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Digitalno omrežje z integriranimi storitvami (ISDN) - Tehnične karakteristike telefonskih terminalov - 2. del: Telefonija s pogovorkami s pretvorbo govora po pravilu PCM A-law

Integrated Services Digital Network (ISDN); Technical characteristics of telephony terminals; Part 2: PCM A-law handset telephony

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ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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Contents

Foreword

This second edition of Part 2 of this Interim European Telecommunication Standard (I-ETS) was produced by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI).

An ETSI standard may be given I-ETS status either because it is regarded as a provisional solution ahead of a more advanced standard, or because it is immature and requires a "trial period". The life of an I-ETS is limited to three years after which it can be converted into an ETS, have it's life extended for a further two years, be replaced by a new version, or be withdrawn.

Part 2 of this I-ETS specifies technical characteristics for Integrated Services Digital Network (ISDN) telephony terminals as described in the scope of this I-ETS. The characteristics are additional to type approval requirements to which the terminal equipment is subject. The additional characteristics are meant to give improved performance.

This second edition of Part 2 to this I-ETS is the second Part of an I-ETS comprising eight Parts.

Part 1: General.

Part 2: PCM A-law, handset telephony.

Part 3: Pulse Code Modulation (PCM) A-law, loudspeaking and handsfree telephony.

Part 4: Interface for additional equipment to an ISDN telephony terminal.

Part 5: Wideband (7 kHz) handset telephony.

Part 6: Wideband (7 kHz) handsfree telephony.

Part 7: Locally generated information tones.

Part 8: Speech transmission characteristics when using low-delay code-excited linear prediction coding at 16 kbit/s.

Proposed announcement date	
Date of adoption of this I-ETS:	29 February 1996
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1 Scope

This second edition of Part 2 of this Interim European Telecommunication Standard (I-ETS) specifies the technical characteristics for Pulse Code Modulation (PCM) A-law 3,1 kHz handset telephony terminals to be used at the basic access for the coincident S and T reference point of the Integrated Services Digital Network (ISDN).

This Part applies in conjunction with I-ETS 300 245-1 [1] and the characteristics specified in this Part are additional to those of I-ETS 300 245-1 [1].

The present version of this Part does not cover measurements on receivers (in handsets) with low acoustic output impedance.

2 Normative references

Part 2 of this I-ETS incorporates by dated or undated reference, provision 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 Part of this I-ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referenced to applies.

[1] I-ETS 300 245-1: "Integrated Services Digital Network (ISDN); Technical characteristics of telephony terminals; Part 1: General".

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

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

[4] CCITT Recommendation G.122 (1988): "Influence of national systems on stability, talker echo and listener echo in international connections".

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

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

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

[8] ITU-T Recommendation P.51 (1993): "Artificial mouth".

[9] ITU-T Recommendation P.57 (1993): "Artificial ears".

[10] IEC Publication 651: "Sound level meters".

[11] CCITT Recommendation O.133 (1988): "Equipment for measuring the performance of PCM encoders and decoders".

[12] CCITT Recommendation G.712 (1992): "Transmission performance characteristics of pulse code modulation".

[13] ITU-T Recommendation P.64 (1993): "Determination of sensitivity/frequency characteristics of local telephone systems".

[14] ITU-T Recommendation P.64 (1988): "Determination of sensitivity/frequency characteristics of local telephone systems to permit calculation of their loudness ratings".

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

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

[17] IEC 225: "Octave, half-octave and third-octave band filters intended for the analysis of sound and vibrations".

[18] CCITT Recommendation O.131 (1988): "Quantizing distortion measuring equipment using a pseudo-random noise".

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

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this I-ETS, the relevant definitions given in CCITT Recommendations P.10 [2] and G.701 [3] apply along with the following:

Acoustic Reference Level (ARL): The acoustic level which gives - 10 dBm0 at the digital interface.

digital interface: The B-channels available at the coincident S and T reference point at an ISDN basic access.

handsfree telephony terminal: A telephony terminal using a loudspeaker associated with an amplifier as a telephone receiver and which can be used without a handset [based on CCITT Recommendation P.10 [2]].

loudspeaking telephony terminal: A handset telephony terminal using a loudspeaker associated with an amplifier as a telephone receiver [based on in CCITT Recommendation P.10 [2]].

telephony 3,1 kHz teleservice: A teleservice providing speech transmission at an audio bandwidth of 3,1 kHz. The communication is bi-directional, with both directions active during the speech phase. User information is provided over a B-channel, signalling is provided over the D-channel [based on ETS 300 111, clause 5].

Terminal Coupling Loss (TCL): The frequency dependent coupling loss between the receiving port and sending port of a terminal due to:

- acoustic coupling at the user interface;
- electrical coupling due to crosstalk in the handset cord or within the electrical circuits;
- seismic coupling through the mechanical parts of the terminal.

NOTE 1: The receiving port and the sending port of a digital voice terminal is a 0 dBr point.

NOTE 2: The coupling at the user interface will depend on the conditions of use.

Weighted Terminal Coupling Loss (TCLW): The weighted TCL using the weighting of CCITT Recommendation G.122 [4].

3.2 Abbreviations

For the purposes of this I-ETS, the following abbreviations, plus the relevant abbreviations in CCITT Recommendations P.10 [2] and G.701 [3] apply:

ARL	Acoustic Reference Level
ERP	Ear Reference Point
ISDN	Integrated Services Digital Network
LRGP	Loudness Rating Guard-ring Position
MRP	Mouth Reference Point
PCM	Pulse Code Modulation
RLR	Receiving Loudness Rating
SLR	Sending Loudness Rating
STMR	SideTone Masking Rating
TCL	Terminal Coupling Loss
TCLw	Weighted Terminal Coupling Loss

4 Call control functions

The requirements of I-ETS 300 245-1 [1] shall be met.

5 Transmission aspects

5.1 General

Recommendations and requirements for PCM A-law handset terminals are given in this second Part of the I-ETS. For loudspeaking or handsfree terminals or when using other coding algorithms other Parts of this I-ETS may apply.

5.1.1 Encoding

The default speech encoding algorithm for all telephony terminals shall be the A-law encoding at 64 kbit/s as defined in CCITT Recommendation G.711 [5]. Any possible other encoding algorithm will be additional. For some encoding algorithms recommendations are given in other Parts of this I-ETS.

5.1.2 Relative level

The digital interface is defined as a 0 dBr point according to CCITT Recommendation G.101 [6].

5.1.3 Volume control

Unless stated otherwise, the requirements apply for all positions of the user-controlled receiving volume control, if provided.

5.2 Speech performance characteristics

5.2.1 Frequency response and sensitivity

5.2.1.1 Sending

The sending sensitivity-frequency response (from Mouth Reference Point (MRP) to digital interface) shall be within the limits restricted by the fully drawn lines in figure 1.

In figure 1, a response is given which is considered to give good quality (naturalness and intelligibility). The response is drawn on a logarithmic (frequency) - linear (dB sensitivity) scale.

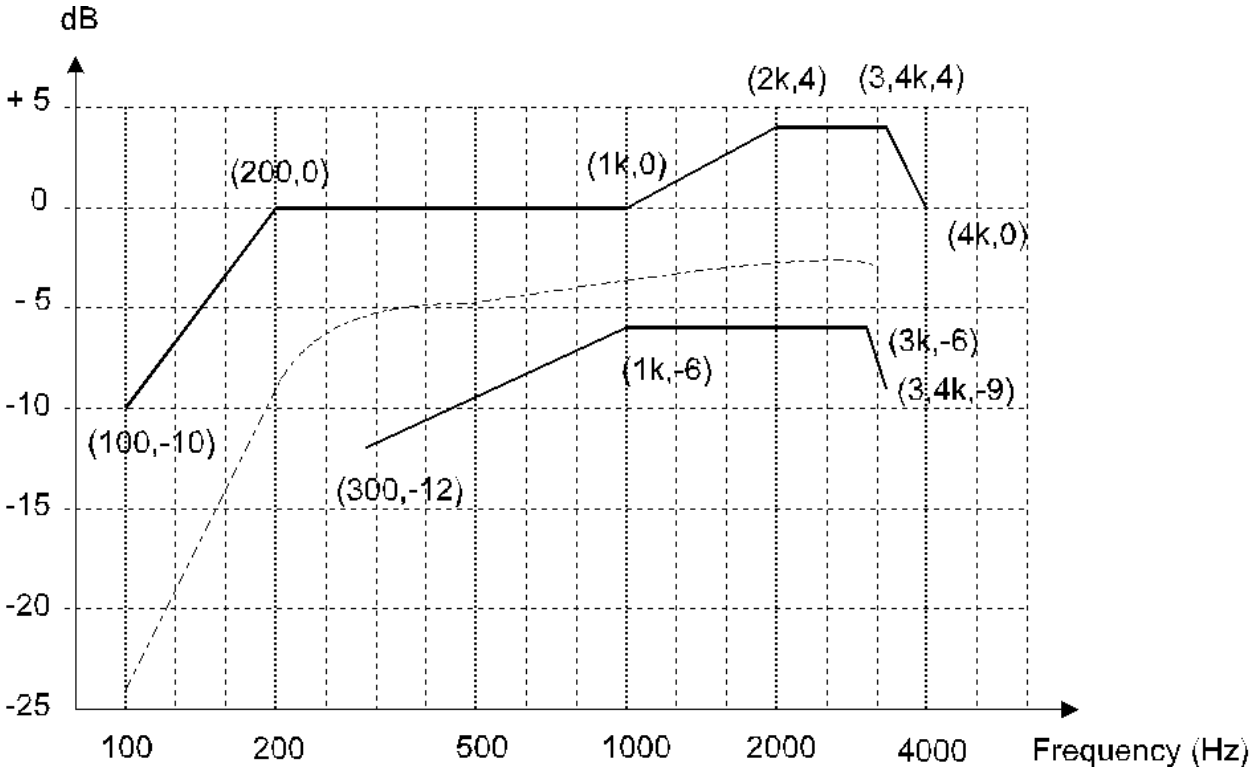

Figure 1: Sending sensitivity/frequency response

The sensitivity values are dB on an arbitrary scale.

Conformance shall be checked by the tests described in annex A, subclauses A.2.1 and A.2.1.1.

5.2.1.2 Receiving

The receiving sensitivity-frequency response (from digital interface to Ear Reference Point (ERP)) shall be within the limits restricted by the fully drawn lines in figure 2.

In figure 2, a response is given which is considered to give good quality (naturalness and intelligibility).

The response is drawn on a logarithmic (frequency) - linear (dB sensitivity) scale.