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Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission

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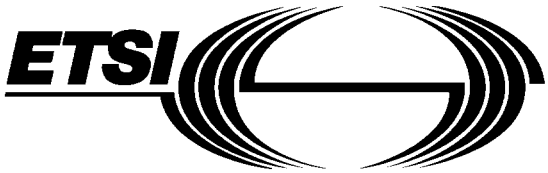

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Foreword

This second edition European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS forms part 8 of a series of 9 laying down the arrangements for the Digital Enhanced Cordless Telecommunications (DECT) Common Interface (CI).

Part 1: "Overview".

Part 2 "Physical layer (PHL)".

Part 3 "Medium Access Control (MAC) layer".

Part 4 "Data Link Control (DLC) layer".

Part 5: "Network (NWK) layer".

Part 6: "Identities and addressing".

Part 7: "Security features".

Part 8: "Speech coding and transmission".

Part 9: "Public Access Profile (PAP)".

Further details of the DECT system may be found in ETR 015, ETR 043, and ETR 056 (see annex E).

Transposition dates	
Date of adoption of this ETS:	6 September 1996
Date of latest announcement of this ETS (doa):	31 December 1996
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Date of withdrawal of any conflicting National Standard (dow):	30 June 1997

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1 Scope

This second edition European Telecommunication Standard (ETS) is part of the Digital Enhanced Cordless Telecommunications (DECT) Common Interface (CI) and specifies the speech coding and transmission requirements.

In order to ensure satisfactory interworking of different portable and fixed units, it is necessary to specify the transmission performance of the analogue information over the digital link. This requires not only use of a common speech algorithm, but also standardization of frequency responses, reference speech levels (or loudness) at the air interface and various other parameters.

This ETS applies to DECT equipment which includes all the necessary functions to provide real-time two-way speech conversation. A 3,1 kHz telephony teleservice conveyed over a DECT link (including Fixed Part (FP) and Portable Part (PP)) which is capable of being connected (directly or indirectly) to the public network access point has to comply with the requirements in this ETS.

Tethered fixed point local loop applications are not required to comply with the requirements of this part.

The speech performance characteristics defined in this ETS typically conform to ETS 300 085 [19], which specifies the overall performance between the handset acoustic interface and a 64 kbit/s A-law Pulse Code Modulated (PCM) digital network interface. The deviations from ETS 300 085 [19] are mainly due to the consequences of non-PCM coding and transmission delay.

The additional features described in clause 8 are those which are not included in ETS 300 085 [19], but which are likely to occur in a DECT system: analogue interface, loudspeaking and hand-free facilities, tandeming with a mobile radio network. Headsets are not covered by the present specifications.

For the DECT systems which connect to the Public Switched Telephone Network (PSTN) via an analogue interface, this ETS includes the basics on which the national specifications can be built, referring to ETS 300 001 [20] (which specifies the connection of terminal equipments to the PSTN via a 2-wire analogue interface) and the appropriate national standard.

ETSI/STC TM5 has prepared a technical report, ETR 041, to be used as a guide for network planning.

A summary of the control and the use of the DECT echo control functions, to guide on need for options to manufacturers and installers, is found in the supplementary services clause of ETR 056.

Information concerning test methods can be found in I-ETS 300 176 [9]. The test methods take into account that DECT is a digital system.

2 Normative references

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

[1] ETS 300 175-1 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2] ETS 300 175-2 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".

[3] ETS 300 175-3 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4] ETS 300 175-4 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5] ETS 300 175-5 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6] ETS 300 175-6 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7] ETS 300 175-7 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

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

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

[10] CCITT Recommendation G.101 (1988): "The transmission plan".

[11] CCITT Recommendation G.131 (1988): "Stability and echo".

[12] CCITT Recommendation G.164 (1988): "Echo suppressors".

[13] CCITT Recommendation G.165 (1988): "Echo cancellers".

[14] CCITT Recommendation G.701 (1988): "Vocabulary of digital transmission and multiplexing, and pulse code modulation (PCM) terms".

[15] CCITT Recommendation G.726 (1991): "40, 32, 24, 16 kbit/s adaptive differential pulse code modulation (ADPCM)".

[16] CCITT Recommendation I.241 (1988): "Teleservices supported by an ISDN".

[17] CCITT Recommendation P.10 (1988): "Vocabulary of terms on telephone transmission quality and telephone sets".

[18] CCITT Recommendation P.34 (1988): "Transmission characteristics of hands-free telephones".

[19] ETS 300 085: "Integrated Services Digital Network (ISDN): 3,1 kHz telephony teleservice; Attachment requirements for handset terminals" (text relevant for NET 33).

[20] ETS 300 001: "Attachments to Public Switched Telephone Network (PSTN); General technical requirements for equipment connected to an analogue subscriber interface in the PSTN" (Candidate NET 4).

[21] CCITT Recommendation G.113 (1988): "Transmission impairments".

[22] CCITT Recommendation G.111 (1988): "Loudness ratings (LRs) in an international connection".

[23] ETS 300 540: "Digital cellular telecommunications system (Phase 2); Transmission planning aspects of the speech service in the GSM Public Land Mobile Network (PLMN) system (GSM 03.50)".

3 Definitions and abbreviations

3.1 Definitions

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

Central Control Fixed Part (CCFP): See ETS 300 175-1 [1].

Cordless Radio Fixed Part (CRFP): See ETS 300 175-1 [1].

DECT Network (DNW): See ETS 300 175-1 [1].

double duplex bearer : See ETS 300 175-1 [1].

End System (ES): See ETS 300 175-1 [1].

fixed geometry Portable Part (PP): A PP in which the electro-acoustic transducers and their associated acoustic components are held in fixed relative positions and/or orientations during all on-line conditions and test conditions of the PP.

Fixed Part (DECT Fixed Part) (FP): See ETS 300 175-1 [1].

Fixed radio Termination (FT): See ETS 300 175-1 [1].

Generic Access Profile (GAP): A standard in addition to the DECT CI that ensures interoperability between FPs and PPs from different manufacturers.

handset echo: The echo, perceptible by the far-end user, resulting from the coupling between the receiving and sending directions of the handset, mostly due to acoustic coupling between transducers. It is particularly objectionable in communications including a satellite and an echo canceller, as the DECT handset echo may be out of range of the echo canceller.

network (telecommunication network): See ETS 300 175-1 [1].

network echo: The echo, perceptible by the DECT user, resulting from reflections in the network. It is mostly due to hybrid impairments at both ends of the communication.

operator (DECT operator): See ETS 300 175-1 [1].

Portable Handset (PHS): See ETS 300 175-1 [1].

Portable Part (DECT Portable Part) (PP): See ETS 300 175-1 [1].

Portable radio Termination (PT): See ETS 300 175-1 [1].

public: See ETS 300 175-1 [1].

public access service: See ETS 300 175-1 [1].

Radio Fixed Part (RFP): See ETS 300 175-1 [1].

Repeater Part (REP) : See ETS 300 175-1 [1].

service provider (telecommunications service provider): See ETS 300 175-1 [1].

telephony service: See CCITT Recommendation I.241 [16].

user (of a telecommunication network): See ETS 300 175-1 [1].