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**Integrated Services Digital Network (ISDN);
Circuit mode structured bearer service category usable for
3,1 kHz audio information transfer
Terminal requirements necessary for end-to-end compatibility**

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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Foreword

This European Telecommunication Standard (ETS) has been produced by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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1 Scope

This European Telecommunication Standard (ETS) specifies the requirements for a terminal to interwork with the circuit-mode 64 kbit/s 8 kHz structured bearer service with a category usable for 3,1 kHz audio information transfer when connected by the pan-European Integrated Services Digital Network (ISDN).

The requirements of this ETS are additional to those of the ETSs for connection to the ISDN basic access interface or ISDN primary rate interface.

Annex A to this ETS specifies the method of testing required to verify conformance to this ETS as defined in ETS 300 110 [3].

NOTE: The characteristics of the ISDN User-Network Interface are specified in ETS 300 012 and ETS 300 104 [2] and the attachment requirements are specified in ETS 300 153 [4] (see Clause 2).

2 Normative references

This 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 ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referenced to applies.

- [1] ETS 300 085 (1990): "Integrated Services Digital Network (ISDN); 3,1 kHz telephony teleservice Attachment requirements for handset terminals (Candidate NET 33)".
- [2] ETS 300 104 (1991): "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access, Layer 3 aspects (Candidate NET 3, Part 2)".
- [3] ETS 300 110 (1992): "Integrated Services Digital Network (ISDN) ; Circuit-mode 64 kbit/s 8 kHz structured bearer service category usable for 3,1 kHz audio information transfer, Service description".
- [4] ETS 300 153 (1992): "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access (Candidate NET 3, Part 1)".
- [5] CCITT Recommendation G.101 (1988): "The transmission plan".
- [6] CCITT Recommendation G.701 (1988): "Vocabulary of digital transmission and multiplexing, and pulse code modulation (PCM) terms".
- [7] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".
- [8] CCITT Recommendation G.164 (1988): "Echo suppressors".
- [9] CCITT Recommendation G.165 (1988): "Echo cancellers".
- [10] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [11] CCITT Recommendation I.230 (1988): "Definition of bearer service categories".
- [12] CCITT Recommendation P. 56 (1988): "Objective measurement of active speech level".

[13] CCITT Recommendation V.25 (1988): "Automatic answering equipment and/or parallel automatic calling equipment on the general switched telephone network including procedures for disabling of echo control devices for both manually and automatically established calls".

3 Definitions

For the purpose of this ETS, the relevant definitions used in CCITT Recommendations G.701 [6], I.112 [10] and I.230 [11] apply.

4 Symbols and abbreviations

For the purpose of this ETS, the symbols and abbreviations used in CCITT Recommendations G.701 [6], I.112 [10] and I.230 [11] apply.

5 D-channel characteristics

5.1 Outgoing call

When initiating a call on the 3,1 kHz audio bearer service, the coding of the Bearer Capability (BC) information element in the SETUP message shall be in conformance with figure 1.

Compliance shall be checked by using the test specified in ETS 300 104 [2], Annex A, Section 3, Clause 9.

8	7	6	5	4	3	2	1		
0 0 0 0 0 1 0 0 Bearer Capability information element Identifier								Octet 1	
0 0 0 0 0 0 1 1 Length of information element								Octet 2	
1	0 0 CCITT		1 0 0 0 0 3,1 kHz audio						Octet 3
1 Ext	Circuit 0 0 Mode		1 0 0 0 0 64 kbit/s						Octet 4
1 Ext	0 1 Layer 1		0 0 0 1 1 G.711 A-law						Octet 5

NOTE: The use of High Layer Compatibility (HLC) and Low Layer Compatibility (LLC) information elements is optional. Information about encoding according to the appropriate teleservice is described in ETR 018.

Figure 1: Coding of Bearer Capability (BC) information element 3,1 kHz audio

5.2 Incoming call

An incoming call shall be considered as a request for the 3,1 kHz audio bearer service if the Bearer Capability (BC) information element in the incoming SETUP message is encoded as described in figure 1.

Compliance can be checked by using the test specified in ETS 300 104 [2], Annex A, Section 1, Clause 1.

NOTE: If HLC or/and LLC elements are present in an incoming call message, they may be used for compatibility checking according to ETS 300 102-1.

6 B-channel characteristics

6.1 Relative level

The digital interface is a 0 dBr point according to CCITT Recommendation G.101 [5].

6.2 Encoding

The information shall be encoded using the A-law at 64 kbit/s as defined in CCITT Recommendation G.711 [7].

6.3 Disabling of echo control equipment

When required (e.g. for voiceband data communication), any echo control equipment shall be disabled by transmitting a tone of $2\ 100\ \text{Hz} \pm 15\ \text{Hz}$ at a level of $-12\ \text{dBm}_0 \pm 6\ \text{dB}$ (as in CCITT Recommendations G.164 [8] and G.165 [9]).

In order to disable echo suppressors as well as echo cancellers, a reversal in the $2\ 100\ \text{Hz}$ tone shall be introduced as described in CCITT Recommendation V.25 [13].

The compliance shall be checked by using the procedure described in Annex A, Clause A.2.

6.4 Speech band power level of signal from the terminal

6.4.1 Speech signals

During any period of 10 seconds the average active power level delivered at the digital interface at frequencies below 4 kHz shall not exceed $-13\ \text{dBm}_0$.

Compliance shall be checked using the test described in Annex A, subclause A.3.1.

NOTE: The requirements for two-way voice terminals are expressed as Loudness Rating requirements. These requirements can be found in ETS 300 082.

6.4.2 Data or code signals

During any period of 60 seconds the average power level arising from any form of data or code excitation shall not exceed $-13\ \text{dBm}_0$.

Compliance shall be checked using the test described in Annex A, subclause A.3.2.

Annex A (normative): Test methods

A.1 Test equipment

The test equipment for measuring power level shall use one of the approaches described in ETS 300 085 [1], Annex A, subclause A.1.4.

The accuracy of the measurements shall meet the requirements of ETS 300 085 [1], Annex A, subclause A.1.6.

The environmental conditions for the testing laboratory can be found in ETS 300 153 [4].

A.2 Disabling of echo control devices

The output level and the frequency of the echo control disabling tone shall be measured, and the conformance to the procedures described in CCITT Recommendation V.25 [13] shall be verified.

A.3 Speech band signal level

A.3.1 Speech signals

The output signal power level at the digital interface shall be measured unweighted using a speech voltmeter conforming to CCITT Recommendation P.56 [12], method B, with an integration time of 10 seconds.

The test shall be conducted in a quiet environment.

A.3.2 Data or code signals

The output signal power level at the digital interface shall be measured unweighted using an integration time of 60 seconds.

Annex B (informative): Bibliography

The following documents are referenced informatively in this ETS.

- | | |
|-----------------------|---|
| ETR 018 (1991): | "Integrated Services Digital Network (ISDN); Application of the BC-, HLC-, LLC-information elements by terminals supporting ISDN services". |
| ETS 300 082 (1992): | "Integrated Services Digital Network (ISDN); 3,1 kHz telephony teleservice, End-to-end compatibility requirements for telephony terminals". |
| ETS 300 012 (1992): | "Integrated Services Digital Network (ISDN); Basic user-network interface, Layer 1 specification and test principles". |
| ETS 300 102-1 (1990): | "Integrated Services Digital Network (ISDN); User-network interface layer 3, Specifications for basic call control". |

History

Document history	
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