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Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT) - Sploġne zahteve za priključ evanje terminala: aplikacije v telefoniji

Digital Enhanced Cordless Telecommunications (DECT); General Terminal Attachment Requirements; Telephony Applications

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Foreword

This Technical Basis for Regulation (TBR) has been produced by the Digital Enhanced Cordless Telecommunications (DECT) Project of the European Telecommunications Standards Institute (ETSI).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 83/189/EEC (replaced by 98/34/EC) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Council Directive 98/13/EC [32] on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity ("the TTE Directive").

Technical specifications relevant to the TTE Directive are given in annex A.

Transposition dates	
Date of adoption of this TBR:	25 June 1999
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1 Scope

The present document specifies the technical characteristics particular to telephony applications provided by terminal equipment which is capable of connection to a public telecommunications network and which uses Digital Enhanced Cordless Telecommunications (DECT). The cordless transmissions for such terminal equipment operate within the frequency band 1 880 MHz - 1 900 MHz.

The objective of the present document is to ensure interworking of terminal equipment via the public network.

The requirements in the present document apply in addition to the attachment requirements for the appropriate public network and the TBR for DECT general attachment requirements.

The present document is applicable to simple telephony terminals as well as to the telephony function of multi-function or multi-service terminals.

The present document includes the speech quality and transmission requirements for a 3,1 kHz telephony teleservice.

For each requirement in the present document, a test is given, including measurement methods. The terminal equipment may be stimulated to perform the tests by additional equipment if necessary.

The present document is not applicable to terminal equipment specially designed for the disabled (e.g. with amplification of received speech as an aid for the hard-of-hearing).

DECT comprises two equipment elements, referred to as a Fixed Part (FP) and a Portable Part (PP). The present document is structured to allow type approval of either a) the FP and PP together, or b) the FP and PP as separate items. Where the DECT FP is connected to a PSTN, and there are any peculiarities in the requirements for voice telephony, these shall be accommodated within the FP.

2 Normative references

The present document 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 the present document only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

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

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

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

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

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

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

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

[9] ETS 300 111: "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Service description".

[10] I-ETS 300 245-3: "Integrated Services Digital Network (ISDN); Technical characteristics of telephony terminals; Part 3: Pulse Code Modulation (PCM) A-law, loudspeaking and handsfree telephony".

[11] TBR 008 (1998): "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals".

[12] ITU-T Recommendation G.101 (1996): "The transmission plan".

[13] ITU-T Recommendation G.111 (1993): "Loudness ratings (LRs) in an international connection".

[14] ITU-T Recommendation G.122 (1993): "Influence of national systems on stability and talker echo in international connections".

[15] CCITT Recommendation G.223 (1988): "Assumptions for the calculation of noise on hypothetical reference circuits for telephony".

[16] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".

[17] ITU-T Recommendation G.712 (1996): "Transmission performance characteristics of pulse code modulation channels".

[18] ITU-T Recommendation G.726 (1990): "40, 32, 24, 16 kbit/s adaptive differential pulse code modulation (ADPCM)".

[19] CCITT Recommendation O.132 (1988): "Quantizing distortion measuring equipment using a sinusoidal test signal".

[20] ITU-T Recommendation O.133 (1993): "Equipment for measuring the performance of PCM encoders and decoders".

[21] ITU-T Recommendation P.50 (1993): "Artificial voices".

[22] ITU-T Recommendation P.51 (1996): "Artificial mouth".

[23] ITU-T Recommendation P.57 (1996): "Artificial ears".

[24] ITU-T Recommendation P.64 (1997): "Determination of sensitivity/frequency characteristics of local telephone systems".

[25] ITU-T Recommendation P.79 (1993): "Calculation of loudness ratings for telephone sets".

[26] 73/23/EEC: "Council Directive of 19 February 1973 on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits" (Low Voltage Directive).

[27] ISO 3 (1973): "Preferred numbers - Series of preferred numbers".

[28] ISO 9614: "Acoustics - Determination of sound power levels of noise sources using sound intensity".

[29] TBR 038: "Public Switched Telephone Network (PSTN); Attachment requirements for a terminal equipment incorporating an analogue handset function capable of supporting the justified case service when connected to the analogue interface of the PSTN in Europe".

[30] ETS 300 700: "Digital Enhanced Cordless Telecommunications (DECT); Wireless Relay Station (WRS)".

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

[32] 98/13/EC: "Council Directive of 12 February 1998 on the approximation of the laws of the Member States concerning telecommunications terminal equipment and satellite earth station equipment, including the mutual recognition of their conformity" (Terminal Directive).

3 Definitions and abbreviations

3.1 Definitions

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

Acoustic Reference Level (ARL): The acoustic level that corresponds to a power level of -10 dBm0 at the TAP.

conducted measurements: Measurements which are made using a direct connection to the Equipment Under Test (EUT).

dBPa: Sound pressure level relative to 1 Pa (no weighting).

duplex bearer: Use of two simplex bearers operating in opposite directions on two physical channels. These pairs of channels always use the same radio Frequency (RF) carrier and always use evenly spaced slots (i.e. separated by 0,5 Time Division Multiple Access (TDMA) frame).

Equipment Under Test (EUT): Equipment submitted to the test laboratory for type examination.

fixed geometry PP: 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 of the PP.

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

NOTE 1: A DECT fixed part contains the logical elements of at least one fixed radio termination, plus additional implementation specific elements.

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

NOTE 2: A fixed radio termination only includes elements that are defined in EN 300 175 parts 1 to 8 [1] to [8]. This includes radio transmission elements (layer 1) together with a selection of layer 2 and layer 3 elements.

Full Slot (SLOT): One 24th of a TDMA frame which is used to support one physical channel.

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

inter-operability: Capability of fixed parts and portable parts, that enable a portable part to obtain access to teleservices in more than one location area and/or from more than one operator (more than one service provider).

Local Echo Loss (LLe): Sum of the reflections measured at the digital interface of the RePP. It is calculated according to ITU-T Recommendations G.122 [14], annex B4, Trapezoidal rule.

Lower Tester (LT): Logical grouping that contains the test equipment, a functionally equivalent DECT PT, a functionally equivalent DECT FT and a test controller.

network echo: 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. The protection consists of an additional echo loss located in the receive path of the DECT system.

Portable Handset (PHS): Single physical grouping that contains all of the portable elements that are needed to provide a teleservice to the user.

NOTE 3: Portable handset is a subset of all possible portable parts. This subset includes all physical groupings that combine one portable radio termination plus at least one portable application in a single physical box.

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

NOTE 4: A portable part is logically divided into one portable termination plus one or more portable applications.

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

NOTE 5: A PT only includes elements that are defined in EN 300 175 parts 1 to 8 [1] to [8]. This includes radio transmission elements together with a selection of layer 2 and layer 3 elements.

public: Attribute indicating that the application of the so qualified term is used to provide access to a public network for the general public.

NOTE 6: The term does not imply any legal or regulatory aspect, nor does it imply any aspects of ownership.

Test Access Point (TAP): Test Access Point is a digital interface with a relative level of 0 dBr providing the access to the PCM speech channels in both transmission directions.

telephony 3,1 kHz teleservice: Definition for telephony 3,1 kHz teleservice is to be found in ETS 300 111 [9].

NOTE 7: Work is currently being undertaken by ETSI to analyse the mouth-to-ear characteristics of voice communication. The results of this work can have consequences for the essential requirements of the present document.

test laboratory: Body which performs testing and is designated to perform 3rd party testing.

variable geometry PP: PP that allows the position and/or orientation of its electro-acoustic transducers and their associated acoustic components to be changed during all on-line conditions of the PP.

3.2 Abbreviations

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

ADPCM	Adaptive Differential PCM
ARL	Acoustic Reference Level
BER	Bit Error Ratio
CI	Common Interface
CLRR	Circuit Loudness Rating, Receive
CLRS	Circuit Loudness Rating, Send
CSS	Composite Source Signal
dBm	dB relative to 1 mW
dBm0	The absolute power level in decibels referred to a point of zero relative level
dBr	The relative power level in decibels

DLC	Data Link Control
ERP	Ear Reference Point
EUT	Equipment Under Test
FFT	Fast Fourier Transformation
FP	Fixed Part
FT	Fixed radio Termination
GAP	Generic Access Profile
ISDN	Integrated Services Digital Network
LL_e	Local Echo loss
L_{meST}	Telephone Sidetone Path Loss
LNR	Low Noise Room
LR	Loudness Rating
LRGP	Loudness Rating Guard-ring Position
LST	Listener Sidetone
LSTR	Listener Sidetone Rating
LT	Lower Tester
MAC	Medium Access Control
MRP	Mouth Reference Point
NWK	NetWorK
PABX	Private Automatic Branch Exchange
PCM	Pulse Code Modulation
PHL	Physical Layer
PHS	Portable HandSet
PP	Portable Part
PSTN	Public Switched Telephone Network
PT	Portable radio Termination
ReFP	Reference Fixed Part (for speech testing)
RePP	Reference Portable Part (for speech testing)
RF	Radio Frequency
RLR	Receive Loudness Rating
RLR_H	Receiving Loudness Rating of the Handset
rms	root mean square
SL	Linear input Signal, see CCITT Recommendation G.726 [18]
SLR	Sending Loudness Rating
SLR_H	Sending Loudness Rating of the Handset
SR	Reconstructed Signal, see CCITT Recommendation G.726 [18]
Ssi(diff)	The difference of the send sensitivities between diffuse and direct sound
Ssi(direct)	The sending sensitivities for the direct sound
STMR	SideTone Masking Rating
TAP	Test Access Point
TCL	Terminal Coupling Loss
TCLw	weighted Terminal Coupling Loss
TDMA	Time Division Multiple Access
TELR	Talker Echo Loudness Rating
WRS	Wireless Relay Station

4 Interpretation of the measurement results

The interpretation of the results recorded in a test report for the measurements described in the present document shall be as follows:

a) the measured value related to the corresponding limit shall be used to decide whether an equipment meets the minimum requirements of the standard;

b) the actual measurement uncertainty of the test laboratory carrying out the measurement, for each particular measurement, shall be included in the test report;

c) the values of the actual measurement uncertainty shall be, for each measurement, equal to or lower than the values in subclause 5.3.4.