7 Stop playing message

7.4.36.4.7.1 'Stop playing message' command

This command from PP requests that the current playing of a message (DTAM incoming or welcome) be stopped. This command works whether the message was actually played, or if the playing was paused with 'Pause/resume playing of message'. See table 75-51 below.

Table 75-51: Values used within {IWU-INFO} message for the "Stop playing message" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command =Stop playing message>	10H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

Possible error cases:

The FP shall answer the 'Stop playing message' command with a negative acknowledgement (see clause 7.4.36.4.10) with one of the following reject reasons, in the indicated cases:

- ***No message was being played***, if no message was being played at command reception time.

7.4.36.4.7.2 'Stop playing message confirm' command

This command from FP confirms the the request to stop current message playing. See table 75-52 below.

Table 75-52: Values used within {IWU-INFO} message for the "Stop Playing Message confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Stop playing message confirm>	11H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

7.4.36.4.8 Record welcome message

7.4.36.4.8.1 'Record welcome message' command

The 'Record welcome message' command allows the local user to request the recording of a new *welcome message* at the indicated welcome message index. If a welcome message was already recorded for this index, it is replaced with the new message. See table 75-53 below.

Table 75-53: Values used within {IWU-INFO} message for the "Record new welcome message" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Record welcome message>	12H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
	<Message position index>	1..127	Position index of the welcome message that is recorded (see note 1)
NOTE: This field can be extended for values up to 16 383. See note 1 at table 39.			

Possible error cases:

The FP shall answer the 'Record welcome message' command with a negative acknowledgement (see clause 7.4.36.4.10) with one of the following reject reasons, in the indicated cases:

- ***Message index to big***, if the message position index value exceeds the maximum number of welcome messages available for the DTAM (see clause 7.4.36.5.1.6).

NOTE: Welcome messages with index between 1 and this maximum always exist (but may be empty), so that the message index always exists for them.

- ***Message index 0 not allowed***, if the PP attempts to use the 'Record welcome message' command with an index of 0 indicating 'current message'.

7.4.36.4.8.2 'Record welcome message confirm' command

See table 75-54 below.

Table 75-54: Values used within {IWU-INFO} message for the "Record welcome message confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Record welcome message confirm>	13H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

7.4.36.4.9 Stop recording welcome message

7.4.36.4.9.1 'Stop recording welcome message' command

The 'Stop recording welcome message' command allows the local user to indicate to the DTAM that recording shall be terminated (i.e. welcome message was entirely recorded). See table 75-55 below.

Table 75-55: Values used within {IWU-INFO} message for the "Stop recording welcome message" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Stop recording welcome message>	14H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

Possible error cases:

The FP shall answer the 'Stop recording welcome message' command with a negative acknowledgement (see clause 7.4.36.4.10) with one of the following reject reasons, in the indicated cases:

- ***No message was being recorded***, if no welcome message was being recorded at command reception time.

7.4.36.4.9.2 'Stop recording welcome message confirm' command

See table 75-56 below.

Table 75-56: Values used within {IWU-INFO} message for the "Stop recording welcome message confirm" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command = Stop recording welcome message confirm>	15H	DTAM command
	<DTAM session identifier>	0..127	Session identifier (see note)
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

7.4.36.4.10 Negative acknowledgement

This command from the FP rejects the previous command with a reject reason, and is sent instead of the regular command confirmation.

The FP shall wait until the erroneous command is completely received from the PP before replying with a negative acknowledgement. See table 75-57 below.

Table 75-57: Values used within {IWU-INFO} message for the "Negative Acknowledgement" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command=negative acknowledgement >	40H	DTAM command
	<DTAM session identifier>	1..127	Session identifier (see note)
	<Reject reason>	0..255	Reject reason
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

Reject reason:

Bits 8 7 6 5 4 3 2 1 Meaning

0 0 0 0 0 0 0 0 Unknown error
0 0 0 0 0 0 0 1 Message list empty
0 0 0 0 0 0 1 0 Message index 0 not allowed
0 0 0 0 0 0 1 1 Message index too big
0 0 0 0 0 1 0 0 No current message defined.
0 0 0 0 0 1 0 1 No message was being played
0 0 0 0 0 1 1 0 No message was being recorded
0 0 0 0 0 1 1 1 End of message list reached
0 0 0 0 1 0 0 0 Beginning of message list reached
0 0 0 0 1 0 0 1 Command not implemented
all other values reserved

In the case of 'invalid session number', the invalid session identifier of the acknowledged command is used in the negative acknowledgement.

7.4.36.4.11 DTAM status command

This command from the FP is sent after the regular command confirmation in some circumstances in order to inform the PP of the current DTAM status, especially concerning the currently handled message. See table 75-58 below.

Table 75-58: Values used within {IWU-INFO} message for the "DTAM status" command

Information element	Field within the information element	Standard values within the field/IE	Normative action/comment
<<IWU to IWU>>	<Length of content>	L	Length of content
	<S/R bit>	1	Transmission of message
	<Protocol Discriminator>	15H	DTAM
	<Command=DTAM status >	41H	DTAM command
	<DTAM session identifier>	1..127	Session identifier (see note)
	<DTAM status>	0..255	DTAM status
NOTE: 'DTAM session identifier' can be extended for values up to 16 383. See note 1 at table 39.			

DTAM status:

Bits 8 7 6 5 4 3 2 1 Meaning
0 0 0 0 0 0 0 0 Reserved
0 0 0 0 0 0 0 1 Message playing has ended
0 0 0 0 0 0 1 0 Message maximum recording time was reached
all other values reserved

7.4.36.5 DTAM related lists

7.4.36.5.1 DTAM specific fields description

7.4.36.5.1.1 DTAM full identifier

See table 75-59.

Table 75-59: DTAM full identifier

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = DTAM full identifier							1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	Voice/ Visual	PIN protected	3
	0/1 ext	DTAM location	DTAM id						4

Voice/Visual property (octet 3). The voice visual property indicates (when unset) if the DTAM is Voice-oriented (see clause 7.4.36.2.1) or (when set) a Visual DTAM (see clause 7.4.36.2.2).

DTAM location (octet 4)

Bits 7 6 5 4 3 2 1 Meaning
0 x x x x x x Local DTAM
1 x x x x x x Remote DTAM

DTAM id (octet 4)

DTAM id shall be unique within all DTAMs used by the DECT system, whether local or remote. DTAM id value shall be in the interval 0..63.

7.4.36.5.1.2 Field 'DTAM Number'

The DTAM number field shall contain a single phone number value that is used when establishing a DTAM consulting call with the DTAM.

This field may be empty in two cases:

- The DTAM has no number; this happens in the following cases:
  - The DTAM is local to the FP.
  - The DTAM is remote but is accessed by the FP through a server API (e.g. HTTP or Web Service interface).
- The DTAM has a number, but the number is supplied by the user as keypad information when establishing the DTAM consulting call.

For the format of this field, see 'Number' field in "List access service" feature, clause 7.4.10.5.1.2, except that the possible value will be in the interval '30'H..'39'H, plus the '2A'H value.

The field 'DTAM Number' may be protected against unauthorized modification by the FP by use of the 'PIN protected' property (see clause 7.4.10.5.1.2).

7.4.36.5.1.3 Field 'Local DTAM current PIN code'

Detailed use of the 'Local DTAM current PIN code' is described in clause 7.4.36.5.6. The 'Local DTAM current PIN code' field shall be coded as in table 75-60.

Table 75-60: 'Local DTAM current PIN code' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = 'Local DTAM current PIN code'								1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	x	PIN protected = 1	3
	1st byte								4
	2nd byte								5
	3rd byte								6
	4th byte								7

7.4.36.5.1.4 Field 'DTAM activation and timeout'

The ' DTAM activation and timeout' field shall be coded as in table 75-61.

Table 75-61: 'DTAM activation and timeout' field

Bit:	8	7	6	5	4	3	2	1	Octet:
	Field identifier = DTAM activation and timeout								1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	x	PIN protected	3
	Deactivated / Activated								4
	default timeout	DTAM timeout							5

Length octet (octet 2): The value of the length (L) indicator shall be equal to '2'.

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'DTAM activation and timeout' field against unauthorised modification, depending on its security policy.

'**Deactivated/Activated' octet** (octet 4). The 'Deactivated/Activated' octet shall be 30H or 31H. 30H stands for DTAM deactivated for that line, 31H for DTAM activated for that line.

Some DTAMs may not allow activation line by line. In that case, the 'Deactivated/Activated ' octet value shall be the same for all lines associated with that DTAM.

'**Default timeout' bit** (bit 8 of octet 5). The 'default timeout' bit indicates (if set) that the configured DTAM timeout is the FP default timeout value. If the bit is set, the following 'DTAM timeout' value shall be disregarded.

DTAM timeout (octet 5). The DTAM timeout is the number of seconds before DTAM answers an incoming call. The DTAM timeout shall be coded with the natural binary value, with the least significant bit in bit position "1". Allowable values are 0 to 127.

A value of zero indicates a timeout of '0' seconds, meaning that the DTAM is configured to answer incoming calls immediately.

Some DTAMs may not allow different values from one line to another. In that case, the FP shall ensure that the DTAM timeout is the same for all lines associated with that DTAM: if the PP user modifies the value for one line, the FP shall copy the new value to all other corresponding line settings.

7.4.36.5.1.5 Field 'DTAM web link'

The 'DTAM Link' field sets the address of the DTAM location on the network. The 'DTAM Link' field shall be coded as in table 75-62.

Table 75-62: 'DTAM web link' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = DTAM web link								1
	0/1	Length (L)							2
	0/1	x	x	x	x	x	x	PIN protected	3
	1^{st} character byte								4
	2^{nd} character byte								5
	…								

'**PIN protected**' (bit 1 of octet 3). This allows the FP to protect the 'DTAM web link' field against unauthorized modification, depending on its security policy.

Characters will be coded as defined for UTF-8 but restricted to the IA5 subset of characters (code point below or equal to 127). The max. length of this parameter (from octet 4) shall be 2 048.

Bits 2 to 7 (octet 3): reserved for further standardization and will be set to "0".

7.4.36.5.1.6 Field 'Welcome message parameters'

The 'Welcome message parameters' field shall be coded as in table 75-63 below.

Table 75-63: 'Welcome message parameters' field

Bit:	8	7	6	5	4	3	2	1	Octet:
	Field identifier = Welcome message parameters								**1**
	0/1	Length (L)							**2**
	0/1	Editable	x	x	x	x	x	PIN protected	**3**
	0/1	Selected welcome message position index							**4**

Length octet (octet 2): the value of the length (L) indicator shall be ≥ '3'. The field shall always contain all of the indicated subfields, even if the 'is_DTAM' bit (see below) is not set.

'**PIN protected' property** (bit 1 of octet 3). The 'PIN protected' property allows the FP to protect (or not) the 'Welcome message parameters' field against unauthorised modification, depending on its security policy.

'**Selected welcome message position index**' (octet 4). This subfield allows the PP user to indicate which welcome message shall be used for the line (starting from 1). The position index value shall correspond to the position index in the 'DTAM Welcome Message List' of the selected welcome message (see clause 7.4.36.5.4).

EXAMPLE: If the DTAM only supports one welcome message, the subfield shall contain a (non-editable) value of 1.

Some DTAMs may not allow to select a welcome message per line (e.g. welcome message selection could be based on time only). In that case, the 'Selected welcome message index' subfied shall be the same for all lines associated with that DTAM; if the PP user modifies the value for one line, the FP shall copy the new value to all other corresponding line settings.

7.4.36.5.1.7 Field 'Screening parameters'

See table 75-64.

Table 75-64: 'Screening parameters' field

Bits	8	7	6	5	4	3	2	1	Octet
	0	Field identifier = Screening parameters							1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	x	PIN protected	3
	Screening deactivated / activated on FP side								4
	Single PP / multiple PPs call screening mode								5
	Screening acceptance timeout								6
	1	Number of screening handsets							7
	0/1	Handset bitmap							8
	0/1	..							
	1	Handset bitmap (continued)							8n

PIN protected (bit 1, octet 3) allows the FP to protect the Screening support field against unauthorized modification, depending on its security policy.

Bits 2 to 6 (octet 3): These bits are reserved for further standardization and shall be set to 0.

'**Screening deactivated/activated on FP side' octet** (octet 4). This one-octet subfield indicates the screening activation status on FP side for the line. Value 30H stands for screening deactivated for the line on FP side, 31H for screening activated for the line on FP side.

Some DTAMs may not allow screening activation line by line. In that case, the subfield value shall be the same for all lines associated with the DTAM.

'**Single PP / multiple PPs call screening mode' octet** (octet 5). This one-octet subfield indicates whether the FP is in 'single PP' of 'multiple PPs' screening mode for the line. Value 30H stands for single PP for the line, 31H for multiple PPs for the line.

A FP that cannot manage multiple PPs in call screening mode shall always use value 30H for this subfield.

Some DTAMs may not allow the use of different modes from one line to the other. In that case, the subfield value shall be the same for all lines associated with the DTAM.

Screening acceptance timeout (octet 6). The screening acceptance timeout is the number of seconds starting from call screening indication (clause 7.4.36.6.2) before the FP releases the call screening presentation to a PP (using clause 7.4.36.6.6). The timeout shall be coded with the natural binary value, with the least significant bit in bit position "1". Allowable values are 0 to 255.

A value of zero indicates that the default value configured in the FP shall be used.

Some DTAMs may not allow different values from one line to another. In that case, the FP shall ensure that the timeout is the same for all lines associated with the DTAM: if the PP user modifies the value for one line, the FP shall copy the new value to all other corresponding DTAM settings entries.

Number of screening handsets (octet 7). The number of screening handsets relates to the number of handsets that are:

- screening capable,
- attached to the considered line, and
- activated for screening on that line thanks to the following bitmap.

The value shall be coded with the natural binary value, with the least significant bit in bit position "1". Allowable values are "1" to "127".

Handset bitmap (octet group 8). This is a bitmap octet group, with handset number 1 in bit position 1, etc. A value of 1 indicates an activated screening-capable handset attached to the line, and a "0" indicates it is not.

Bits 7 6 5 4 3 2 1 Meaning

x x x x x x 1 Handset number 1 is an activated screening capable handset attached to the line
x x x x x 1 x Handset number 2 is an activated screening capable handset attached to the line
x x x x 1 x x Handset number 3 is an activated screening capable handset attached to the line
x x x 1 x x x Handset number 4 is an activated screening capable handset attached to the line
x x 1 x x x x Handset number 5 is an activated screening capable handset attached to the line
x 1 x x x x x Handset number 6 is an activated screening capable handset attached to the line
1 x x x x x x Handset number 7 is an activated screening capable handset attached to the line

NOTE 1: If extension bit is 0 in the first octet (indicating presence of an additional octet), the least significant bit of second octet stands for handset number 8.

NOTE 2: The format of the current field is a bitmap; it differs from 'Number' field format of the Internal Names List (terminal id number) but represents the same handset numbers.

The FP shall control that only screening capable handsets attached to the line are activated through the bitmap.

Only the necessary number of octets shall be transmitted over the air within the octet group, depending directly on the number of *registered* handsets. It is not necessary to transmit all 19 octets of the octet group (covering the 127 positions). As a particular case, if there is no screening handset for the line:

- the 'Number of Screening handsets' shall be set to 0.
- no handset bitmap octet will be included in the field.

7.4.36.5.1.8 Field 'Time duration'

See table 75-65.

Table 75-65: 'Time duration' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = Time duration								1
	0/1	Length (L)							2
	0/1	editable	x	x	x	x	x	PIN protected	3
	<Hours in BCD format>								4
	<Minutes in BCD format>								5
	<Seconds in BCD format>								6

For octet 3, each bit indicates whether a property of the field is given (1) or not (0). In the case of 'x', the value is reserved for future use.

Hours/Minutes/Seconds (octets 4,5 and 6). Contain the time duration in hours, minutes and seconds in BCD format.

EXAMPLE: A duration of 1 hour 22 minutes and 2 seconds shall be coded with octet 4 = 01H (hour), octet 5 = 22H (minute), octet 6 = 02H (second).

NOTE: Octets 4, 5 and 6 coding is identical to <<Time-Date>> IE (see EN 300 175-5 [5], clause 7.7.50) for the same octets with 'coding' subfield value '01'B ('Time') and 'interpretation' subfield value '000001'B ('Time duration').

7.4.36.5.1.9 Field 'Local DTAM new PIN code'

Detailed use of the 'Local DTAM new PIN code' is described in clause 7.4.36.5.6. The 'Local DTAM new PIN code' field shall be coded as in table 75-66.

Table 75-66: 'Local DTAM new PIN code' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = Local DTAM new PIN code								1
	0/1	Length (L)							2
	0/1	Editable	x	x	x	x	x	PIN protected = 1	3
	1st byte								4
	2nd byte								5
	3rd byte								6
	4th byte								7

7.4.36.5.1.10 Field 'Position index'

This field is used for indicating the DTAM position used for storing the (possibly empty) recorded message. See table 75-67.

Table 75-67: 'Position index' field

Bits	8	7	6	5	4	3	2	1	Octet
	Field identifier = Position index								**1**
	0/1	Length (L)							**2**
	0/1	editable	x	x	x	x	x	PIN protected	**3**
	Position index value								**4**

The Position index value shall be in the interval [1 .. N], where N is the number of available positions in the considered DTAM for storing DTAM welcome messages. N shall not exceed 255.

7.4.36.5.2 DTAM Settings List

The DTAM Settings List contains one entry for each line-DTAM association.

Any non line specific DTAM parameter value shall therefore be repeated for each line using the concerned DTAM.

See table 75-68 below.

Table 75-68: Entry fields for the DTAM Settings List

Field identifier	Field	Length constraint	Normative action/comment	Clause
01H	Line id	≥ 1	Line id of the Line-DTAM association	7.4.10.5.1.7
02H	DTAM full identifier	= 3	DTAM location and DTAM id of the line-DTAM association Includes the Voice/Visual property	7.4.36.5.1.1
03H	DTAM Number	≥ 1	The number to call DTAM	7.4.36.5.1.2 7.4.10.5.1.2
04H	Local DTAM current PIN code	= 5	Current PIN code of the local DTAM used for checking PIN code entered by user	7.4.36.5.1.3
05H	DTAM activation and timeout	≥ 1	Allows to activate/deactivate the DTAM for the indicated line (for all lines) and define the used DTAM timeout	7.4.36.5.1.4
06H	DTAM web link	≥ 1	The link to connect DTAM	7.4.36.5.1.5
07H	Welcome message parameters	≥ 1	Selected message for the indicated line	7.4.36.5.1.6
08H	Screening parameters	≥ 5	Screening parameters for the indicated line-DTAM association	7.4.36.5.1.7
09H	Local DTAM new PIN code	= 5	New PIN code of the local DTAM used to modify the PIN code	7.4.36.5.1.9

7.4.36.5.2.1 Entry fields statuses for local and remote DTAMs

See table 75-69 below.

Table 75-69: Entry field statuses for the DTAM Settings List

Field identifier	Field	Local DTAM Status	Remote DTAM Status
01H	Line id	M	M
02H	DTAM full identifier	M	M
03H	DTAM Number	M (note 1)	M (note 2)
04H	Local DTAM PIN code	O	NA
05H	DTAM activation and timeout	M	M
06H	DTAM web link	M (note 2)	M (note 2)
07H	Welcome message parameters	M	M
08H	Screening parameters	O	NA
09H	Local DTAM new PIN code	O	NA
NOTE 1: The field shall always be empty. NOTE 2: The field is mandatory but may be empty.			

7.4.36.5.3 DTAM Incoming Calls List

The DTAM Incoming Calls List shall contain the following fields.

NOTE: The DTAM Incoming Calls List is only used by Visual DTAMs (see clause 7.4.36.2).

See table 75-70 below.

Table 75-70: "DTAM Incoming Calls List" entry fields

Field identifier	Field	Length constraint	Normative action/comment	Clause
01H	DTAM full identifier	=3	DTAM location + DTAM id + DTAM Visual/voice property	7.4.36.5.1.1
02H	Number	≥ 1	Number of the calling party	7.4.10.5.1.2
03H	Name	≥ 1	Name of the calling party	7.4.10.5.1.3
04H	Date and Time	≥ 5	Date and time of the DTAM incoming call	7.4.10.5.1.4
05H	Read status	= 1	Indicates whether entry is shown first time	7.4.10.5.1.5
06H	Line name	≥ 2	Name of line on which the call was received (cannot be empty)	7.4.10.5.1.6
07H	Line id	≥ 3	Id of line on which the call was received	7.4.10.5.1.7
08H	Time duration	= 5	Message time duration	7.4.36.5.1.8

7.4.36.5.4 DTAM Welcome Message List

The "DTAM Welcome Message List" contains for each DTAM one entry per available position in the DTAM for recording a welcome message.

The number of positions (number of entries in the list with corresponding DTAM id) shall always correpond to the maximum number of welcome messages supported by the DTAM and should remain stable over time. In order to remove a welcome message, the PP user may empty the position by setting the message time duration to 0.

NOTE 1: Another way to remove a message is to replace it with another one, using the DTAM command 'Record welcome message' at the corresponding entry index.

The list shall contain the fields indicated in the following table 75-71.

NOTE 2: The DTAM Welcome Message List is used for both DTAM profiles (Voice oriented and Visual DTAMs).

Table 75-71: "DTAM Welcome Message List" entry fields

Field identifier	Field	Length constraint	Normative action/comment	Clause
01H	DTAM full identifier	= 3	DTAM location + DTAM id + DTAM Visual/voice property=1 (Visual DTAM)	7.4.36.5.1.1
02H	Position index	≥ 1	Index of the position in the DTAM holding the recorded message	7.4.36.5.1.10
03H	Name	≥ 1	Label of the recorded message	7.4.10.5.1.3
04H	Time duration	= 5	Message time duration 0 is used of no message is recorded for the position	7.4.36.5.1.8

NOTE 3: The DTAM Settings List is used in order to select the welcome message used for a line (or several lines).

7.4.36.5.5 List Access service call transformation into a DTAM consulting call

The present clause applies to a PP involved in an LiA service call not already transformed into a voice call. It does not apply to an LiA session started within a voice call.

In order to transform an LiA service call into a DTAM consulting call, the PP shall use control code 1C20H together with the targeted DTAM id. The LiA session may continue, or may be ended.

EXAMPLE: Figure 80-6 describes LiA access to the DTAM Settings List, transformed into a DTAM consulting call. The DTAM id is found in the DTAM Settings List itself. Transformation of an LiA access to the DTAM incoming list could also be used.

NOTE: In principle, LiA access to any list can be tranformed into a DTAM consulting call, provided that the PP knows the DTAM id. However, the most probable use case involves LiA access to a DTAM relating list.

Basic service change. The basic service shall implicitly change from 'LiA service call' into 'DTAM wideband speech default setup attributes' indicating a 'DTAM consulting call' (see clause 7.4.36.3.1).

Call class change. The call class shall implicitly change to adapt to the DTAM location (see clause 7.4.36.3.1).

Subsequent LiA session with DTAM Incoming Calls List. If the DTAM is a Visual DTAM, an LiA session with the DTAM Incoming Calls List should be started (if it was not already started in the initial LiA session) within the established DTAM consulting call, as described in clause 7.4.36.3.1 (subsection 'LiA session within DTAM consulting call').

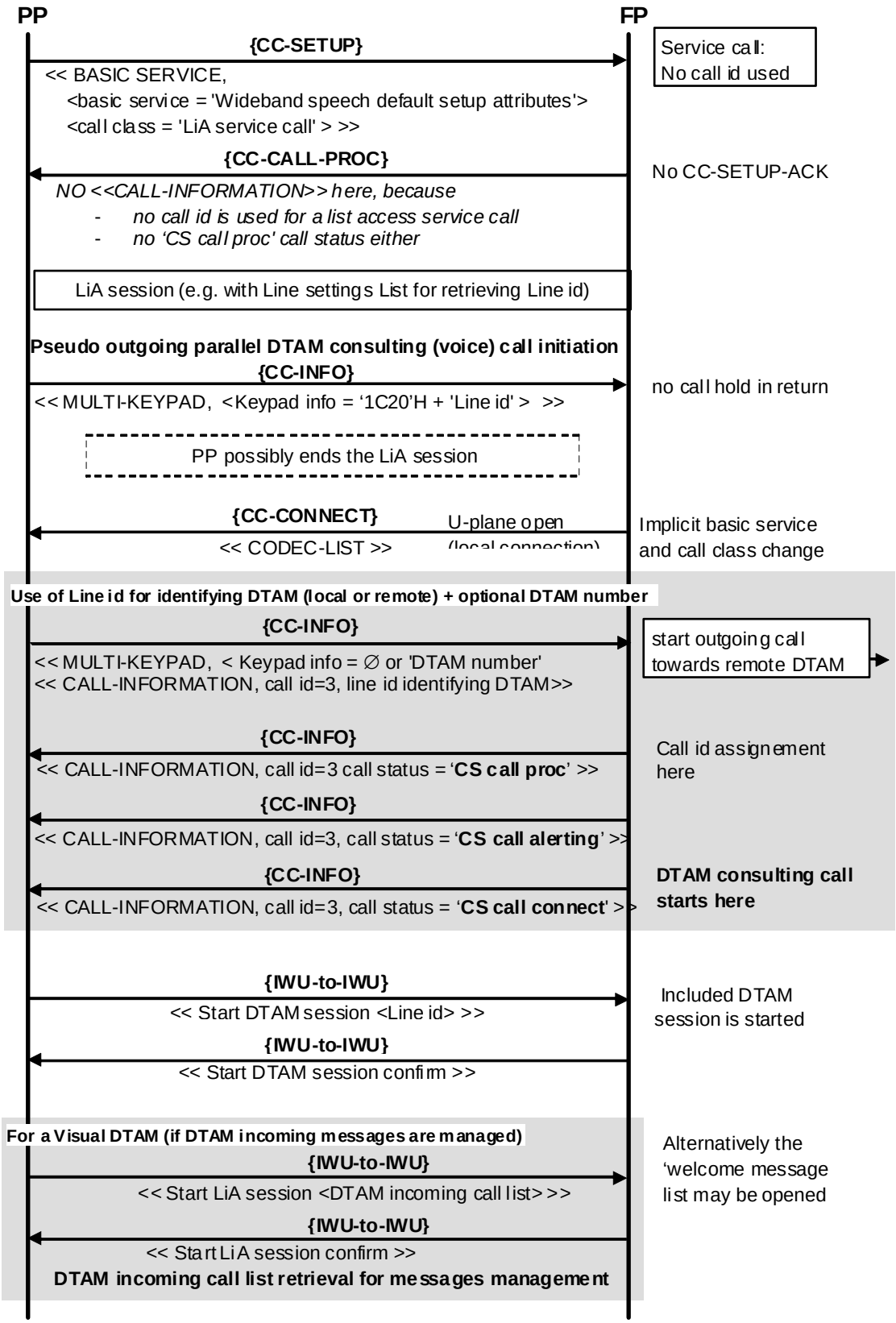


Figure 80-6: DTAM consulting (voice) call establishment from LiA service call

7.4.36.5.6 Local DTAM PIN code management

The local DTAM PIN code works similarly to the Line Settings List PIN code described in clause 7.4.11.1.

Two distinct fields are defined in the 'DTAM settings' list:

- The 'Local DTAM current PIN code' field (see clause 7.4.36.5.1.3) is only used to check the PIN code entered by the user. As it is not directly modifiable, it is not considered as 'PIN protected'.
- The 'Local DTAM new PIN code' field (see clause 7.4.36.5.1.9) is used to modify the PIN code and is therefore always 'PIN protected'. If the field is modified, the new value shall be stored in both PIN code fields.

Both fields are protected against reading: after any 'edit entry' or 'read entry' command on any of these two fields, the FP shall answer with the invalid value 'FFFFFFFF'H, instead of the real value of the field.

Line dependency. The DTAM Settings List allows the definition of one PIN code per line. When a DTAM used on several lines does not allow the use of one PIN code per line, the PIN code shall protect the whole DTAM (it is at least true for voice-oriented DTAMs).

PIN checking. PIN checking involves opening a session with the DTAM Settings List and using 'edit entry'/'save entry' with the 'current' PIN code field. The save entry command shall only contain the 'current PIN code' field. The save entry command has a special behaviour in this context, as it does not modify the stored field but only compares the sent value with the stored value. PIN check is successful if the value inserted in the 'save entry' command is correct; otherwise a negative acknowledgement with reject reason 'incorrect PIN' is used.

Only the PP initiating PIN checking shall be allowed to perform protected operations.

PIN code protected operations.

Protected operation shall include:

- Modification or deletion of PIN protected fields in the 'DTAM settings' and 'DTAM incoming call' list:
  - the subset of PIN-protected fields within these lists is left free to the implementer. However, The 'Local DTAM new PIN code' shall always be PIN protected.
- Operations implying protected fields deletion (i.e. list or list entry deletion).
- Reading access to the 'DTAM incoming call' list and to the DTAM Welcome Message List.
- DTAM session creation (this includes use of DTAM commands within that session and listening of messages).

NOTE 1: Reading access to the 'DTAM settings' list is not PIN protected. However the PIN code fields values are protected through the invalid returned value.

NOTE 2: Possible use of the same PIN code for protecting remote access to the local DTAM is out of scope of the present document.

Absence of prior PIN checking in the same call. In the case where no successful PIN checking took place before a protected operation within the same call:

- The FP shall answer a 'start DTAM session command' with DTAM start session reject reason 'PIN code required' (see clause 7.4.36.4.2.2).
- The FP shall answer a protected LiA command with a negative acknowledgement with reject reason 'PIN code required' (see clause 7.4.10.4.9).

Ciphering. For security reasons, both PIN code fields from PP to FP shall never be sent over the air on a non-ciphered link. If this is not the case, the FP shall answer the 'save entry' with a negative acknowledgement, with reject reason = "procedure not allowed" (see clause 7.4.10.4.9).

7.4.36.6 Call Screening

7.4.36.6.1 Screening general requirements

Call screening applies to an external incoming call received on a line with an associated DTAM, and for which no user of the DECT system answered the call within the configured DTAM timeout (see clause 7.4.36.4.14).

Call screening. Call screening is used in addition to the recording of the DTAM incoming call, to allow users to listen to the call while it is being recorded, and without answering it. The screening PP is muted and the audio is routed to the speaker (or earpiece).

Call screening indication. Renewed presentation of the call when answered by a DTAM with call status 'CS screening setup', so that the PP can accept the screened call and call screening can begin with that PP.

Call screening acceptance. Acceptance by a PP receiving a call screening indication of the call in screening mode. This acceptance may be either automatic or manual depending on the PP configuration.

Call screening interception. During call screening, the user intercepts the call and joins it, continuing the incoming call as a regularly answered call. Recording of the call is stopped.

Screening-capable PP. PP that is able to accept (or reject) a call in screening mode (see clause 7.4.36.6.3). Call screening acceptance involves in particular opening the loudspeaker and muting the microphone.

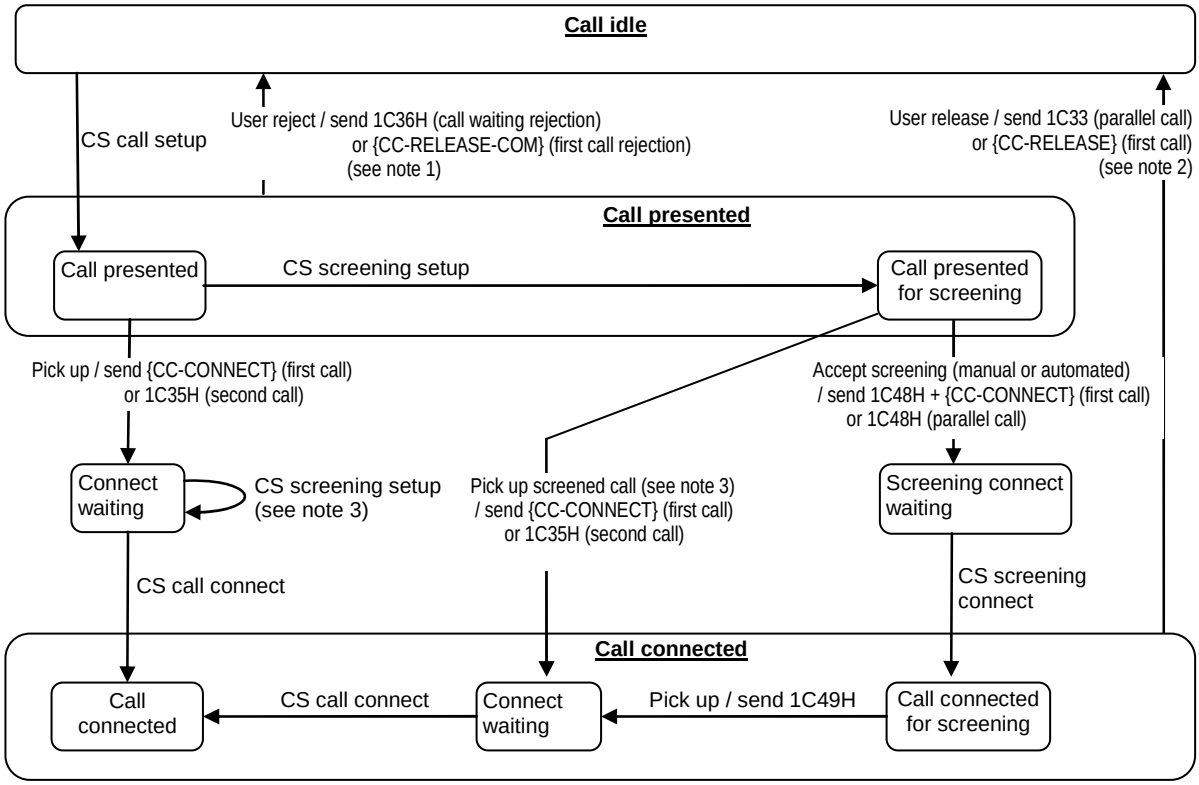
A screening capable PP shall indicate so by indicating 'Support of DTAM and Screening features' in the terminal capability information element.

Screening PP. Screening capable PP that is activated for screening on the considered line (see 'Screening parameters' in clause 7.4.36.5.1.7) and therefore receives call screening indications.

NOTE: If screening is indicated via a 'CS screening setup' to screening PPs, non activated screening-capable PPs are handled like non screening capable PPs and receive an FT initiated call screening release (see clause 7.4.36.6.6).

Screened call. Call for which the screening PPs attached to the line of the external incoming call receive a call screening indication that the call may be accepted in screening mode.

Summary of PP side states for a first or parallel call. The screening-specific states and other regular states of an external incoming call, and their relations with the screening-specific and other regular control codes are summarized below in figure 80-7.



NOTE 1: Call waiting rejection (1C36H) can still be used if a parallel call is presented for screening ('CS screening setup' has been received).
NOTE 2: Parallel call release (1C33H) can still be used if call is connected for screening ('CS screening connect' has been received). In that case, the call becomes idle on the DECT system as a result of the release, but not idle end-to-end (DTAM recording continues).
NOTE 3: Crossing of call pick-up from user and 'CS screening setup' from FP is solved by cancelling screening presentation.
NOTE 4: In order to accept a first incoming call without screening, {CC-CONNECT} alone is allowed in 'Call presented' and 'Call presented for screening' states, while call screening interception (1C49H) is allowed in 'Call connected for screening' state.
NOTE 5: In order to accept a parallel incoming call without screening, 'Call waiting acceptance' (1C35H) is allowed in 'Call presented' and 'Call presented for screening' states, while call screening interception (1C49H) is allowed in 'Call connected for screening' state.

Figure 80-7: Summary of PP side states for a first or parallel screened call. Crossing cases

7.4.36.6.2 Call screening indication (FP to PP)

Call screening indication may be sent by the FP after an external incoming call was first presented (as a regular external incoming call) and not answered within DTAM timeout.

Call screening can be seen as a second presentation of the call to the PP (i.e. with 'CS screening setup' call status instead of 'CS call status') after the initial regular incoming call presentation (with 'CS call setup') was not answered by any user within DTAM timeout.

NOTE 1: Call screening indication should not occur before the associated DTAM answers the call.

For a first external incoming call, call screening indication (to all *screening* PPs not already involved in a call) occurs after regular call presentation (to all PPs) as follows:

- The FP sends a {CC-SETUP} message, with call status 'CS call setup' to the PP.
- The PP returns a {CC-ALERTING} message.
- The FP starts playing the welcome message towards the remote user (i.e. even if U-plane is not connected).

- At the time of call screening indication:
  - For a screening PP, the FP sends a *call screening indication* to the PP by sending call status '**CS screening setup**' within a {CC-INFO} message indicating that call screening has started.
  - For a non-screening PP, the FP sends a {CC-RELEASE} from the FP.

NOTE 2: Non-screening PPs include non screening-capable PPs, and screening-capable PPs that are not activated.

- A screening PP that receives a call screening indication has the following options:
  - Accept the screened call (can be done automatically or manually); see clause 7.4.36.6.3.
  - Reject the screened call (user initiated rejection; see clause 7.4.36.6.4).
  - Pick up the call as a regular external incoming call (in which case DTAM recording and screening stop).
  - Ignore the screened call, that is, neither accept, reject, nor pick up the call (only possible if call screening acceptance is configured as manual).

NOTE 3: The case of a waiting call is described in clause 7.4.36.6.8.

7.4.36.6.3 Call screening acceptance (PP to FP)

The screened call (i.e. the second presentation of the call in call screening mode with call status 'CS screening setup') can be accepted by the PP by use of a 'call screening acceptance'.

After the screened call has been accepted by a sceening PP, call screening can begin with that PP. All other PPs receive a {CC-RELEASE} message.

A screened call can be accepted automatically or manually by the user.

For accepting a screened call (either manually or automatically), the PP shall use a call screening acceptance control code ('1C48'H) in a <<MULTIKEYPAD>> IE sent to the FP within a {CC-INFO} message (see also clause 7.4.3.2).

Single PP call screening mode. If an FP only supports a single PP in screening mode, or if the FP is configured in single PP screening mode, the FP shall release the screened call for all other PPs by using the 'FP initiated call screening release' procedure (see clause 7.4.36.6.6).

Multiple PPs call screening mode. See clause 7.4.36.6.10.

See figure 80-8 below for an example.

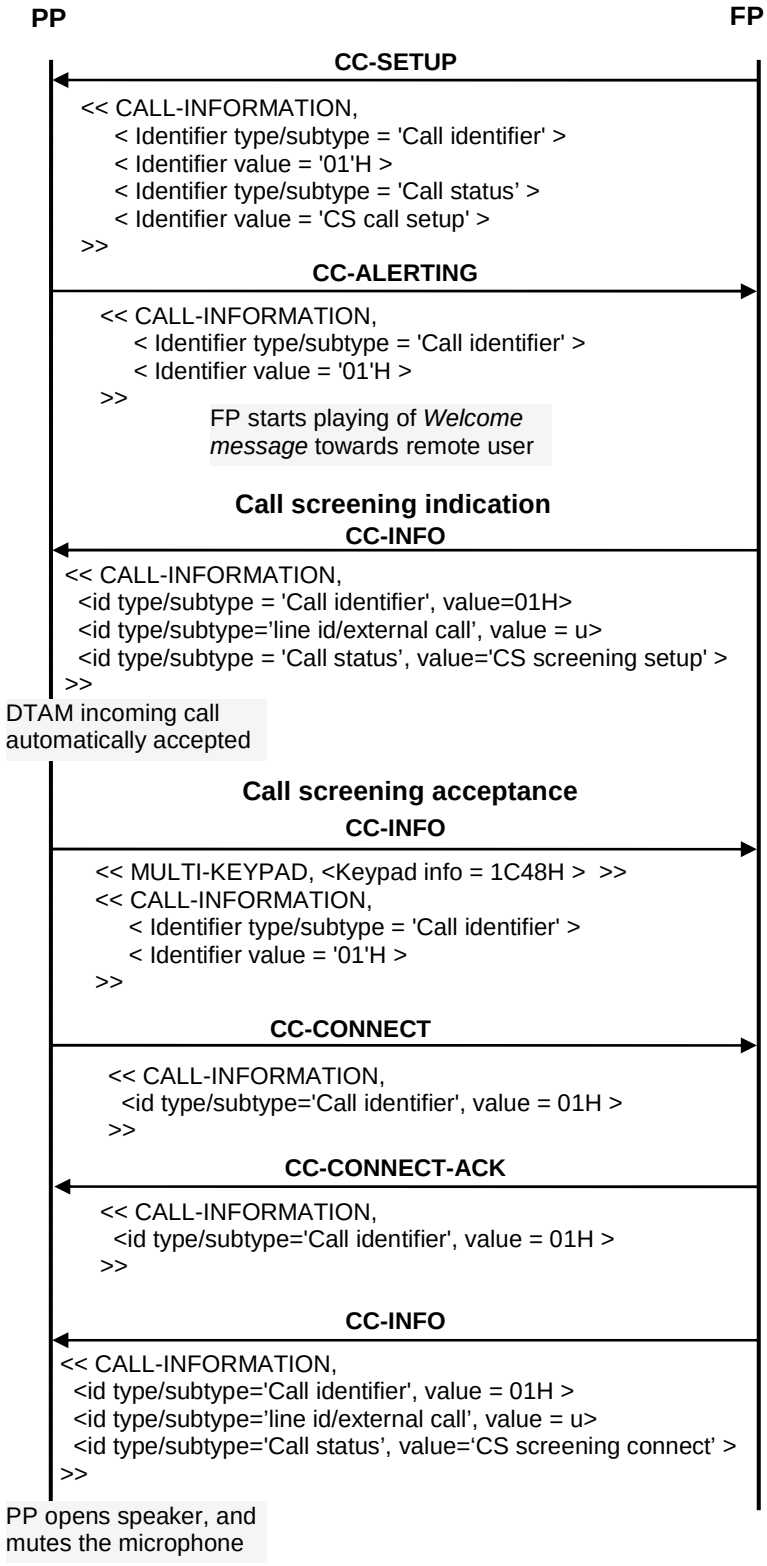


Figure 80-8: Call screening acceptance

7.4.36.6.4 Call screening rejection (PP to FP)

The screened call can be rejected by the PP as follows:

- If the screened call is a first call, the PP shall reject it by sending a {CC-RELEASE-COM} message (abnormal release).

- If the screened call is a parallel call, the PP shall reject it by using the call waiting rejection procedure (see clause 7.4.3.5.7).

NOTE 1: Call screening rejection should be user initiated. A PP for which screening is not desired should be deactivated as described in clause 7.4.36.5.1.7.

NOTE 2: if the screened call (first of parallel) is rejected by a PP, call screening presentation continues with other PPs.

See figure 80-9 below for an example.

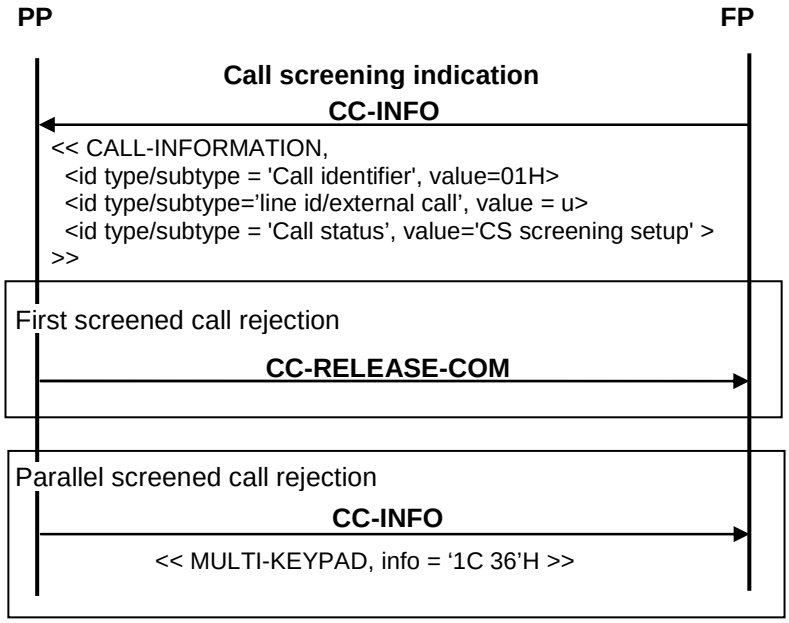


Figure 80-9: Call screening rejection

7.4.36.6.5 Call screening interception (PP to FP)

Call screening interception allows the PP to pick up a screened call as a regular incoming call (instead of as a screened call). When a screened call is intercepted, screening of the call and DTAM recording both stop.

Call screening interception shall only be used after a call screening acceptance by the same PP (i.e. after control code 1C48H has been sent by this PP).

See figure 80-10 below for an example.

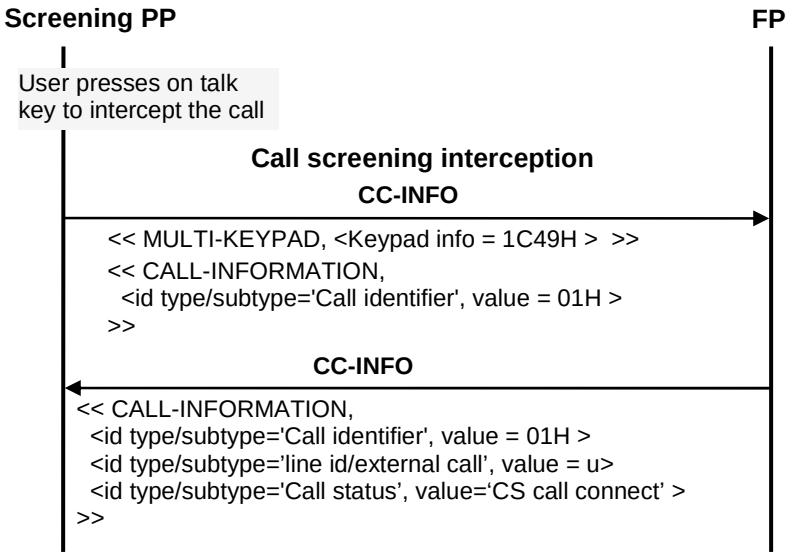


Figure 80-10: Call screening interception

7.4.36.6.6 FP initiated call screening release (FP to PP)

The FP shall use the FP initiated call screening release procedure in the following cases:

- None of the screening PPs accepted the call, i.e. all screening PPs either rejected or ignored the screened call within the screening acceptance timeout (see clause 7.4.36.5.1.7, field 'Screening parameters').

NOTE: In this case, the FP continues recording the DTAM incoming message as if no screening had been started.

- The remote user of the call hanged up the call.
- DTAM recording timer expired (which also terminates the call with the remote user).

See figure 80-11 below for an example.

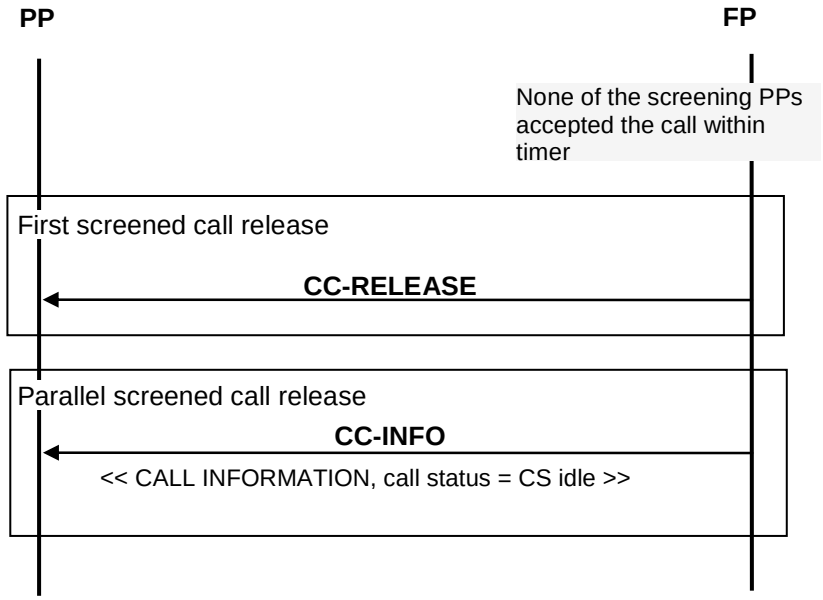


Figure 80-11: Call screening release (example)

7.4.36.6.7 Parallel call during active call screening

See table 75-72 below.

Table 75-72: Supported parallel call procedure during active call screening

Procedure name	PP Support	FP Support
Outgoing parallel call initiation (external or internal)	O	O
Call waiting indication (external or internal)	M	M
Call waiting acceptance	M	M
Call waiting rejection	M	M
Active call release with replacement (from PP to FP)	M	M
Call toggle request (external or internal)	M	M
Negative acknowledgement	M	M
Putting a call on-hold	M	M
Resuming a call put on-hold	M	M
Intrusion call request indication (only internal)	O	O
3-party conference call request (external or internal)	O	O
Call transfer request (external or internal)	O	O
Explicit call intrusion	O	O

7.4.36.6.8 Call screening of a waiting call

The FP may indicate call screening to the PP after a call waiting indication. As for a first screened call, the user may:

- accept the screened call with a call screening acceptance (1C48H; see figure 80-12 below);
- reject the screened call with a regular call waiting rejection (1C36H) as defined in clauses 7.4.3.5.7 and 7.4.36.6.4;
- pick it up as a regular waiting call with a call waiting acceptance (1C35H), or an active call release with replacement (1C38H). If the call is picked up, DTAM recording and screening both stop;
- ignore the screened call (in which case clause 7.4.36.6.6 applies).

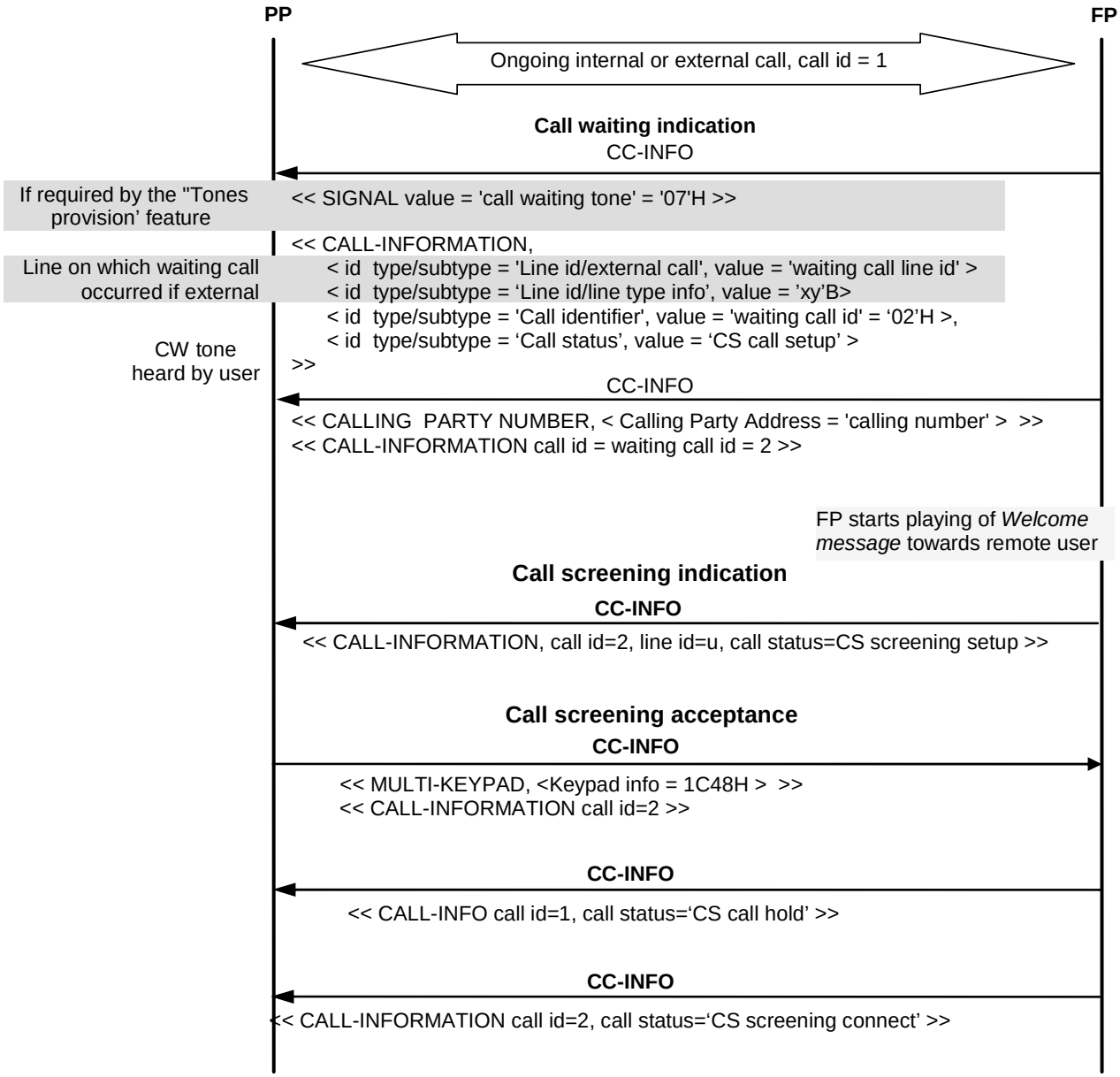


Figure 80-12: Waiting call screening

7.4.36.6.9 Call screening with screening and non-screening PPs

The present clause describes call screening in a multiple PP environment and applies to a DECT system containing the following:

- A DTAM-supporting FP, connected to a local or remote DTAM.
- Screening PPs and non-screening PPs.

When screening of the external incoming call starts, the call shall be released by the FP for all non-screening PPs.

When screening is accepted by one of the PPs, and if the FP is in single screened call mode, the FP shall release the call for all other (screening) PPs.

See figure 80-13 below for an example.

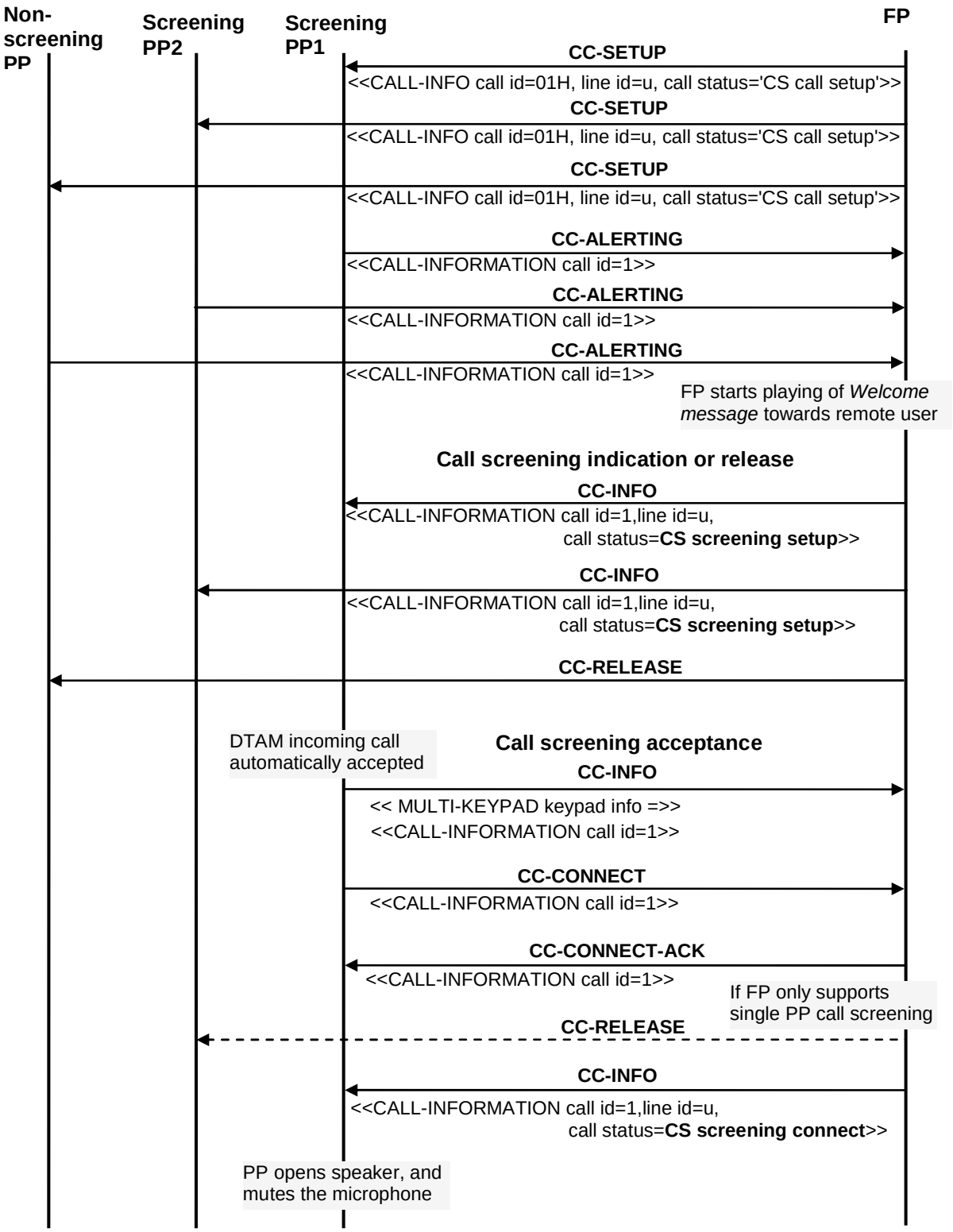


Figure 80-13: Call screening with screening and non-screening PPs

7.4.36.6.10 Single/Multiple PP(s) call screening mode

Single PP call screening mode. If a FP only supports a single PP in screening mode, or if the FP is configured in single PP screening mode, and as soon as one of the screening PPs accepts the screened call, the FP shall release the screened call for all other PPs by using the 'FP initiated call screening release' procedure (see clause 7.4.36.6.6).

Multiple PPs call screening mode. In the case where one of the screening PPs accepts the received *call screening indication*, the screened call presentation continues for all other screening PPs, and can still be accepted by them.

See the following figure 80-14 for an example.

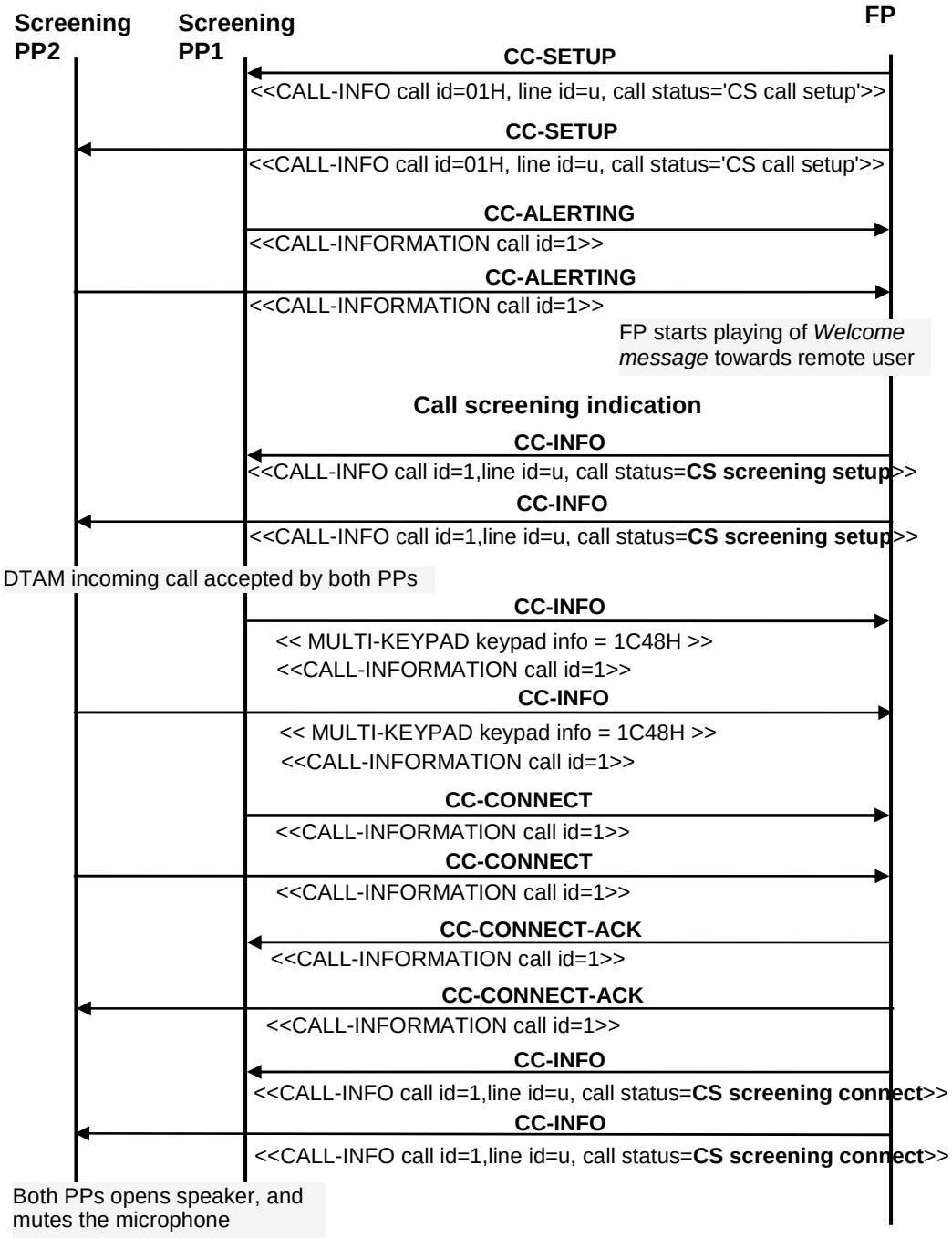


Figure 80-14: Call screening acceptance by multiple PPs

7.5 Data Link Control (DLC) layer procedures

All mandatory requirements as defined in clause 7.5 of TS 102 527-3 [18] shall apply.

7.6 Medium Access Control (MAC) layer procedures

All mandatory requirements as defined in clause 7.6 of TS 102 527-3 [18] shall apply.

7.7 Physical layer (PHL) requirements

All mandatory requirements as defined in clause 7.7 of TS 102 527-3 [18] shall apply.

7.8 Requirements regarding the speech transmission

All mandatory requirements as defined in clause 7.8 of TS 102 527-3 [18] shall apply.

7.9 Management procedures

All procedures described in GAP (EN 300 444 [11], clause 13) shall be supported. Higher layer capability FP broadcast shall be set as described in clause 7.4.9.2 of the present document.

7.10 Application procedures

7.10.1 Easy PIN code and easy pairing registration

All mandatory requirements as defined in clause 7.10.1 of TS 102 527-3 [18] shall apply.

7.10.2 Handset locator

All mandatory requirements as defined in clause 7.10.2 of TS 102 527-3 [18] shall apply.

7.10.3 Transmit power control

7.10.3.1 Base manual transmit power control

Feature content will be provided in a further revision of the present document.

7.10.3.2 Handset adaptive transmit power control

Feature content will be provided in a further revision of the present document.

Annex A (normative): System parameters

A.1 CC timers

All mandatory requirements as defined in clause A.1 of TS 102 527-3 [18] shall apply with the following additions:

<CC.NG.02> Notification allowed deferring timer.

FT value: 2 000 milliseconds.

PT value: Not used.

Start: End of session (case 1), End of call (case 2), Event time (case 3).

Stop: none.

NOTE 1: The 3 uses of the timer and corresponding start times are described in clause 7.4.10.9.2.2.

<CC.NG.03> SMS Sending to network timer.

FT value: 2 000 milliseconds.

PT value: Not used.

Start: Arrival of SMS in Outgoing SMS List.

Stop: SMS handed over to network (and moved to the Sent SMS List).

NOTE 2: If timeout is reached, entry addition in the Outgoing SMS List is notified to the PP. The FP may still try to hand over SMS to the network after timeout. If it succeeds after timeout, entry deletion from the Outgoing SMS List is also notified to the PP.

A.2 MM timers

All mandatory requirements as defined in clause A.2 of TS 102 527-3 [18] shall apply.

A.3 Application timers

All mandatory requirements as defined in clause A.3 of TS 102 527-3 [18] shall apply.

A.4 Constants

P100: FP side maximum response time allowed for an LiA command (as a complete exchange) when the answer fits in a single data packet last.

The mandated value is 800 milli-seconds.

Annex B (normative): Procedure Diagrams

For the purposes of the present document, the diagrams in TS 102 527-3 [18], annex B shall apply.

Annex C (informative): Recommended implementation of procedures

For the purposes of the present document, the recommendations in TS 102 527-3 [18], annex C apply.

Annex D (informative): Guidelines for implementation of DTMF

For the purposes of the present document, the guidelines in TS 102 527-3 [18], annex D apply.

Annex E (informative): Tones format in Recommendations ITU-T

For the purposes of the present document, the recommendations in TS 102 527-3 [18], annex E apply.

Annex F (informative): Services and features defined in other specifications

F.1 Services and features defined in TS 102 527-1 (New Generation DECT; part 1)

The following informative annex shows the features and services defined in TS 102 527-1 [17] (New Generation DECT; part 1), many of them are reused in the present document. This list is informative, and shows the status in TS 102 527-1 [17] (V1.2.1). Where there are changes or divergences the original definitions at TS 102 527-1 [17] apply.

F.1.1 New Generation DECT; part 1, Speech Services (clause 5.1 of TS 102 527-1)

Narrow band ADPCM G.726 voice service [NG1.1]: Recommendation ITU-T G.726 [12] narrow band codec **[NG1.SC.1]** over 32 kbit/s unprotected transmission channel.

Narrow band PCM G.711 voice service [NG1.2]: Recommendation ITU-T G.711 [13] narrow band codec **[NG1.SC.2]** over 64 kbit/s protected or unprotected transmission channels.

Wideband 7 kHz G.722 voice service [NG1.3]: Recommendation ITU-T G.722 [14] wideband codec **[NG1.SC.3]** over 64 kbit/s protected or unprotected transmission channels.

Wideband 7 kHz low rate G.729.1 voice service [NG1.4]: Recommendation ITU-T G.729.1 [15] wideband codec **[NG1.SC.4]** over 32 kbit/s unprotected transmission channels.

Super wideband 14 kHz MPEG-4 ER AAC-LD voice service [NG1.5]: MPEG-4 ER AAC-LD super wideband codec **[NG1.SC.5]** over 64 kbit/s protected or unprotected transmission channels.

Wideband 11 kHz low rate MPEG-4 ER AAC-LD voice service [NG1.6]: MPEG-4 ER AAC-LD super wideband codec **[NG1.SC.6]** over 32 kbit/s unprotected transmission channels.

F.1.2 New Generation DECT; part 1, Network (NWK) features (clause 5.2 of TS 102 527-1)

Codec Negotiation [NG1.N.1): capability to negotiate the speech codec to be used in a communication, based on the supported capabilities in both peers and the previsions included in the present document. This feature may require slot type change.

Codec Switching [NG1.N.2): capability to switch between different speech codecs during a call. This feature may require slot type change.

F.1.3 New Generation DECT; part 1, Data Link Control (DLC) services (clause 5.3 of TS 102 527-1)

LU1 Transparent UnProtected service (TRUP) Class 0/minimum_delay [NG1.D.1]: transparent unprotected service introducing minimum delay, transmission Class 0/min_delay as defined by EN 300 175-4 [4], clause 11.2.

LU1 Transparent UnProtected service (TRUP) Class 0 [NG1.D.2]: transparent unprotected service introducing minimum delay, transmission Class 0 as defined by EN 300 175-4 [4], clause 11.2.

LU7 64 kbit/s protected bearer service [NG1.D.3]: protected service providing reliable 64 kbit/s transmission over packet type P80 incorporating FEC and ARQ protection mechanisms. Defined by EN 300 175-4 [4], clause 11.9.

LU12 UNProtected Framed service (UNF) Class 0 [NG1.D4]: unprotected service introducing normal delay, transmission Class 0 as defined by EN 300 175-4 [4], clause 11.14.

FU1 DLC frame [NG1.D.5]: bidirectional frame used in LU1 service. Defined in EN 300 175-4 [4], clause 12.2. Frame length depends on slot type and is defined in table 12.2.1.1 of EN 300 175-4 [4], clause 12.2.1.

FU7 DLC frame [NG1.D.6]: bidirectional frame used in LU7 service. Defined in EN 300 175-4 [4], clause 11.9.

FU12 DLC frame with adaptation for codec G.729.1 [NG1.D.7]: bidirectional frame used in LU12 service, as defined in EN 300 175-4 [4], clause 12.12, frame size specified for full slot, 2-level modulation and with the adaptation for codec G.729.1 defined in EN 300 175-4 [4], clause E.1.

F.1.4 New Generation DECT; part 1, Medium Access Control (MAC) services (clause 5.4 of TS 102 527-1)

I_N_minimum delay symmetric MAC service type [NG1.M.1]: I_N_minimum delay symmetric connection as defined in EN 300 175-3 [3], clause 5.6.2.1.

I_N_normal delay symmetric MAC service type [NG1.M.2]: I_N_normal delay symmetric connection as defined in EN 300 175-3 [3], clause 5.6.2.1.

I_{PQ}_error_detection symmetric MAC service type [NG1.M.3]: I_{PQ}_ error_detection symmetric connection as defined in EN 300 175-3 [3], clause 5.6.2.1. (type 3: I_P_ error_detection with single-subfield protected B-field as defined in EN 300 175-3 [3], clause 6.2.1.3.4).

Advanced Connections [NG1.M.4]: MAC Connection Oriented service providing connection between FT and PT. Advanced connections are able to support multiple bearers, bearers different of the full slot, and any MAC service. The service includes the means for setting-up and releasing the required bearer(s).

F.1.5 New Generation DECT; part 1, Physical Layer (PHL) services (clause 5.5 of TS 102 527-1)

2 level GFSK modulation [NG1.P.1]: 2 level Gaussian frequency Shift Key (GFSK) modulation as defined by EN 300 175-2 [2], clause 5.

Physical Packet P32 [NG1.P.2]: physical packet P32 (full slot) as defined by EN 300 175-2 [2], clause 4.4.2.

Physical Packet P64 [NG1.P.3]: variable capacity Physical packet P00j as defined by EN 300 175-2 [2], clause 4.4.3, with j = 640.

Physical Packet P67 [NG1.P.4]: variable capacity Physical packet P00j as defined by EN 300 175-2 [2], clause 4.4.3, with j = 672.

Physical Packet P80 [NG1.P.5]: physical packet P80 (double slot) as defined by EN 300 175-2 [2], clause 4.4.4.

F.1.6 New Generation DECT; part 1, Speech coding and audio features (clause 5.6 of TS 102 527-1)

G.726 32 kbit/s ADPCM [NG1.SC.1]: Recommendation ITU-T G.726 [12] narrow band codec as defined by EN 300 175-8 [8], clause 5.1. Recommendation ITU-T G.726 [12] codec is mandatory for New Generation DECT in order to ensure interoperability with existing DECT systems.

G.711 64 kbit/s log-PCM [NG1.SC.2]: Recommendation ITU-T G.711 narrow band codec [13] as defined by EN 300 175-8 [8], clause 5.2. Recommendation ITU-T G.711 [13] codec is optional for New Generation DECT in order to improve the quality of narrow band communications, and fax/modem transmissions.
Recommendation ITU-T G.711 [13] provides a slightly higher intrinsic voice quality and no transcoding for PSTN calls. Both, A-Law and μ-Law are supported.

G.722 64 kbit/s wideband [NG1.SC.3]: Recommendation ITU-T G.722 wideband SB-ADPCM 7 kHz codec [14] as defined by EN 300 175-8 [8], clause 5.3. Recommendation ITU-T G.722 [14] is chosen as mandatory wideband codec for New Generation DECT in order to greatly increase the voice quality by extending the bandwidth from narrow band to wideband. Recommendation ITU-T G.722 [14] provides a high wideband quality at a bit rate of 64 kbit/s with low complexity and very low delay.

G.729.1 32 kbit/s wideband [NG1.SC.4]: Recommendation ITU-T G.729.1 wideband codec [15] as defined by EN 300 175-8 [8], clause 5.4. Recommendation ITU-T G.729.1 [15] codec is optional for New Generation DECT in order to provide even higher wideband quality and better robustness to packets/frames losses than Recommendation ITU-T G.722 [14] at half the bit rate of Recommendation ITU-T G.722 [14]. This allows a better transport efficiency on the network side and over the DECT air interface (one full slot). In addition, it is seamless interoperable with largely deployed Recommendation ITU-T G.729 [i.7] based VoIP networks and terminals. Recommendation ITU-T G.729.1 [15] encodes signals in frames of 20 ms. It is a scalable codec operating at bitrates of 8 kbit/s and from 12 kbit/s to 32 kbit/s per steps of 2 kbit/s, in narrow band or in wideband from 14 kbit/s. Recommendation ITU-T G.729.1 [15] already incorporates a high efficiency packet loss concealment mechanism.

MPEG-4 ER AAC-LD 64 kbit/s super wideband [NG1.SC.5]: MPEG-4 ER AAC-LD codec as defined by ISO/IEC 14496-3:2009: [16] and by EN 300 175-8 [8] clause 5.5.1. MPEG-4 ER AAC-LD is optional for New Generation DECT in order to provide higher quality than G.722 by further extending the bandwidth to superwideband (50 Hz to 14 kHz) (and even further, up to full audio bandwidth (20 Hz to 20 kHz)). MPEG-4 ER AAC-LD is designed for high quality communication applications including all kind of audio signals e.g. speech and music and provides a high quality for music streaming or other multimedia applications mixing speech and music. It provides an audio bandwidth of 14 kHz or more at a bitrate of 64 kbit/s. MPEG 4 ER AAC-LD (Error resilient, Low Delay AAC profile) is standardized as an audio profile of MPEG-4 (ISO/IEC 14496-3 [16]). The frame size is 10 ms and the algorithmic delay 20 ms.

MPEG-4 ER AAC-LD 32 kbit/s wideband [NG1.SC.6]: as [NG1.SC5], but using the 32 kbit/s mode, as defined by EN 300 175-8 [8], clause 5.5.2. It provides a bandwidth of 11,5 kHz or more. The frame size is 20 ms and the algorithmic delay 40 ms.

PLC (Packet Loss Concealment) G.722 Appendix III & IV [NG1.SC.7]: to better cope with transmission errors, a Packet Loss Concealment algorithm (PLC) as defined by EN 300 175-8 [8], clause 5.3.2 may be optionally implemented for Recommendation ITU-T G.722 [14]. Appendices III and IV describe packet loss concealment solutions extending the Recommendation ITU-T G.722 [14] decoder. These PLC algorithms may be optionally implemented to improve voice quality in degraded transmission conditions where packets/frames may be lost (in IP network or on DECT air interface).

NOTE 1: Both appendices meet the same quality requirements but address two different quality/complexity trade offs:

1) Appendix III aims at maximizing the robustness at a price of additional complexity.

2) Appendix IV proposes an optimized complexity/quality trade off with almost no additional complexity compared with Recommendation ITU-T G.722 [14] normal decoding (0,07 WMOPS).

Since Recommendation ITU-T G.722 [14] does not incorporate any mechanism to cope with lost frames/packets, the use of a PLC algorithm is strongly recommended to avoid annoying effects of packet/frame losses.

NOTE 2: Recommendation ITU-T G.729.1 [15] already incorporates a packet loss concealment mechanism.

Detection of Modem/fax tone [NG1.SC.8]: detection of the 1 100 Hz, 1 300 Hz and 2 100 Hz standard tones indicating a fax/modem transmission and answering, as defined by EN 300 175-8 [8] clause 5.2.2. The main utility of this function is the switching of codecs to transparent PCM (Recommendation ITU-T G.711 [13]) in order to facilitate modem/fax transmission. The tone detection can also be used to de-activate echo suppression if present.

Codec selection and switching [NG1.SC.9]: to handle several codecs (at least Recommendation ITU-T G.726 [12] and Recommendation ITU-T G.722 [14]), New Generation DECT will support a codec selection and switching mechanism. This may consequently allow the use of other codecs that could be specified in next releases as additional optional codecs according to future application or interoperability needs.

PP Audio type 1a ("classic GAP" handset) [NG1.SC.10]: Audio specification for a general purpose 3,1 kHz telephony handset as defined by EN 300 175-8 [8], clause 7.2.3.

PP audio type 1b ("improved GAP" handset) [NG1.SC.11]: Audio specification for a general purpose 3,1 kHz telephony handset with improved TCLw, as defined by EN 300 175-8 [8], clause 7.2.4. It is compatible with VoIP and long delay networks.

PP audio type 1c (HATS tested, 3,1 kHz handset) [NG1.SC.12]: Audio specification for a general purpose 3,1 kHz telephony handset based on the new HATS methodology, as defined by EN 300 175-8 [8], clause 7.2.5. It includes strong echo suppression (TCLw) requirements and is compatible with VoIP and long delay networks.

PP audio type 1d (HATS tested, 3,1 kHz "improved" handset) [NG1.SC.13]: Audio specification for a general purpose 3,1 kHz telephony handset based on the new HATS methodology with improved quality, as defined by EN 300 175-8 [8], clause 7.2.6. It includes strong echo suppression (TCLw) requirements and is compatible with VoIP and long delay networks. This type has a more demanding acoustic specification, providing superior subjective quality. In practice, this means better electro-acoustic components (speaker, microphone), electronics and signal processing.

PP Audio type 2a (Recommendation ITU-T P.311 7 kHz handset) [NG1.SC.14]: Audio specification for a wideband, 7 kHz service, handset based on the Recommendation ITU-T P.311 [i.6], as defined by EN 300 175-8 [8], clause 7.2.9.

PP Audio type 2b (HATS 7 kHz handset) [NG1.SC.15]: Handset for 7 kHz service (wideband), based on HATS methodology, as defined by EN 300 175-8 [8], clause 7.2.10. It includes strong echo suppression (TCLw) requirements and is compatible with VoIP and long delay networks.

PP Audio type 2c (HATS 7 kHz "improved" handset) [NG1.SC.16]: Handset for 7 kHz service (wideband), based on HATS methodology, with improved quality, as defined by EN 300 175-8 [8], clause 7.2.11. It includes strong echo suppression (TCLw) requirements and is compatible with VoIP and long delay networks. This type has a more demanding acoustic specification, providing superior subjective quality. In practice, this means better electro-acoustic components (speaker, microphone), electronics and signal processing.

PP audio type 3a (HATS tested, 3,1 kHz handsfree) [NG1.SC.17]: Audio specification for a Narrowband (3,1 kHz) handsfree device as defined by EN 300 175-8 [8], clause 7.2.7. This type applies to handsfree devices operating with an open loudspeaker and microphone. The type applies to either:

1) specific PPs designed to operate in handsfree mode;

2) standard handset implementing types 1a, 1b, 1c or 1d, but with the option to operate in handsfree mode; and

3) handsfree accessory devices connected to a handset by any wired or wireless technology.

It provides (300 Hz - 3,4 kHz) frequency range, and it is defined based on HATS methodology.

PP audio type 3b (HATS tested, 3,1 kHz "improved" handsfree) [NG1.SC.18]: Audio specification for a Narrowband (3,1 kHz) handsfree device, improved quality version, as defined by EN 300 175-8 [8], clause 7.2.8. This type applies to handsfree devices operating with an open loudspeaker and microphone. The type applies to either:

1) specific PPs designed to operate in handsfree mode;

2) standard handset implementing types 1a, 1b, 1c or 1d, but with the option to operate in handsfree mode; and

3) handsfree accessory devices connected to a handset by any wired or wireless technology.

It provides (300 Hz - 3,4 kHz) frequency range, and it is defined based on HATS methodology. This type has a more demanding acoustic specification, providing superior subjective quality. In practice, this means better electro-acoustic components (speaker, microphone), electronics and signal processing.

PP Audio type 4a (HATS 7 kHz handsfree) [NG1.SC.19]: Wideband (7 kHz) handsfree device, as defined by EN 300 175-8 [8], clause 7.2.12. This type applies to handsfree devices operating with an open loudspeaker and microphone. The profile applies to either:

1) specific PPs designed to operate in handsfree mode;

2) standard wideband handset implementing profiles 2a, 2b or 2c, but with the option to operate in handsfree mode; and

3) handsfree accessory devices connected to a handset by any wired or wireless technology.

It provides (150 Hz - 7 kHz) frequency range, and it is defined based on HATS methodology.

PP Audio type 4b (HATS 7 kHz "improved" handsfree) [NG1.SC.20]: Wideband (7 kHz) handsfree device, improved quality version, as defined by EN 300 175-8 [8], clause 7.2.13. This type applies to handsfree devices operating with an open loudspeaker and microphone. The profile applies to either:

1) specific PPs designed to operate in handsfree mode;

2) standard wideband handset implementing profiles 2a, 2b or 2c, but with the option to operate in handsfree mode; and

3) handsfree accessory devices connected to a handset by any wired or wireless technology.

It provides (150 Hz - 7 kHz) frequency range, and it is defined based on HATS methodology. This type has a more demanding acoustic specification, providing superior subjective quality. In practice, this means better electro-acoustic components (speaker, microphone), electronics and signal processing.

PP Audio type 5a (Super wideband 14 kHz) [NG1.SC.21]: Handset for 14 kHz service (super wideband), as defined by EN 300 175-8 [8], clause 7.2.14.

PP Audio type 5b (Super wideband 14 kHz, handsfree) [NG1.SC.22]: Handsfree device for 14 kHz service (super wideband), as defined by EN 300 175-8 [8], clause 7.2.15.

FP audio type 1b ("new ISDN" 3,1 kHz) [NG1.SC.23]: Audio specification for a DECT FP supporting narrowband service and providing a digital 64 kbit/s G.711 interface, typically (but not necessarily) an ISDN connection, new specification, as defined by EN 300 175-8 [8], clause 7.3.3.

NOTE 3: FP Audio type 1a ("classic ISDN", 3,1 kHz FP, see EN 300 175-8 [8]) is not to be used in in New Generation DECT equipment. Instead of it, FP type 1b should be used in NG-DECT FPs with ISDN or digital circuit-switch interfaces.

PP echo canceller for FP, narrowband (3,1 kHz) service [NG1.SC.24]: Auxiliary feature for FPs consisting on echo canceller for handling the echo generated by PPs type 1a. As defined by EN 300 175-8 [8], clause 7.4.2. Only narrowband echo cancellation capability is required for this feature.

PP echo supressor for FP, narrowband (3,1 kHz) service [NG1.SC.25]: Auxiliary feature for FPs consisting on echo supressor for handling the echo generated by PPs type 1a. As defined by EN 300 175-8 [8], clause 7.4.3. Only narrowband capability is required for this feature.

FP audio type 2 (analog PSTN 3,1 kHz) [NG1.SC.26]: Audio specification for a DECT FP supporting narrowband service and providing an analog 2-wire PSTN interface. As defined by EN 300 175-8 [8], clause 7.3.4.

FP audio type 3 (VoIP 3,1 kHz) [NG1.SC.27]: Audio specification for a DECT FP supporting narrowband service and providing a VoIP interface, with codecs G.711 (typically) or G.726 on top of it. As defined by EN 300 175-8 [8], clause 7.3.5.

FP Audio type 4 (ISDN, wideband) [NG1.SC.28]: Audio specification for a DECT FP supporting wideband service and providing a digital 64 kbit/s interface, typically (but not necessarily) an ISDN connection, with a wideband codec such as G.722, MPEG, etc. As defined by EN 300 175-8 [8], clause 7.3.6.

FP Audio type 5 (VoIP wideband) [NG1.SC.29]: Audio specification for a DECT FP supporting wideband service and providing a VoIP interface, with a wideband codec on top such as G.722, MPEG, etc. As defined by EN 300 175-8 [8], clause 7.3.8.

PP echo canceller for FP, wideband (7 kHz) service [NG1.SC.30]: Auxiliary feature for FPs consisting on echo canceller for handling the echo generated by PPs type 2a. As defined by EN 300 175-8 [8], clause 7.4.2. Only wideband echo cancellation capability is required for this feature.

PP echo supressor for FP, wideband (7 kHz) service [NG1.SC.31]: Auxiliary feature for FPs consisting on echo supressor for handling the echo generated by PPs type 2a. As defined by EN 300 175-8 [8], clause 7.4.3. Only wideband echo cancelation capability is required for this feature.

FP audio type 6a (internal call) [NG1.SC.32]: This type of audio specification applies to the case of internal call inside a DECT FP or a DECT system without any external interface. FP audio type 6a is defined by EN 300 175-8 [8], clause 7.3.8.

FP audio type 6b (internal conference) [NG1.SC.33]: This type of audio specification applies to the case of 3-party or multi-party conference inside a DECT FP or a DECT system with or without an external interface. FP audio type 6b is defined by EN 300 175-8 [8], clause 7.3.9.

Adaptive volume control for FP [NG1.SC.34]: Accessory feature for FPs consisting on an adaptive volume control depending on the level of environmental noise at the PP. The gain variation is symmetrical. As described in EN 300 175-8 [8], clause 7.6 and informative annex D.

F.2 Services and features defined in EN 300 444 (GAP)

The following informative annex shows the features and MAC/DLC services defined in EN 300 444 [11] (GAP), many of them are reused in the present document. This list is informative, and shows the status in EN 300 444 [11]. Where there are changes or divergences the original definitions at EN 300 444 [11] (GAP) apply.

F.2.1 GAP Network (NWK) features (clause 4.1 of EN 300 444)

outgoing call [N.1]: call initiated at a DECT PP.

off-hook [N.2]: ability to indicate the action of going off-hook, e.g. to start call setup or accept a call.

on-hook (FULL Release) [N.3]: ability to indicate the action of going on-hook (e.g. to terminate a call) and fully release the radio resource.

dialled digits (basic) [N.4]: capability to dial digits 0 to 9, *, #.

register recall [N.5]: ability of the PP to request the invocation of the supplementary service "register recall" over the DECT interface and the ability of the FP to transmit the request to the local network. Register recall means to seize a register (with dial tone) to permit input of further digits or other action.

go to DTMF signalling (defined tone length) [N.6]: go to DTMF signalling with defined tone length.

pause (dialling pause) [N.7]: ability to generate or indicate a dialling pause, e.g. to await further dial tone.

incoming call [N.8]: call received at a DECT PP.

authentication of PP [N.9]: process by which the identity of a DECT PP is checked by the FP.

authentication of user [N.10]: process by which the identity of a user of a DECT PP is checked by the FP. The User Personal Identification (UPI), a personal identification of 0 to 8 digits, manually entered by the user, is used for user authentication.

location registration [N.11]: facility whereby a PP can be registered with a FP or a cluster of FPs such that incoming calls, radio pages or messages may be routed to it.

on-air key allocation [N.12]: capability to transform Authentication Code (AC) into User Authentication Key (UAK) using the key allocation procedure.

identification of PP [N.13]: ability for the FP to request and PP to provide specific identification parameters.

service class indication/assignment [N.14]: assignment by the FP to PP of the service class and indication to the FP by the PP of the contents of its service class.

alerting [N.15]: activates or deactivates alerting at the PP using any appropriate indication.

ZAP [N.16]: ability first to assign and then to re-program the account data held in the PP so that access rights may be suspended subject to the conditions set by the service provider being met, coupled with the ability to re-program the account data again to reinstate access rights once these conditions have been met. One ZAP field should be provided per account field. The PP has the right to authenticate the FP prior to the execution of ZAP suspend.

encryption activation FT initiated [N.17]: activation of the encryption process requested by FT.

subscription registration procedure on-air [N.18]: standardized procedure for loading subscription registration data into a PP in real time over the air-interface.

link control [N.19]: ability to request, accept, maintain and release a data link for the purposes of a NWK layer procedure.

terminate access rights FT initiated [N.20]: ability of the FP to delete a subscription in the PP.

partial release [N.21]: ability to release an established or in progress Call Control (CC) call whilst retaining the radio resource for the purpose of accessing further services.

go to DTMF (infinite tone length) [N.22]: go to DTMF signalling, indicating infinite DTMF tone duration.

go to pulse [N.23]: go to pulse (decadic) signalling.

signalling of display characters [N.24]: transmission to the PP of characters to be displayed on the user's PP display (if provided).

display control characters [N.25]: characters sent to the PP to control the user's display in the PP (if provided). Such characters include cursor control, clear screen, home, flash, inverse video, etc.

authentication of FT [N.26]: process by which the identity of a FP is checked by the PP.

encryption activation PT initiated [N.27]: activation of the encryption process suggested by PT. The real time start of ciphering is done in the MAC layer and is always initiated by the PT.

encryption deactivation FT initiated [N.28]: deactivation of the encryption process requested by FT. The real time stop of ciphering is done in the MAC layer and is always initiated by the PT.

encryption deactivation PT initiated [N.29]: deactivation of the encryption process suggested by PT. The real time stop of ciphering is done in the MAC layer and is always initiated by the PT.

Calling Line Identification Presentation (CLIP) [N.30]: ability to provide the calling party number to the called party before accepting the call.

internal call [N.31]: call between 2 users that does not make use of the local network resources. This is typically useful in residential environments.

service call [N.32]: call initiated by a DECT PT for entering of FT related service and adjustment procedures in a transparent way. After having sent the service call indication, the PT behaves according to the rules of a normal call.

Enhanced U- plane connection [N.33]: ability of the FT to initiate connection of the U- plane during call establishment or release e.g. to facilitate the provision of in band tones or announcements.

Calling Name Identification Presentation (CNIP) [N.34]: ability to provide the calling party name to the called party before accepting the call.

Enhanced Security [N.35]: mechanism to enhance DECT security by introduction of early encryption and the possibility of re-keying during an ongoing call.

AES/DSAA2 authentication [N.36]: authentication using the DECT Authentication Algorithm #2 (DSAA2), based on AES, and including type 2 (see EN 300 175-7 [7]) air i/f procedures.

F.2.2 GAP Speech coding and audio features (clause 4.2 of EN 300 444)

For the purposes of the present document the following definitions apply:

G.726 32 kbit/s ADPCM [SC.1]: Recommendation ITU-T G.726 [12] narrow band codec as defined by EN 300 175-8 [8] clause 5.1.

PP audio type 1a ("classic GAP" handset) [SC.2]: audio specification for a general purpose 3,1 kHz telephony handset as defined by EN 300 175-8 [8], clause 7.2.3.

PP audio type 1b ("improved GAP" handset) [SC.3]: audio specification for a general purpose 3,1 kHz telephony handset with improved TCLw, as defined by EN 300 175-8 [8], clause 7.2.4. It is compatible with VoIP and long delay networks.

PP audio type 1c (HATS tested, 3,1 kHz handset) [SC.4]: audio specification for a general purpose 3,1 kHz telephony handset based on the new HATS methodology, as defined by EN 300 175-8 [8], clause 7.2.5. It includes strong echo suppression (TCLw) requirements and is compatible with VoIP and long delay networks.

PP audio type 1d (HATS tested, 3,1 kHz "improved" handset) [SC.5]: audio specification for a general purpose 3,1 kHz telephony handset based on the new HATS methodology with improved quality, as defined by EN 300 175-8 [8], clause 7.2.6. It includes strong echo suppression (TCLw) requirements and is compatible with VoIP and long delay networks. This type has a more demanding acoustic specification, providing superior subjective quality. In practice, this means better electro-acoustic components (speaker, microphone), electronics and signal processing.

PP audio type 3a (HATS tested, 3,1 kHz handsfree) [SC.6]: audio specification for a Narrowband (3,1 kHz) handsfree device as defined by EN 300 175-8 [8], clause 7.2.7. This type applies to handsfree devices operating with an open loudspeaker and microphone. The type applies to either:

1) specific PPs designed to operate in handsfree mode;

2) standard handset implementing types 1a, 1b, 1c or 1d, but with the option to operate in handsfree mode; and

3) handsfree accessory devices connected to a handset by any wired or wireless technology.

It provides (300 Hz to 3,4 kHz) frequency range, and it is defined based on HATS methodology.

PP audio type 3b (HATS tested, 3,1 kHz "improved" handsfree) [SC.7]: audio specification for a Narrowband (3,1 kHz) handsfree device, improved quality version, as defined by EN 300 175-8 [8], clause 7.2.8. This type applies to handsfree devices operating with an open loudspeaker and microphone. The type applies to either:

1) specific PPs designed to operate in handsfree mode;

2) standard handset implementing types 1a, 1b, 1c or 1d, but with the option to operate in handsfree mode; and

3) handsfree accessory devices connected to a handset by any wired or wireless technology.

It provides (300 Hz to 3,4 kHz) frequency range, and it is defined based on HATS methodology. This type has a more demanding acoustic specification, providing superior subjective quality. In practice, this means better electro-acoustic components (speaker, microphone), electronics and signal processing.

FP audio type 1a ("classic ISDN" 3,1 kHz) [SC.8]: audio specification for a DECT FP supporting narrowband service and providing a digital 64 kbit/s G.711 interface, typically (but not necessarily) an ISDN connection, classic specification, as defined by EN 300 175-8 [8], clause 7.3.2. It is recommended to use FP type 1b instead of type 1a.

FP audio type 1b ("new ISDN" 3,1 kHz) [SC.9]: audio specification for a DECT FP supporting narrowband service and providing a digital 64 kbit/s G.711 interface, typically (but not necessarily) an ISDN connection, new specification, as defined by EN 300 175-8 [8], clause 7.3.3. It is recommended to use FP type 1b instead of type 1a.

PP echo canceller for FP [SC.10]: auxiliary feature for FPs consisting on echo canceller for handling the echo generated by PPs type 1a. As defined by EN 300 175-8 [8], clause 7.4.2. Only narrowband echo cancellation capability is required.

PP echo suppressor for FP [SC.11]: auxiliary feature for FPs consisting on echo suppressor for handling the echo generated by PPs type 1a. As defined by EN 300 175-8 [8], clause 7.4.3. Only narrowband capability is required.

FP audio type 2 (analogue PSTN 3,1 kHz) [SC.12]: audio specification for a DECT FP supporting narrowband service and providing an analogue 2-wire PSTN interface. As defined by EN 300 175-8 [8], clause 7.3.4.

FP audio type 3 (VoIP 3,1 kHz) [SC.13]: audio specification for a DECT FP supporting narrowband service and providing a VoIP interface, with codecs G.711 (typically) or G.726 on top of it. As defined by EN 300 175-8 [8], clause 7.3.5.

FP audio type 6a (internal call) [SC.14]: this type of audio specification applies to the case of internal call inside a DECT FP or a DECT system without any external interface. This type applies to any service. As defined by EN 300 175-8 [8], clause 7.3.8.

FP audio type 6b (internal conference) [SC.15]: this type of audio specification applies to the case of 3-party or multi-party conference inside a DECT FP or a DECT system with or without an external interface. Applies to any service. As defined by EN 300 175-8 [8], clause 7.3.9.

Adaptive volume control for FP [SC.16]: accessory feature for FPs consisting on an adaptive volume control depending on the level of environmental noise at the PP. The gain variation should be symmetrical. As described in EN 300 175-8 [8], (detailed descriptions for each type of FP in clause 7.6, and examples of settings in informative annex D).

F.2.3 GAP Application features (clause 4.3 of EN 300 444)

AC to bitstring mapping [A.1]: mapping of the AC into a bitstring.

multiple subscription registration [A.2]: ability of PP to store more than one subscription.

manual entry of the Portable Access Rights Key (PARK) [A.3]: ability of the PP to accept a manual entry of the PARK for ensuring attachment to the right FP in a physical area covered by many providers.

terminal identity number assignment in mono-cell system [A.4]: ability to assign to each PT a terminal identity number.

F.2.4 DLC service definitions (clause 5.1 of EN 300 444)

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

C_S channel fragmentation and recombination [D.2]: Lc service providing channel dependant fragmentation (by means of dividing a LAPC data unit into more than one service data units for delivery to the MAC layer C_S logical channel) and recombination (by means of joining several service units received from the MAC layer C_S logical channel into a LAPC data unit).

broadcast Lb service [D.3]: simplex point-to-multipoint transmission using simple fixed length DLC frames providing a restricted broadcast service in direction FP to PP(s).

intra-cell voluntary connection handover [D.4]: internal handover process provided and initiated by the DLC layer (e.g. as a result of continued poor quality of service from the MAC layer), whereby one set of DLC entities (C-plane and U-plane) can re-route data from one MAC connection to a second new MAC connection in the domain of the same cell, while maintaining the service provided to the NWK layer.

intercell voluntary connection handover [D.5]: internal handover process provided and initiated by the DLC layer (e.g. as a result of continued poor quality of service from the MAC layer), whereby one set of DLC entities (C-plane and U-plane) can re-route data from one MAC connection to a second new MAC connection not in the domain of the same cell, while maintaining the service provided to the NWK layer.

encryption activation [D.6]: transporting the NWK layer encryption request and the cipher key to the MAC layer, thereby enabling the encryption process in the MAC layer.

LU1 TRansparent UnProtected service (TRUP) class 0/min_delay [D.7]: transparent unprotected service introducing minimum delay between the higher layers and the MAC layer.
May be used for speech and non-speech applications. Speech transmission should only use the class 0/min_delay operation over a single bearer MAC connection. Data integrity is not guaranteed. No error protection is applied, and octets may be lost, erroneous or duplicated. The continuous higher layer data is fragmented for delivery to the I_N logical channel in the transmission direction, and recombined from the I_N logical channel in the receiving direction.

FU1 [D.8]: offers a defined fixed length frame structure and buffering functions for transmission of U-plane data to the MAC layer (at the transmit side) or accept of data from the MAC layer (at the receiving side) on demand and with minimum delay. Used for speech but may be used for more general data purposes.

encryption deactivation [D.9]: transporting the NWK layer encryption deactivation request to the MAC layer, thereby disabling the encryption process in the MAC layer.

F.2.5 GAP MAC service definitions (clause 5.2 of EN 300 444)

general [M.1]: set of basic requirements regarding data formats, multiplexing, CRC usage, scanning and locking, which are prerequisites to communication between peer MAC entities.

continuous broadcast [M.2]: simplex service from FT to PT whereby the FT maintains at least one bearer with continuous transmissions. The PT can use the information carried in this bearer to lock to the FT and to obtain knowledge about the FT.

paging broadcast [M.3]: service whereby the identities of specific PTs can be broadcast by the FT. This service is normally used by the FT to request a specific PT to set up a link to the FT.

basic connection [M.4]: service providing connection between FT and PT consisting of one full slot duplex bearer supporting the In_minimum_delay data service (i.e. speech). Only one basic connection may exist between a FT and particular PT (except during connection handover). The service includes the means for setting-up and releasing the required bearer(s).

C_S higher layer signalling [M.5]: low rate connection oriented data service with ARQ using the C_S channel to transfer higher layer signalling data.

quality control [M.6]: provides means for monitoring and controlling the radio link quality.

encryption activation [M.7]: service providing means for enabling the encryption whereby on demand all higher layer data (including speech) is transferred across the AI in an encrypted form. Always initiated by the PT.

extended frequency allocation [M.8]: service which allows a FT to support frequencies in addition to the standard DECT frequencies.

bearer handover - intra-cell [M.9]: internal MAC process whereby data transfer (C channel and I channel) is switched from one duplex bearer to another in the domain of the same cell while maintaining the service to the DLC layer.

bearer handover - inter-cell [M.10]: internal MAC process whereby data transfer (C channel and I channel) is switched from one duplex bearer to another not in the domain of the same cell while maintaining the service to the DLC layer.

connection handover - intra-cell [M.11]: in the MAC layer, it is the process enabling setting up a new basic connection in the domain of the same cell to support connection handover at the DLC layer.

connection handover - inter-cell [M.12]: in the MAC layer, it is the process enabling setting up a new basic connection not in the domain of the same cell to support connection handover at the DLC layer.

Secondary Access Rights Identity (SARI) support [M.13]: ability to support, in addition to the primary Access Rights Identity (ARI), secondary ARIs that the FT broadcasts less frequently than PARIs. These may be used to reflect an inter-operators agreement allowing a portable to access more than one operator or services through FT.

encryption deactivation [M.14]: service providing means for disabling the encryption whereby on demand the process of transmitting higher layer data (including speech) across the AI in encrypted form is to be cancelled (a connection release automatically disables ciphering).

Re-keying [M.15]: mechanism to change the cipher key during an ongoing call.

Early encryption [M.16]: mechanism to activate encryption immediately after connection establishment.

AES/DSC2 encryption [M.17]: encryption using the DSC2 algorithm, based on AES, with Cipher Key of 128 bits.

F.3 Services and features defined in TS 102 527-3 (NG-DECT Part 3)

The following informative annex shows the features and services defined in TS 102 527-3 [18] (New Generation DECT; Part 3: extended wideband speech services), that are reused in the present document. This list is informative, and shows the status in TS 102 527-3 (V1.4.1) [18]. Where there are changes or divergences the original definitions at TS 102 527-3 [18] apply.

F.3.1 New Generation DECT; part 3, Speech Services (clause 5.1 of TS 102 527-3)

No additional speech services are defined in TS 102 527-3 [18]. The definitions of TS 102 527-1 [17], clause 5.1 apply.

F.3.2 New Generation DECT; part 3, Network (NWK) features (clause 5.2 of TS 102 527-3)

Missed call notification [NG1.N.3]: ability to inform a user that a call has been missed.

Voice message waiting notification [NG1.N.4]: ability to inform a user that a voice message has been left in the voice mailbox to which the user has access.

Date and time synchronization [NG1.N.5]: ability to synchronize the date and time on the DECT system. From FP to all registered PP or from one registered PP to the FP.

Parallel calls [NG1.N.6]: ability to handle in the DECT system two or more simultaneous calls originated or terminated in the same PP.

Common parallel call procedures (external or internal) [NG1.N.7]: set of common procedures for handling PSTN double calls, SIP multiple calls on a single line, as well as parallel call situations occurring in a multiple line DECT system.

Call transfer (internal or external) [NG1.N.8]: ability to create a new call while already involved in a call and connect the remote party to it (kind of parallel calls).

3-party conference call (internal or external) [NG1.N.9]: ability to connect the local party and the two remote parties of two parallels calls into a single conference (kind of parallel calls).

Intrusion call [NG1.N.10]: ability for a PP not participating to an already established call to connect to it (kind of parallel calls). Intrusion call is also known as "barging in".

Call deflection [NG1.N.11]: ability to redirect an incoming call during the call presentation to another user.

Line identification [NG1.N.12]: ability to exchange between the PP and FP a line identifier for external calls.

Call identification [NG1.N.13]: ability to exchange between the PP and FP a call identifier assigned by the FP at call setup and call statuses from FP to PP.

Multiple lines [NG1.N.14]: ability for a DECT System to handle several external lines.

Multiple calls [NG1.N.15]: ability for a DECT System to handle a line supporting several simultaneous external calls.

List access service [NG1.N.16]: ability to store information on the DECT system in a set of lists on the FP and manage these lists from the PP.

Calling Line Identity Restriction (CLIR) [NG1.N.17]: ability for the user to hide the identity of his line (i.e. Calling Line Identity Presentation) to the called party.

Call forwarding [NG1.N.18]: ability to request to the network a redirection of incoming calls.

DTMF handling [NG1.N.19]: ability to handle DTMF signalling and generation.

Tones provision [NG1.N.20]: ability to support complete call progress tones generation.

Headset management [NG1.N.21]: ability to handle calls with a headset PP in a DECT system.

Handling of lines where second calls are signalled in-band [NG1.N.22]: ability to handle second calls on PSTN lines or lines following similar rules.

F.3.3 New Generation DECT; part 3, DLC Services (clause 5.3 of TS 102 527-3)

No additional speech services are defined in TS 102 527-3 [18]. The definitions given in TS 102 527-1 [17], clause 5.3 and in EN 300 444 [11], clause 5.1 apply.

F.3.4 New Generation DECT; part 3, MAC Services (clause 5.4 of TS 102 527-3)

"no emission" mode [NG1.M.5]: ability to deactivate all radio transmissions in a DECT FP when it does not handle any call. Power-down is negotiated and an algorithm is provided, that guarantees a short resynchronization time, if an RF-connection is required by any of the peers.

F.3.5 New Generation DECT; part 3, Physical Layer (PHL) Services (clause 5.5 of TS 102 527-3)

No additional Physical Layer (PHL) services are defined in TS 102 527-3 [18]. The definitions given in TS 102 527-1 [17], clause 5.5 apply.

F.3.6 New Generation DECT; part 3, Speech coding and audio features (clause 5.6 of TS 102 527-3)

No additional Speech coding and audio features are defined in TS 102 527-3 [18]. The definitions given in TS 102 527-1 [17], clause 5.6 apply.

F.3.7 New Generation DECT; part 3, Application features (clause 5.7 of TS 102 527-3)

Easy PIN code registration [NG1.A.1]: ability to invite the user to register a PP that is not registered to a FP. The access rights procedure is triggered by PIN entering.

Easy pairing registration [NG1.A.2]: ability to register a PP that is not registered to a FP by pressing a physical or logical button on the PP and on the FP.

Handset locator [NG1.A.3]: ability to locate physically handsets (have them ring) by pressing a physical or logical button on the FP.

F.4 GAP Feature/service to procedure mapping tables

The following informative annex shows the features/service to procedure mapping tables as defined in EN 300 444 [11] (GAP), that are reused in the present document (unless other specification is given). This list is informative, and shows the status in EN 300 444 [11]. Where there are changes or divergences the original definitions at EN 300 444 [11] (GAP) apply.

F.4.1 GAP NWK feature to procedure mapping table (clause 6.8.1 of EN 300 444)

Table F.1: NWK feature to procedure mapping (table 5 of EN 300 444)

Feature supported					
			Status		
Item no.	Name of feature	Reference	PT	FT	
				R/B	P
N.35	Outgoing call	4.1	M	M	M
N.36	Off hook	4.1	M	M	M
N.37	On hook (full release)	4.1	M	M	M
N.38	Dialled digits (basic)	4.1	M	M	M
N.39	Register recall (see notes 4 and 5)	4.1	M	O	O
N.40	Go to DTMF signalling (defined tone length) (see note 1)	4.1	M	O	M
N.41	Pause (dialling pause) (see note 3)	4.1	M	O	O
N.42	Incoming call	4.1	M	M	M
N.43	Authentication of PP	4.1	M	C101	M
N.44	Authentication of user (see note 2)	4.1	M	O	O
N.45	Location registration	4.1	M	O	M
N.46	On air key allocation (see note 2)	4.1	M	C101	O
N.47	Identification of PP	4.1	M	O	O
N.48	Service class indication/assignment	4.1	M	O	M
N.49	Alerting	4.1	M	M	M
N.50	ZAP (see note 2)	4.1	M	O	O
N.51	Encryption activation FT initiated	4.1	M	C101	M
N.52	Subscription registration procedure on-air	4.1	M	M	M
N.53	Link control	4.1	M	M	M
N.54	Terminate access rights FT initiated (see note 2)	4.1	M	O	O
N.55	Partial release	4.1	O	O	O
N.56	Go to DTMF (infinite tone length)	4.1	O	O	O
N.57	Go to Pulse	4.1	O	O	O
N.58	Signalling of display characters	4.1	O	O	O
N.59	Display control characters	4.1	O	O	O
N.60	Authentication of FT	4.1	O	O	O
N.61	Encryption activation PT initiated	4.1	O	O	O
N.62	Encryption deactivation FT initiated	4.1	O	O	O
N.63	Encryption deactivation PT initiated	4.1	O	O	O
N.64	Calling Line Identification Presentation (CLIP)	4.1	O	O	O
N.65	Internal call	4.1	O	O	O
N.32	Service call	4.1	O	O	O
N.33	Enhanced U- plane connection	4.1	O	O	O
N.34	Calling Name Identification Presentation (CNIP)	4.1	O	O	O
N.35	Enhanced security	4.1	O	O	O
N.36	AES/DSAA2 authentication	4.1	C102	C102	C102
NOTE 1: The PT is only required to be able to send the <<MULTI-KEYPAD>> information element containing the DECT standard 8-bit character (EN 300 175-5 [5], annex D) codings "Go to DTMF", defined tone length and the FT is required to be able to understand it in the public environment.					
NOTE 2: This feature is required to be supported in the PT to guarantee the same level of security among all the handsets that operates in a system. The invocation of the feature is however optional to the operator.					
NOTE 3: The PT is required to be able to send the <<MULTI-KEYPAD>> information element containing the DECT standard 8-bit character (EN 300 175-5 [5], annex D) codings "Dialling Pause". This guarantees automatic access to secondary or alternative networks.					
NOTE 4: This feature uses keypad code 15 hex.					
NOTE 5: The FT is not mandated to receive and understand the register recall DECT character. However, if a FT supports it there may be no corresponding action that the FT can take with the local network as a result of this function.					
C101: IF feature N.35 THEN M ELSE O.					
C102: IF MAC service M.17 THEN M ELSE O.					

F.4.2 GAP DLC service to procedure mapping table (clause 6.8.2 of EN 300 444)

Table F.2: DLC service to procedure mapping (table 6 of EN 300 444 [11])

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
D.1 LAPC class A service and Lc		5.1	M	M	M
	Class A link establishment	9.1	M	M	M
	Class A acknowledged information transfer	9.2	M	M	M
	Class A link release	9.3	M	M	M
	Class A link re-establishment	9.4	M	M	M
D.2 C_S channel fragmentation and recombination		5.1	M	M	M
	C_S channel fragmentation and recombination	9.5	M	M	M
D.3 Broadcast Lb service		5.1	M	M	M
	Normal broadcast	9.6	M	M	M
D.4 Intra-cell voluntary connection handover		5.1	M	C001	C001
	Class A basic connection handover	9.7	M	M	M
D.5 Inter-cell voluntary connection handover		5.1	M	O	O
	Class A basic connection handover	9.7	M	M	M
D.6 Encryption activation		5.1	M	C003	M
	Encryption switching	9.8	M	M	M
D.7 LU1 TRUP Class 0/min_delay		5.1	M	M	M
	U-plane Class 0/min delay	9.9	M	M	M
D.8 FU1		5.1	M	M	M
	FU1 frame operation	9.10	M	M	M
D.9 Encryption deactivation		5.1	C002	C002	C002
	Encryption switching	9.8	M	M	M
C001: IF service M.9 THEN O ELSE M. C002: IF feature N.29 OR N.28 THEN M ELSE I. C003: IF feature N.17 OR N.27 THEN M ELSE I.					

F.4.3 GAP MAC service to procedure mapping table (clause 6.8.3 of EN 300 444)

Table F.3: MAC service to procedure mapping (table 7 of EN 300 444 [11])

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
M.1 General		5.2	M	M	M
	General	10.1	M	M	M
M.2 Continuous broadcast		5.2	M	M	M
	Downlink broadcast	10.2	M	M	M
	Higher Layer capability FP broadcast	13.6	M	M	M
M.3 Paging broadcast		5.2	M	M	M
	Paging broadcast	10.3	M	M	M
M.4 Basic connections		5.2	M	M	M
	Setup of basic connection, basic bearer setup (A-field)	10.4	M	M	M
	Connection/bearer release	10.5	M	M	M
M.5 C_S higher layer signalling		5.2	M	M	M
	C_S channel data	10.8	M	M	M
	Q2 bit setting	10.9	M	M	M

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
M.6 Quality control		5.2	M	M	M
	RFPI handshake	10.10	M	M	M
	Antenna diversity	10.11	M	O	O
	Sliding collision detection	10.12	O	M	M
M.7 Encryption activation		5.2	M	C004	M
	Encryption process - initialization and synchronization	10.13	M	M	M
	Encryption mode control	10.14	M	M	M
	Handover encryption process	10.15	M	M	M
M.8 Extended frequency allocation		5.2	M	O	O
	Extended frequency allocation	10.16	M	M	M
M.9 Bearer handover, intra-cell		5.2	M	C001	C001
	Bearer handover request	10.6	M	M	M
M.10 Bearer handover, inter-cell		5.2	M	O	O
	Bearer handover request	10.6	M	M	M
M.11 Connection handover, intra-cell		5.2	M	C002	C002
	Connection handover request	10.7	M	M	M
M.12 Connection handover, inter-cell		5.2	M	O	O
	Connection handover request	10.7	M	M	M
M.13 SARI support		5.2	M	O	O
	Downlink broadcast	10.2	M	M	M
	Higher Layer capability FP broadcast	13.6	M	M	M
M.14 Encryption deactivation		5.2	C003	C003	C003
	Encryption mode control	10.14	M	M	M
M.15 Re-keying		5.2	C705	C705	C705
	Re-keying	10.17	M	M	M
M.16 Early encryption		5.2	C706	C706	C706
	Early encryption	10.18	M	M	M
M.17 AES/DSC2 encryption (see note)		5.2	O	O	O
	AES/DSC2 encryption	10.19	M	M	M
NOTE: IF implemented THEN NWK feature N.36 should be implemented.					
C001: IF service M.11 THEN O ELSE M. C002: IF service M.9 THEN O ELSE M. C003: IF feature N.29 OR N.28 THEN M ELSE I. C004: IF feature N.17 OR N.27 THEN M ELSE I. C705: IF feature N.35 and NWK layer procedure "Re-keying during a call" are implemented THEN M ELSE O. C706: IF feature N.35 and NWK layer procedure "Early encryption" are implemented THEN M ELSE O.					

F.4.4 GAP Application feature to procedure mapping table (clause 6.8.4 of EN 300 444)

Table F.4: Application feature to procedure mapping table (table 8 of EN 300 444 [11])

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
A.1 AC to bitstring mapping		4.3	M	C001	M
	AC to bitstring mapping	14.2	M	M	M
A.2 Multiple subscription registration		4.3	M	N/A	N/A
	Subscription control	14.1	M	N/A	N/A
A.3 Manual entry of the PARK		4.3	O	N/A	N/A
	Manual entry of the PARK	14.3	M	N/A	N/A
A.4 Terminal identity number assignment in mono cell system		4.3	O	O	N/A
	Terminal identity number assignment	14.4	O	O	N/A
C001: IF feature N.9 OR N.10 OR N.12 OR N.26 THEN M ELSE N/A.					

F.5 NG-DECT Part 3 feature/service to procedure mapping tables

The following informative annex shows the features/service to procedure mapping tables as defined in TS 102 527-3 [18] (New Generation DECT; Part 3: extended wideband speech services), that are reused in the present document (unless other specification is given). This list is informative, and shows the status in TS 102 527-3 [18] V1.4.1. Where there are changes or divergences the original definitions at TS 102 527-3 [18] apply.

F.5.1 NG-DECT Part 3 NWK feature to procedure mapping table (clause 6.10 of TS 102 527-3)

The NWK features to procedure mapping of EN 300 444 [11] (GAP), clause 6.7 with the following changes and additional features apply:

Table F.5: NWK feature to procedure mapping (table 9 of TS 102 527-3 [18])

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.N.1 Codec Negotiation		5.2 [17]	M	M	M
	Exchange of codec list during registration and location registration	7.3.1 [17]	M	M	M
	Basic service wideband speech and default attributes	7.3.2 [17]	M	M	M
	Codec Negotiation during call establishment	7.3.3 [17]	M	M	M
NG1.N.2 Codec Switching		5.2 [17]	M	M	M
	Codec Change	7.3.4 [17]	M	M	M
	Slot type modification	7.3.5 [17]	M	M	M
	MAC layer advanced connection slot type modification	7.6.7 [17]	M	M	M
	MAC layer connection type modification: basic to/from advanced	7.6.6 [17]	M	M	M
NG1.N.3 Missed call notification		5.2	M	M	M
	Generic events notification, general	7.4.1.1	M	M	M
	Missed call notification	7.4.1.3	M	M	M
NG1.N.4 Voice message waiting notification		5.2	M	M	M
	Generic events notification, general	7.4.1.1	M	M	M
	Voice message waiting notification	7.4.1.2	M	M	M
NG1.N.5 Date and Time synchronization		5.2	M	M	M
	Date and Time synchronization	7.4.2	M	M	M
	Date and Time recovery	7.4.20	O	O	O
NG1.N.6 Parallel Calls		5.2	M	M, note 2	O
	Parallel call common requirements	7.4.3.1	M	M	M
	Control messages	7.4.3.2	M	M	M
	Sending Keypad information	8.10 [11]	M	M	M
	Codec change for parallel calls	7.4.3.3	M	M	M
	Sending negative acknowledgement	7.4.3.4	M	M	M
	Busy system or line notification	7.4.8.3	M	M	M
NG1.N.7 Common parallel call procedures (external or internal)		5.2	M	M, note 2	O
	Outgoing parallel call initiation (external or internal)	7.4.3.5.1	M	M	M
	Call waiting indication (external or internal)	7.4.3.5.2	M	M	M
	Call toggle (external or internal)	7.4.3.5.3	M	M	M
	Call release and call release rejection	7.4.3.5.4	M	M	M
	Call waiting acceptance (from PP to FP)	7.4.3.5.6	M	M	M
	Call waiting rejection (from PP to FP)	7.4.3.5.7	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	Active call release with replacement (from PP to FP)	7.4.3.5.12	O	M	M
	Putting a call on-hold	7.4.3.5.8	O	M	M
	Resuming a call put on-hold	7.4.3.5.9	O	M	M
	CLIP on call waiting indication	7.4.3.5.10	M	M	M
	CNIP on call waiting indication	7.4.3.5.11	M	M	M
NG1.N.8 Call transfer (external or internal)		5.2	M	M	O
	Announced call transfer	7.4.3.6.1	M	M	M
	Unannounced call transfer	7.4.3.6.2	M	M	M
	Call re-injection to the system (external or internal)	7.4.3.6.3	M	M	M
	Remote party CLIP on call transfer	7.4.3.6.4	M	M	M
	Remote party CNIP on call transfer	7.4.3.6.5	M	M	M
NG1.N.9 3-party conference call (external or internal)		5.2	O	O, note 1	O, note 1
	3-party Conference with established internal and external calls	7.4.3.7	M	M	M
NG1.N.10 Intrusion call		5.2	O	O, note 1	O, note 1
	Implicit intrusion call into a line in "single call" mode	7.4.3.8.1	C901	M	M
	Explicit intrusion call (from PP to FP)	7.4.3.8.2	C901	M	M
NG1.N.11 Call deflection (internal or external)		5.2	O	O, note 1	O, note 1
	Call deflection (internal)	7.4.4.2	M	M	M
	Call deflection (external)	7.4.4.2	M	M	M
	Call deflection control messages	7.4.4.1.1	M	M	M
NG1.N.12 Line identification		5.2	M	M	M
	Line identification general requirements	7.4.5.1	M	M	M
	General line identification requirements for external outgoing calls	7.4.5.2.1	M	M	M
	Line identification for a first external outgoing call using <<CALL-INFO>> IE	7.4.5.2.2	M	M	M
	Line identification for a first external outgoing call using <<MULTI-KEYPAD>> IE	7.4.5.2.3	I (note 5)	O	O
	FP managed line selection for a first external outgoing call	7.4.5.2.4	M	M	M
	General line identification requirements for external incoming calls	7.4.5.3.1	M	M	M
	Line identification for a first external incoming call	7.4.5.3.2	M	M	M
NG1.N.13 Call identification		5.2	M	M	M
	Call identifier general requirements	7.4.6.1	M	M	M
	Call identifier assignment on outgoing call (FP to PP)	7.4.6.2	M	M	M
	Call identifier assignment on incoming call (FP to PP)	7.4.6.3	M	M	M
	Call status indication to the handset	7.4.6.4	M	M	M
NG1.N.14 Multiple lines		5.2	M	O	O
	Multiple lines common requirements	7.4.7.1	M	M	M
	Terminal attachment and line settings	7.4.7.2	M	M	M
	Incoming and outgoing external calls on a multiple line system	7.4.7.3	M	M	M
	Internal calls in multiple line context	7.4.7.4	M	M	M
	Compatibility with non multiple line PP or FP	7.4.7.5	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.N.15 Multiple calls		5.2	M	M	O
	Multiple calls general requirements	7.4.8.1	M	M	M
	Incoming and outgoing external calls on a multiple call line	7.4.8.2	M	M	M
	Busy system or line notification	7.4.8.3	M	M	M
NG1.N.16 List access service		5.2	M	M	O
	General considerations	7.4.10.1	M	M	M
	List change notification	7.4.10.2	O	M	M
	Start / end session (note 4)	7.4.10.4.1	M	M	M
	Query supported entry fields (note 4)	7.4.10.4.2	O	M	M
	Read entries (note 4)	7.4.10.4.3	M	M	M
	Edit entry (note 4)	7.4.10.4.4	M	M	M
	Save entry (note 4)	7.4.10.4.5	M	M	M
	Delete entry (note 4)	7.4.10.4.6	M	M	O
	Delete list (note 4)	7.4.10.4.7	M	M	M
	Search entries (note 4)	7.4.10.4.8	M	M	M
	Negative acknowledgement	7.4.10.4.9	M	M	M
	Data packet / Data packet last	7.4.10.4.10	M	M	M
	DECT system and line settings considerations	7.4.11.1	M	M	O
	Interactions between registration, attachment of handsets and lists	7.4.11.2	M	M	O
	Fields description	7.4.10.5.1	M	M	M
	[Supported lists]				
	List of Supported Lists	7.4.10.5.2	O	M	M
	Missed Calls List	7.4.10.5.3	M	M	M
	Outgoing Calls List	7.4.10.5.4	O	O	O
	Incoming Accepted Calls List	7.4.10.5.5	M	M	M
	All Calls List	7.4.10.5.6	O	O	O
	Contact List	7.4.10.5.7	M	M	M
	Internal Names List	7.4.10.5.8	M	M	M
	All Incoming Calls List	7.4.10.5.11	O	O	O

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	DECT System Settings List	7.4.11.3	M	M	O
	Line Settings List	7.4.11.4	M	M	O
	Virtual Contact List and call list per line	7.4.11.5	O	C902	O
	[Supported DECT system settings]				
	Current PIN code	7.4.11.3.1	M	M	O
	Clock master	7.4.11.3.2	M	M	O
	Base reset	7.4.11.3.3	M	M	O
	FP IP address / type	7.4.11.3.4	O	O	O
	FP IP address / value	7.4.11.3.5	O	O	O
	FP IP address / subnet mask	7.4.11.3.6	O	O	O
	FP IP address / gateway	7.4.11.3.7	O	O	O
	FP IP address / DNS server	7.4.11.3.8	O	O	O
	FP version / Firmware version	7.4.11.3.9	M	M	O
	FP version / EEprom version	7.4.11.3.10	M	M	O
	FP version / Hardware version	7.4.11.3.11	O	O	O
	Emission mode	7.4.11.3.12	C903	C903	O
	New PIN code	7.4.11.3.13	M	M	O
	[Supported line settings]				
	Line name	7.4.11.4.1	M	M	O
	Line id	7.4.11.4.2	M	M	O
	Attached handsets	7.4.11.4.3	M	M	O
	Dialling prefix	7.4.11.4.4	O	O	O
	FP melody	7.4.11.4.5	O	O	O
	FP volume	7.4.11.4.6	O	O	O
	Blocked number	7.4.11.4.7	O	O	O
	Multiple calls mode (single/multiple)	7.4.11.4.8	M	M	M
	Intrusion call	7.4.11.4.9	C904	C904	C904
	Permanent CLIR	7.4.11.4.10	C905	C905	C905
	Call forwarding Unconditional	7.4.11.4.11	M	M	I
	Call forwarding on No Answer	7.4.11.4.12	M	M	I
	Call forwarding on Busy subscriber	7.4.11.4.13	M	M	I
NG1.N.17 Calling line identity restriction		5.2	O	O	O
	Considerations	7.4.12.1	M	M	O
	Permanent CLIR mode (all calls)	7.4.12.2	M	M	O
	Temporary CLIR mode (call by call)	7.4.12.3	M	N/A	O
NG1.N.18 Call forwarding (external calls)		5.2	M	M	I
	Call Forwarding common requirements	7.4.13.1	M	M	I
	External Call Forwarding Unconditional (CFU) to external number	7.4.13.2	M	M	I
	External Call Forwarding on No Answer (CFNA) to external number	7.4.13.3	M	M	I
	External Call Forwarding on Busy subscriber (CFB) to external number	7.4.13.4	M	M	I
NG1.N.19 DTMF handling		5.2	M	M	O
	Uplink DTMF transmission at call setup when FP connected to classic switching network	7.4.14.1.1	M	C906	C906
	Uplink DTMF transmission when connected	7.4.14.1.2	M	M	O
	Downlink DTMF reception	7.4.14.2	M	M	O
	Local DTMF feedback of dialled digits	7.4.14.3	M	M	O
NG1.N.20 Tones provision		5.2	M	M	O
	General considerations	7.4.15.1	M	M	O
	Tones provision by the system	7.4.15.2	M	M	O
	Transparency to tones provision by the network or PABX	7.4.15.3	M	M	O

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.N.21 Headset management		5.2	C907	M	O
	Headset considerations	7.4.16.1	C907	M	O
	Headset call interception	7.4.16.2	C907	M	O
	Headset incoming call	7.4.16.3	C907	M	O
	Re-dial of last outgoing call	7.4.16.4	C908	M	O
	Re-dial of last incoming call	7.4.16.5	C908	M	O
	Switching from headset to handset (headset initiated)	7.4.16.6	C908	M	O
	Switching from headset to handset (handset initiated)	7.4.16.7	C909	M	O
	Compatibility with other telephony features and profiles	7.4.16.8	C907	M	O
NG1.N.22 Handling of lines where second calls are signalled in-band		5.2	M	O note 2	O
	General requirements	7.4.3.10.1	I	M	M
	Basic 'double call with in-band signalling' lines	7.4.3.10.2	I	M note 3	M
	Off-hook CLIP enabled 'double call with in-band signalling' lines	7.4.3.10.3	M	M note 3	M
	Use of transparent commands on DCIBS lines (Basic or Off-hook CLIP enabled) or any other line	7.4.3.10.4	M	M	M
GAP.N.11 Location registration		4.1 [11]	M	O	M
	Location registration	8.28 [11]	M	M	M
	Location update	8.29 [11]	M	O	O
	Terminal Capability indication	7.4.9.1	M	M	M
	Location registration after re-lock	7.4.18	M	N/A	N/A
GAP.N.14 Service class indication/assignment		4.1 [11]	M	O	M
	Obtaining access rights	8.30 [11]	M	M	M
	Terminal Capability indication	7.4.9.1	M	M	M
	Authentication of PP using DSAA	8.24 [11]	M	M	M
	Authentication of PP using DSAA2	8.24 [11]	C910	C910	C910
GAP.N.15 Alerting		4.1 [11]	M	M	M
	PT Alerting	8.14 [11]	M	M	M
	PT Alerting using pattern signaling	7.4.19	M	M	M
GAP.N.16 ZAP		4.1 [11]	M	O	O
	Obtaining access rights	8.30 [11]	M	M	M
	Terminal Capability indication	8.17 [11]	M	M	M
	Incrementing the ZAP value	8.26 [11]	M	M	M
	Authentication of FT using DSAA	8.23 [11]	O	M	M
	Authentication of FT using DSAA2	8.45.6 [11]	C911	C910	C910
GAP.N.18 Subscription registration user procedure on-air		4.1 [11]	M	M	M
	Obtaining access rights	8.30 [11]	M	M	M
	Terminal Capability indication	7.4.9.1	M	M	M
GAP.N.19 Link control		4.1 [11]	M	M	M
	Indirect FT initiated link establishment	7.3.8 [17]	M	M	M
	Direct PT initiated link establishment	8.36 [11]	M	M	M
	Link release "normal"	8.37 [11]	M	M	M
	Link release "abnormal"	8.38 [11]	M	M	M
	Link release "maintain"	8.39 [11]	M	M	M
GAP.N.24 Signalling of display characters		4.1 [11]	O	O	O
	Display	8.16 [11]	M	M	M
	Terminal capability indication	7.4.9.1	M	M	M
GAP.N.25 Display control characters		4.1 [11]	O	O	O
	Display	8.16 [11]	M	M	M
	Terminal capability indication	7.4.9.1	M	M	M
GAP.N.31 Internal Call		4.1 [11]	M	M	M
	Internal call setup	7.3.6 [17]	M	M	M
	Internal call keypad	8.19 [11]	M	O	O
	Internal call CLIP	8.43 [11]	M	M	M

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
	Internal call CNIP	8.44 [11]	M	M	M
	Internal call codec priority	7.4.3.9	M	M	M
	UTF-8 CNIP	7.4.17	M	M	M
GAP. N.34 Calling Name Identification Presentation (CNIP)		4.1 [11]	M	M	M
	Calling Name Identification Presentation (CNIP) Indication	8.42 [11]	M	M	M
	UTF-8 CNIP	7.4.17	M	M	M
GAP.N.35 Enhanced security		4.1 [11]	M	M	M
	Encryption of all calls	8.45.1 [11]	M	M	M
	Re-keying during a call	8.45.2 [11]	O	O	O
	Early encryption	8.45.3 [11]	O	O	O
	Subscription requirements	8.45.4 [11]	M	M	M
	Behaviour against legacy devices	8.45.5 [11]	M	M	M

C901: At least one of the two procedures 7.4.3.8.1 OR 7.4.3.8.2 should be implemented.
C902: IF NG1.N.14 THEN "O" ELSE "I".
C903: IF NG1.M.5 THEN "M" ELSE "I".
C904: IF NG1.N.10 THEN "M" ELSE "I".
C905: IF NG1.N.17 THEN "M" ELSE "I".
C906: IF FP is connected to classic switching networks (PSTN for example) THEN "M" ELSE "N/A".
C907: IF the PT is a headset PP THEN "M" ELSE "I".
C908: IF the PT is a headset PP THEN "O" ELSE "I".
C909: IF the PT is a headset PP THEN "I" ELSE "O".
C910: IF feature GAP.N.36 THEN M ELSE I.
C911: IF feature GAP.N.36 THEN O ELSE I.

NOTE 1: If the corresponding feature is not supported on FT side, the FT should however implement the "sending negative acknowledgement" procedure (see clause 7.4.3.4).
NOTE 2: All procedures of NG1.N.6 and NG1.N.7 apply to all FTs and for all line types (full parallel call compliant lines and DCIBS lines). For DCIBS lines, the FT implements in addition NG1.N.22 feature, which describes some amendments to NG1.N.6 and NG1.N.7 for such lines. A given FT should be designed to handle both line types, or only one of them.
NOTE 3: Both procedures are M for the FP. However, for a given line, only one of the procedures 7.4.3.10.2 or 7.4.3.10.3 is used.
NOTE 4: See also clause 7.4.10.4 for details per list.
NOTE 5: This procedure is provisioned for GAP and Part 1 PPs and is irrelevant for Part 3 PPs.

F.5.2 NG-DECT Part 3 DLC service to procedure mapping table (clause 6.11 of TS 102 527-3)

The DLC service to procedure mapping of EN 300 444 [11] (GAP), clause 6.8.1, with the following changes and additional services apply:

Table F.6: DLC service to procedure mapping (table 10 of TS 102 527-3)

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
NG1.D.1 LU1 Transparent UnProtected service (TRUP) Class 0/minimum_delay		5.3 [11]	M	M	M
	LU1 Transparent UnProtected service (TRUP) operation	11.2 [4]	M	M	M
	Class 0: No Lu_x retransmission or sequencing	14.2.3.1 [4]	M	M	M
	Class 0 procedures	14.3.2 [4]	M	M	M
	Minimum delay (speech) operation	14.2.3 [4]	M	M	M
	LLME U-plane establishment	9.9.1 [11]	M	M	M
NG1.D.2 LU1 Transparent UnProtected service (TRUP) Class 0		5.3 [17]	C1001	C1001	C1001
	LU1 Transparent UnProtected service (TRUP) operation	11.2 [4]	M	M	M
	Class 0: No Lu_x retransmission or sequencing	14.2.3.1 [4]	M	M	M
	Class 0 procedures	14.3.2 [4]	M	M	M
	LLME U-plane establishment	9.9.1 [11]	M	M	M
NG1.D.3 LU7 64 kbit/s protected bearer service		5.3 [17]	C1001	C1001	C1001
	LU7 DLC layer service	11.9.4 [4]	M	M	M
NG1.D.4 LU12 Unprotected Framed service (UNF) Class 0		5.3 [11]	C1001	C1001	C1001
	LU12 UNprotected Framed service (UNF) operation	11.14 [4]	M	M	M
	Class 0: No Lu_x retransmission or sequencing	14.2.3.1 [4]	M	M	M
	Class 0 procedures	14.3.2 [4]	M	M	M
	LLME U-plane establishment	9.9.1 [11]	M	M	M
NG1.D.5 FU1 DLC frame		5.3 [11]	M	M	M
	FU1 frame operation	8.19 [11]	M	M	M
	FU1 frame structure	12.2 [4]	M	M	M
NG1.D.6 FU7 DLC frame		5.3 [11]	C1001	C1001	C1001
	FU7 frame structure	11.9.4.2 [4]	M	M	M
NG1.D.7 FU12 DLC frame with adaptation for codec G.729.1		5.3 [11]	C1001	C1001	C1001
	FU12 frame structure	12.12 [4]	M	M	M
	Annex for codec G.729.1	E.1 [4]	M	M	M
	FU12 frame operation	7.5.2 [11]	M	M	M
C1001: Status defined by clause 6.3, table 2.					

F.5.3 NG-DECT Part 3 MAC service to procedure mapping table (clause 6.12 of TS 102 527-3)

The MAC service to procedure mapping of EN 300 444 (GAP) [11], clause 6.8.2, with the following changes and additional services apply.

Table F.7: MAC service to procedure mapping (table 11 of TS 102 527-3 [18])

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
NG1.M.1 I_N_minimum delay symmetric MAC service type		5.4 [17]	M	M	M
	MAC layer procedures: general	7.9.1 [17]	M	M	M
	MAC Connection oriented service	5.6 3 [3]	M	M	M
	MAC Basic connection	5.6.1.1 [3]	M	M	M
	MAC Advanced connection	5.6.1.2 [3]	M	M	M
	I_N_minimum delay symmetric MAC service, type 1	5.6.2.1 [3]	M	M	M
NG1.M.2 I_N_normal delay symmetric MAC service type		5.4 [17]	O	O	O
	MAC layer procedures: general	7.9.1 [17]	M	M	M
	MAC Connection oriented service	5.6 [3]	M	M	M
	MAC Basic connection	5.6.1.1 [3]	M	M	M
	MAC Advanced connection	5.6.1.2 [3]	M	M	M
	I_N_normal delay symmetric MAC service type 2	5.6.2.1 [3]	M	M	M
NG1.M.3 I_{PQ}_error_detection symmetric MAC service type		5.4 [17]	O	O	O
	MAC layer procedures: general	7.9.1 [17]	M	M	M
	MAC Connection oriented service	5.6 [3]	M	M	M
	MAC Basic connection	5.6.1.1 [3]	M	M	M
	MAC Advanced connection	5.6.1.2 [3]	M	M	M
	I_P_error_detection symmetric MAC service type 3	5.6.2.1 [3]	M	M	M
	Single-subfield protected format	6.2.1.3.4 [3]	M	M	M
NG1.M.4 Advanced connections		5.4 [17]	M	M	M
	Setup of advanced connection, bearer setup (A-field)	7.6.5 [17]	M	M	M
	Connection type modification: basic to/from advanced	7.6.6 [17]	M	M	M
	Slot type modification	7.6.7 [17]	M	M	M
	Service type modification	7.6.8 [17]	C1101	C1101	C1101
	ECN number modification	7.6.9 [17]	C1102	C1102	C1102
	Connection/bearer release	7.6.10 [17]	M	M	M
NG1.M.5 "no-emission" mode		5.4	O	O	O
	Tail identification for "no emission" mode	7.1.2 [3]	M	M	M
	Extended Physical and Mac layer capabilities (part 2) bit a_{23}	7.2.3.11 [3]	M	M	M
	Bearer handover/replacement information, multiframe-countdown	7.2.4.3 [3]	M	M	M
	"no emission" mode sync information	7.3.5.3 [3]	M	M	M
	"no emission" mode procedures	9.4 [3]	M	M	M
	Management procedures for "no emission" mode	11.11 [3]	M	M	M
GAP.M.2 Continuous broadcast		5.2 [11]	M	M	M
	Downlink broadcast	7.6.3	M	M	M
	Higher Layer information FP broadcast	7.4.9.2	M	M	M
GAP.M.3 Paging broadcast		5.2 [11]	M	M	M
	Paging broadcast	7.6.4 [17]	M	M	M
GAP.M.9 Bearer handover, intra-cell		5.2 [11]	M	C1103	C1103
	Bearer handover request	7.6.11 [17]	M	M	M

Service/Procedure mapping					
			Status		
Service	Procedure	Reference	PT	FT	
				R/B	P
GAP.M.10 Bearer handover, inter-cell		5.2 [11]	M	O	O
	Bearer handover request	7.6.11 [17]	M	M	M
GAP.M.11 Connection handover, intra-cell		5.2 [11]	M	C1104	C1104
	Connection handover request	7.6.12 [17]	M	M	M
GAP.M.12 Connection handover, inter-cell		5.2 [11]	M	O	O
	Connection handover request	7.6.12 [17]	M	M	M
GAP.M.13 SARI support		5.2 [11]	M	O	O
	Downlink broadcast	7.6.3	M	M	M
	Higher Layer information FP broadcast	7.4.9.2	M	M	M
GAP.M.15 Re-keying		5.2 [11]	C1105	C1105	C1105
	Re-keying	10.17 [11]	M	M	M
GAP.M.16 Early encryption		5.2 [11]	C1106	C1106	C1106
	Early encryption	10.18 [11]	M	M	M

C1101: IF service NG1.4 OR NG1.5 OR NG1.6 OR NG1.2 IA II OR NG1.2 IA III THEN M ELSE O.
C1102: IF multiple connection between the same PT-FT pair THEN M ELSE O.
C1103: IF service GAP.M.11 THEN O ELSE M.
C1104: IF service GAP.M.9 THEN O ELSE M.
C1105: IF NWK layer procedure "Re-keying during a call" is implemented THEN M ELSE O.
C1106: IF NWK layer procedure "Early encryption" is implemented THEN M ELSE O.

F.5.4 NG-DECT Part 3 application feature to procedure mapping table (clause 6.13 of TS 102 527-3)

The Application feature to procedure mapping of EN 300 444 [11] (GAP), clause 6.8.3, with the following changes apply.

Table F.8: Application feature to procedure mapping (table 12 of TS 102 527-3 [18])

Feature/Procedure mapping					
			Status		
Feature	Procedure	Reference	PT	FT	
				R/B	P
NG1.A.1 Easy PIN code registration		5.7	M	O	N/A
	Registration mode automatic access	7.10.1.3.1	M	N/A	N/A
	Searching mode and PIN code requests	7.10.1.1.1	M	N/A	N/A
	Base station name selection	7.10.1.3.2	O	O	N/A
	Registration user feedback	7.10.1.3.3	M	O	N/A
NG1.A.2 Easy pairing registration		5.7	M	M	N/A
	Easy pairing description	7.10.1.2.1	M	M	N/A
	Registration mode automatic access	7.10.1.3.1	M	N/A	N/A
	Base station limited registration mode	7.10.1.2.2	N/A	M	N/A
	Searching mode request	7.10.1.2.3	M	N/A	N/A
	Base station name selection	7.10.1.3.2	O	O	N/A
	Registration user feedback	7.10.1.3.3	M	O	N/A
NG1.A.3 Handset locator		5.7	M	O	O
	Handset locator	7.10.2	M	M	O
GAP.A.1 AC to bitstring mapping		4.3 [11]	M	C1201	M
	AC to bitstring mapping	14.2 [11]	M	M	M
GAP.A.2 Multiple subscription registration		4.3 [11]	M	N/A	N/A
	Subscription control	14.1 [11]	M	N/A	N/A
GAP.A.3 Manual entry of the PARK		4.3 [11]	O	N/A	N/A
	Manual entry of the PARK	14.3 [11]	M	N/A	N/A
GAP.A.4 Terminal identity number assignment in mono cell system		4.3 [11]	O	O	N/A
	Terminal identity number assignment	14.4 [11]	M	M	N/A
C1201: IF feature GAP.N.9 OR GAP.N.10 OR GAP.N.12 OR GAP.N.26 THEN M ELSE N/A.					

Annex G (informative): DTAM service use case examples

G.1 Voice oriented remote DTAM with a DTAM number

G.1.1 DTAM incoming messages management

In the case of a voice oriented DTAM, DTAM commands used for managing DTAM incoming messages do not require a message index (see clause 7.4.36.2.1). Therefore, no LiA session is used here. DTAM commands may be issued as soon as the call is placed.

In this example, the PP (or PP user) relies on the DTAM Settings List to provide the DTAM number required in order to call the voice oriented DTAM.

See the example in figure G.1 below.

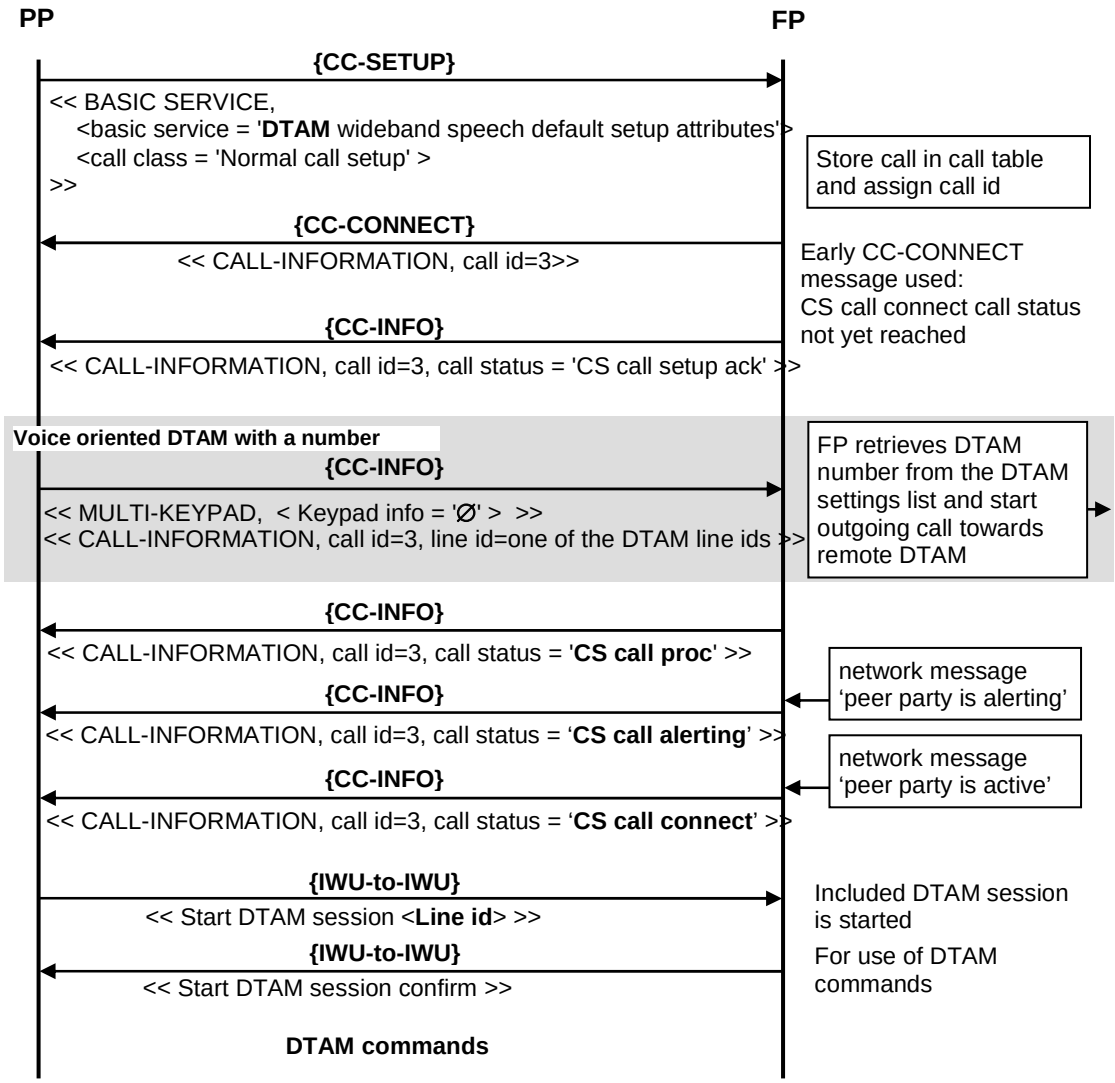


Figure G.1: Voice oriented remote DTAM (with a DTAM number)

G.1.2 Welcome messages management

Even for Voice oriented DTAMs, management of welcome messages are handled through a list.

See the example in figure G.2 below.

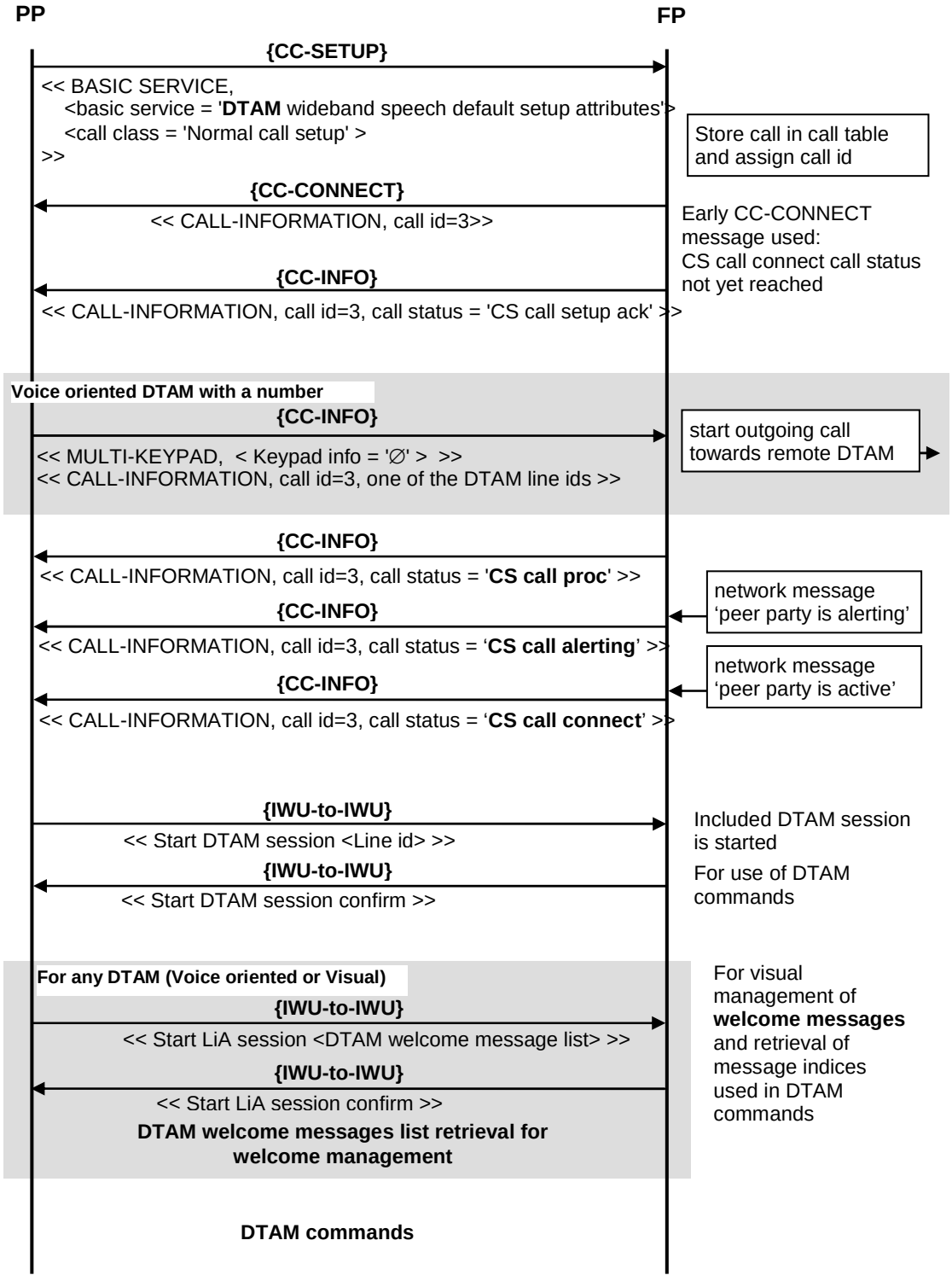


Figure G.2: Voice oriented remote DTAM (with a DTAM number)

G.2 Local or remote (visual) DTAM without DTAM number

G.2.1 DTAM incoming/Welcome messages management

Even when no 'DTAM number' is defined for a DTAM, an empty keypad information is sent to the FP. The 'Cs call proc' call status is sent back to inform the PP that no more information is needed in order to reach the DTAM.

See the example in figure G.3 below.

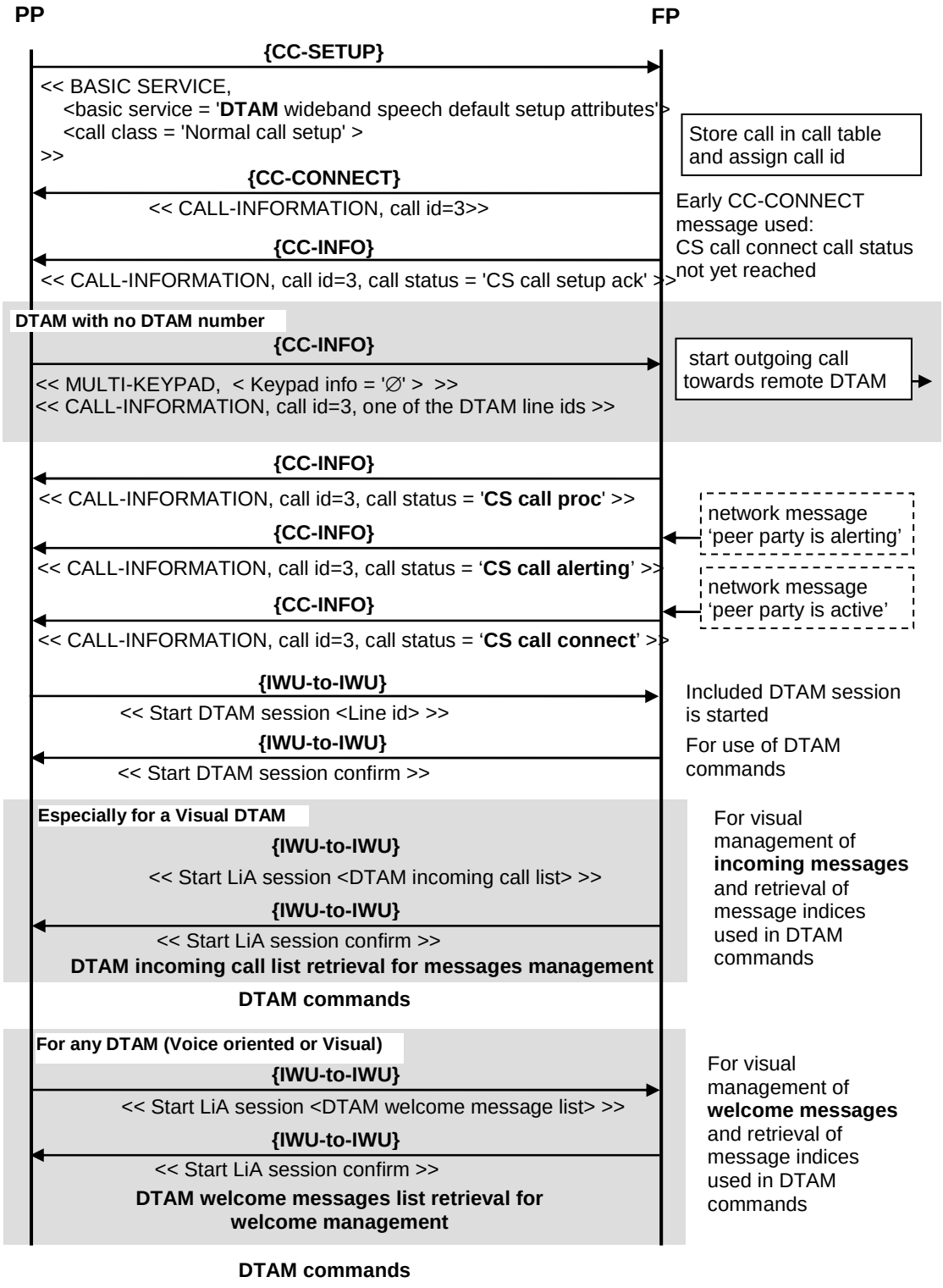


Figure G.3: Local or remote visual DTAM without a number
Start session/DTAM id used as a replacement for the keypad info

G.3 DTAM message deletion via Delete entry

No DTAM consulting call (and DTAM session) is strictly necessary for deleting a message. However the following use case should not be used for DTAMs having a number.

See the example in figure G.4 below.

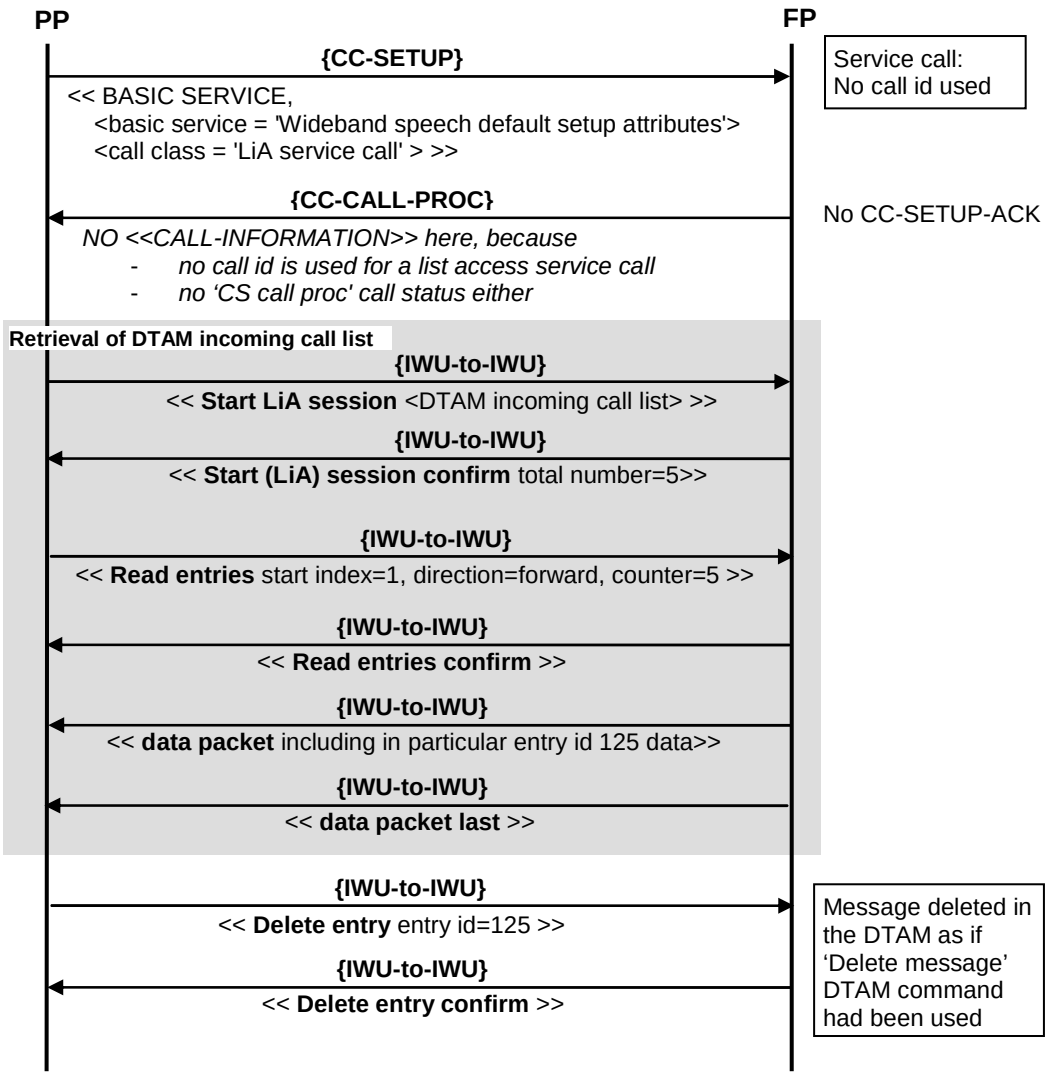


Figure G.4: DTAM message deletion without a DTAM consulting call

Annex H (normative): Editable fields

All mandatory requirements as defined in Annex H of TS 102 527-3 [18] shall apply with the following additions in tables H.11, H.12, H.13, H.14 and H.15 below.

Table H.11: 'Editable' status in the "SMS Settings List"

Field id	Field	Clause	Editable
01H	SMS service id	7.4.35.4.2.1	NO
02H	Line id	7.4.10.5.1.7	YES
03H	Enable SMS	7.4.35.4.2.2	MD
04H	Max SMS size	7.4.35.4.2.3	MD
05H	SMSC Send Server	7.4.35.4.2.4	MD
06H	SMSC Receive Server	7.4.35.4.2.5	MD
07H	SMS delivery report	7.4.35.4.2.6	YES
08H	SMS validity period	7.4.35.4.2.7	YES
09H	Allowed SMS character encodings and variants	7.4.35.4.2.8	NO

Table H.12: 'Editable' status in the "Incoming SMS List"

Field identifier	Field	Clause	Editable
01H	Number	7.4.10.5.1.2	NO
02H	Name	7.4.10.5.1.3	NO
03H	Date and Time	7.4.10.5.1.4	NO
04H	Read status	7.4.10.5.1.5 and 7.4.35.5.1.4	YES
05H	SMS service id	7.4.35.4.2.1	NO
06H	SMS size	7.4.35.5.1.2	NO
07H	SMS content	7.4.35.5.1.3	NO

Table H.13: 'Editable' status in the "Sent SMS List"

Field identifier	Field	Clause	Editable
01H	Number	7.4.10.5.1.2	NO
02H	Name	7.4.10.5.1.3	NO
03H	Date and Time	7.4.10.5.1.4	NO
04H	SMS service id	7.4.35.4.2.1	NO
05H	Network side SMS encoding	7.4.35.5.1.1	NO
06H	SMS size	7.4.35.5.1.2	NO
07H	SMS content	7.4.35.5.1.3	NO

Table H.14: 'Editable' status in the "Outgoing SMS List"

Field identifier	Field	Clause	Editable (note)
01H	Number	7.4.10.5.1.2	YES
02H	Name	7.4.10.5.1.3	YES
03H	Date and Time	7.4.10.5.1.4	YES
04H	SMS service id	7.4.35.4.2.1	YES
05H	Network side SMS encoding	7.4.35.5.1.1	YES
06H	SMS size	7.4.35.5.1.2	YES
07H	SMS content	7.4.35.5.1.3	YES
NOTE: Editability is necessary at least at entry creation using save(0) (see clause 7.4.10.4.5.1, Procedure not allowed). However further attempts to modify the entry is likely to trigger a FP negative acknowledgement (already at 'edit entry' stage) if the FP is already attempting to send the SMS to the network.			

Table H.15: 'Editable' status in the "Draft SMS List"

Field identifier	Field	Clause	Editable
01H	Number	7.4.10.5.1.2	YES
02H	Name	7.4.10.5.1.3	YES
03H	Date and Time	7.4.10.5.1.4	NO
04H	SMS service id	7.4.35.4.2.1	YES
05H	Sending request	7.4.35.5.1.5	YES
06H	Network side SMS encoding	7.4.35.5.1.1	YES
07H	SMS size	7.4.35.5.1.2	YES
08H	SMS content	7.4.35.5.1.3	YES

Annex I (informative): Bibliography

- ISO/IEC 8073 (1997): "Information technology - Open Systems Interconnection - Protocol for providing the connection-mode transport service".
- ETSI EN 301 649: "Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS)".
- ETSI EN 300 176-1: "Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 1: Radio".
- ETSI TS 124 072: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Call Deflection Supplementary Service; Stage 3".
- IETF RFC 3640: "RTP Payload Format for Transport of MPEG-4 Elementary Streams".
- IETF RFC 3016: "RTP Payload Format for MPEG-4 Audio/Visual Streams".
- IETF RFC 4749: "RTP Payload Format for the G.729.1 Audio Codec".
- IETF RFC 3261: "SIP: Session Initiation Protocol".

History

Document history		
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