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Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals

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ICS:

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)
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Contents

Foreword	7
1 Scope	9
2 Normative references	9
3 Definitions and abbreviations	11
3.1 Definitions	11
3.2 Abbreviations	12
4 General	12
5 Safety requirements	12
6 ElectroMagnetic Compatibility (EMC) requirements	12
7 Call control functions	13
7.1 Information element codings specific for the Telephony 3,1 kHz teleservice	13
7.1.1 Bearer Capability information element	13
7.1.2 High Layer Compatibility (HLC) information element	14
7.1.3 Low Layer Compatibility (LLC) information element	14
7.2 Outgoing calls, inclusion and coding of the compatibility elements	15
7.3 Incoming calls - compatibility checking	15
8 Transmission aspects	16
8.1 General	16
8.1.1 Encoding	16
8.1.2 Volume control	16
8.2 Speech performance characteristics (handset telephony 3,1 kHz)	17
8.2.1 Sensitivity - frequency response	17
8.2.1.1 Sending	17
8.2.1.2 Receiving	17
8.2.2 Sending and Receiving Loudness Ratings (SLR and RLR)	18
8.2.2.1 Nominal values	18
8.2.2.2 Volume control	18
8.2.3 Sidetone	18
8.2.3.1 Talker sidetone	18
8.2.3.2 Listener sidetone	19
8.2.4 Terminal Coupling Loss (TCL)	19
8.2.4.1 Weighted Terminal Coupling Loss (TCLw)	19
8.2.4.2 Stability loss	19
8.2.5 Distortion	19
8.2.5.1 Sending	19
8.2.5.1.1 Method 1 (Pseudo random noise stimulus)	19
8.2.5.1.2 Method 2 (Sinusoidal test signal)	20
8.2.5.2 Receiving	20
8.2.5.2.1 Method 1 (Pseudo random noise signal)	20
8.2.5.2.2 Method 2 (Sinusoidal test signal)	21
8.2.5.3 Sidetone	21
8.2.6 Variation of gain with input level	21
8.2.6.1 Sending	21
8.2.6.2 Receiving	21
8.2.7 Out-of-band signals	22
8.2.7.1 Discrimination against out-of-band input signals (sending)	22

	8.2.7.2	Spurious out-of-band (receiving).....	22
8.2.8	Noise.....		23
	8.2.8.1	Sending.....	23
	8.2.8.2	Receiving.....	23
	8.2.8.3	Level of sampling frequency (receiving).....	23
8.2.9	Acoustic shock.....		23
8.2.10	Delay.....		23
9	Operation under restricted power conditions.....		24
10	Testing and approval methodology.....		24
Annex A (normative):	Test specification for voice transmission aspects.....		25
A.1	General conditions for testing.....		25
A.1.1	Environment for tests.....		25
A.1.2	Test equipment interface.....		25
A.1.3	Test equipment requirements.....		25
	A.1.3.1	Electro-acoustic equipment.....	25
	A.1.3.2	Test equipment for digital telephone sets.....	25
		A.1.3.2.1	Codec approach and specification.....
		A.1.3.2.2	Direct digital processing approach.....
A.1.4	Alternative test methods.....		27
A.1.5	Accuracy of test equipment.....		27
A.1.6	Bandwidth.....		27
A.1.7	Powering.....		27
A.2	Transmission requirements testing.....		28
A.2.1	Sensitivity/frequency response.....		28
	A.2.1.1	Sending.....	28
	A.2.1.2	Receiving.....	28
A.2.2	Loudness ratings.....		28
	A.2.2.1	Sending Loudness Rating (SLR).....	28
	A.2.2.2	Receiving Loudness Rating (RLR).....	29
A.2.3	Sidetone.....		29
	A.2.3.1	Talker sidetone.....	29
	A.2.3.2	Listener sidetone.....	29
		A.2.3.2.1	Sound field calibration.....
		A.2.3.2.2	Measurement and calculation of LSTR.....
		A.2.3.2.3	Measurement and calculation of the value of the D-factor.....
A.2.4	Terminal Coupling Loss.....		31
	A.2.4.1	Weighted Terminal Coupling Loss (TCLw).....	31
	A.2.4.2	Stability loss.....	31
A.2.5	Distortion.....		32
	A.2.5.1	Sending.....	32
		A.2.5.1.1	Method 1.....
		A.2.5.1.2	Method 2.....
	A.2.5.2	Receiving.....	32
		A.2.5.2.1	Method 1.....
		A.2.5.2.2	Method 2.....
	A.2.5.3	Sidetone.....	33
A.2.6	Variation of gain with input level.....		33
	A.2.6.1	Sending.....	33
	A.2.6.2	Receiving.....	33
A.2.7	Out-of-band signals.....		33
	A.2.7.1	Discrimination against out-of-band input signal.....	33
	A.2.7.2	Spurious out-of-band signals.....	33
A.2.8	Noise.....		34
	A.2.8.1	Sending.....	34
	A.2.8.2	Receiving.....	34
	A.2.8.3	Level of sampling frequency (receiving).....	34
A.2.9	Delay.....		34

Annex B (normative):	Abstract Test Suite (ATS) in electronic form for the call control functions	36
B.1	The TTCN Graphical form (TTCN.GR)	36
B.2	The TTCN Machine Processable form (TTCN.MP)	36
Annex C (informative):	Acoustic shock requirements	37
C.1	Continuous signal	37
C.2	Peak signal	37
Annex D (normative):	Description of the cross-correlation method	38
D.1	Test signal	38
D.2	Calculation	38
Annex E (normative):	TBR Requirements Table (TBR-RT)	39
E.1	Guidance for completion of the TBR-RT	39
E.2	Call control functions requirements TBR-RT	40
E.3	Transmission aspects requirements TBR-RT	40
Annex F (informative):	Test Report Format	42
F.1	Identification	42
F.1.1	Identification of the Document	42
F.1.2	Identification of the testing laboratory	42
F.1.3	Identification of the client	42
F.1.4	Identification of the test item	42
F.1.5	Use of subcontractors	42
F.2	Test conditions	43
F.3	Test equipment	43
F.4	Test results	43
F.4.1	Call control functions	43
F.4.2	Speech transmission characteristics	43
F.4.3	Power feeding	43
F.5	Summary and conclusion	43
Annex G (normative):	List of supported telecommunication services	44
G.1	Basic telecommunication services	44
G.2	Supplementary services	44
Annex H (informative):	Bibliography	45
History	48

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SIST TBR 008 E2:2004

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Foreword

This Technical Basis for Regulation (TBR) has been produced by the ETSI Project Digital Terminals and Access (DTA).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 83/189/EEC (as amended) 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 as requested by the above mentioned mandate, the reference of which will be published in the Official Journal of the European Communities referencing the Council Directive relating to telecommunications terminal equipment and satellite earth station equipment, including the mutual recognition of their conformity (Directive 98/13/EC).

A common technical regulation may be established by the European Commission in accordance with the Directive.

Technical specifications relevant to the 98/13/EC Directive are given in the TBR-Requirements Table (TBR-RT) in annex E.

Transposition dates	
Date of adoption of this TBR	18 September 1998
Date of latest announcement of this TBR (doa):	31 January 1999
Date of latest publication of new National Standard or endorsement of this TBR (dop/e):	30 April 1999
Date of withdrawal of any conflicting National Standard (dow):	31 October 1999

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1 Scope

This Technical Basis for Regulation (TBR) specifies the technical requirements under Article 5(g) of Directive 98/13/EC for Terminal Equipment Type 1 (TE1 see [1]) for the telephony 3,1 kHz teleservice to be attached to the pan-European Integrated Services Digital Network (ISDN) at an interface at the coincident S and T reference point for a basic access.

The objective of this TBR is to ensure interworking via the network.

A test is given for each requirement in this TBR including measurement methods. The terminal equipment may be stimulated to perform tests by additional equipment if necessary.

This TBR specifies the Article 5(g) requirements for TE1 that:

- a) are intended for participation in calls that use those on-demand circuit mode basic services that are specified in clause G.1;
- b) optionally use those supplementary services that are specified in clause G.2;
- c) are capable of handling either incoming calls only, outgoing calls only or both incoming and outgoing calls.

This TBR is applicable to simple 3,1 kHz telephony terminals as well as to the 3,1 kHz telephony function of multimedia or multi-service terminals and includes all functions necessary to provide real-time 2-way speech conversation. This TBR only applies to items of terminal equipment with an integral user-network interface for ISDN basic access, and which have a handset. Where a function is indicated as optional, it need not be provided, but, where such a function is provided, the terminal needs to conform to the requirements and tests specified in this TBR.

This TBR is not applicable to: [\(standards.iteh.ai\)](https://standards.iteh.ai/)

- a) terminal equipment specially designed for the disabled (e.g., with amplification of received speech as an aid for the hard-of-hearing);
- b) terminal equipment using a radio link (e.g., cordless telephones);
- c) terminal equipment for hostile environments;
- d) terminal equipment with a switching function which is not covered by the definition of TE1.

NOTE: Terminals that meet the requirements of this TBR will also be suitable for connection to the S reference point for interworking via the public network.

2 Normative references

This TBR 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 TBR only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies. Informative references can be found in annex H.

- [1] CCITT Recommendation I.411 (1988): "ISDN user-network interfaces - Reference configurations".
- [2] ITU-T Recommendation P.10: "Vocabulary of terms on telephone transmission quality and telephone sets".
- [3] ITU-T Recommendation G.701 (1993): "Vocabulary of digital transmission and multiplexing, and pulse code modulation (PCM) terms".
- [4] IEC 651: "Sound level meters".

- [5] TBR 3 (1995) including Amendment 1 (1998): "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access".
- [6] ITU-T Recommendation G.101 (1996): "The transmission plan".
- [7] ETS 300 111 (1992): "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice, Service description".
- [8] ITU-T Recommendation G.122 (1993): "Influence of national systems on stability and talker echo in international connections".
- [9] ETS 300 102-1 (1993): "Integrated Services Digital Network (ISDN); User-network interface layer 3, Specifications for basic call control".
- [10] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".
- [11] CCITT Recommendation G.223 (1988): "Assumptions for the calculation of noise on hypothetical reference circuits for telephony".
- [12] ITU-T Recommendation P.51 (1996): "Artificial mouth".
- [13] ITU-T Recommendation P. 57 (1996): "Artificial ears".
- [14] ITU-T Recommendation O.133 (1993): "Equipment for measuring the performance of PCM encoders and decoders".
- [15] ITU-T Recommendation G.712 (1996): "Transmission performance characteristics of pulse code modulation channels".
- [16] ITU-T Recommendation P.64 (1997): "Determination of sensitivity/frequency characteristics of local telephone systems".
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- [17] ISO 3 (1973): "Preferred numbers - series of preferred numbers".
- [18] ITU-T Recommendation P.79 (1993): "Calculation of loudness ratings for telephone sets".
- [19] IEC 225: "Octave, half-octave and third-octave band filters intended for the analysis of sound and vibrations".
- [20] CCITT Recommendation O.131 (1988): "Quantizing distortion measuring equipment using a pseudo-random noise test signal".
- [21] CCITT Recommendation O.132 (1988): "Quantizing distortion measuring equipment using a sinusoidal test signal".
- [22] ISO/IEC 9646: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TBR, the relevant definitions as given in ITU-T Recommendation P.10 [2] and ITU-T Recommendation G.701 [3], apply plus the following:

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

dB(A): Sound level relative to 20 mPa measured using the A-weighting defined in IEC 651 [4].

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

dBPa(A): Sound level relative to 1 Pa measured using the A-weighting defined in IEC 651 [4].

D-factor: The computed average of the difference between the sending sensitivity using an artificial mouth and that using a diffuse room noise source.

designated terminal: The terminal which is permitted to draw power from power source 1 under restricted power conditions as specified in TBR 3 [5].

digital interface: The interface at the coincident S and T reference point. The digital interface shall be a 0 dBr point according to ITU-T Recommendation G.101 [6].

multimedia terminal: A terminal that simultaneously supports two or more media.

multiservice terminal: A terminal that supports two or more teleservices.

pink noise: A noise signal where the power spectrum is diminishing by 3 dB/octave.

restricted power condition: The condition indicated by the reversed polarity of the phantom voltage at the coincident S and T reference point, as defined in TBR 3 [5].

NOTE 1: For some networks restricted power condition will be the normal operating mode.

telephony 3,1 kHz teleservice: As defined in ETS 300 111 [7].

NOTE 2: Work is currently being undertaken by ETSI to analyse the mouth-to-ear characteristics of voice communication. The results of this work could have consequences for the essential requirements of this TBR.

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

- acoustical 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 3: The receiving port and the sending port of a digital voice terminal is a 0 dBr point.

NOTE 4: The coupling at the user interface depends on the conditions of use.

Weighted Terminal Coupling Loss (TCLW): The weighted terminal coupling loss using the weighting of ITU-T Recommendation G.122 [8].

3,1 kHz telephony terminal: A terminal that supports the telephony 3,1 kHz teleservice as described in ETS 300 111 [7].

3.2 Abbreviations

For the purposes of this TBR, the relevant abbreviations given in ITU-T Recommendation P.10 [2] and ITU-T Recommendation G.701 [3], apply plus the following:

ARL	Acoustic Reference Level
BC	Bearer Capability
DTS	Digital Test Sequence
EMC	ElectroMagnetic Compatibility
ERP	Ear Reference Point
HLC	High Layer Compatibility
ICS	Implementation Conformance Statement
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
LE	acoustic earcap LEakage
LLC	Low Layer Compatibility
LmeST	SideTone path loss
LRGP	Loudness Rating Guard-ring Position
LSTR	Listener SideTone Rating
MFPB	Multi Frequency PushButton
MRP	Mouth Reference Point
STMR	SideTone Masking Rating
TBR	Technical Basis for Regulation
TBR-RT	Technical Basis for Regulation - Requirements Table
TCL	Terminal Coupling Loss
TCLw	Weighted Terminal Coupling Loss
TE	Terminal Equipment
RLR	Receiving Loudness Ratings
SLR	Sending Loudness Ratings

4 General

Each requirement in this TBR is either applicable to all Terminal Equipment (TE) within the scope of this TBR, or only applicable to certain TE depending on the functions implemented within the TE. Annex E specifies the relationship between the requirements and the terminal. The supplier shall provide information on the functions implemented in the terminal and this information shall be used to determine which requirements apply and the manner in which the tests are to be performed. This information may be provided in the form of a complete TBR Requirements Table (TBR-RT) proforma (a blank TBR-RT proforma is provided in annex E).

Since the verification of the voice transmission depends on the proper operation of the call control functions, the verification of the call control tests shall be performed before verification of the voice transmission tests.

5 Safety requirements

There are no safety requirements under this TBR.

NOTE: Safety requirements are imposed under the Low Voltage Directive (73/23/EEC) and articles 5 (a) and 5 (b) of Directive 98/13/EC.

6 ElectroMagnetic Compatibility (EMC) requirements

There are no EMC requirements under this TBR.

NOTE: EMC requirements are imposed under the EMC Directive (89/336/EEC). Requirements for conducted emissions will be added to this TBR when appropriate.

7 Call control functions

At least one of the following shall be implemented:

- outgoing calls;
- incoming calls.

NOTE: The option chosen should not conflict with the option chosen for TBR 3 [5].

7.1 Information element codings specific for the Telephony 3,1 kHz teleservice

7.1.1 Bearer Capability information element

Reference: ETS 300 102-1, subclause 4.5.5 and ETR 18, subclause 6.3.

Definition: The purpose of the Bearer Capability information element is to indicate a requested CCITT Recommendation I.231 bearer.

The coding of the BC information element used in this TBR are given in figure 1 and figure 2.

8	7	6	5	4	3	2	1	
Bearer capability information element identifier								Octet 1
0	0	0	0	0	1	0	0	
Length of information element								Octet 2
0	0	0	0	0	0	1	1	
Length of information element								Octet 3
1	0	0	0	0	0	0	0	
Length of information element								Octet 4
1	0	0	1	0	0	0	0	
Length of information element								Octet 5
1	0	1	0	0	0	1	1	

Figure 1: Coding of Bearer capability (BC) information element indicating speech

8	7	6	5	4	3	2	1	
Bearer capability information element identifier								Octet 1
0	0	0	0	0	1	0	0	
Length of information element								Octet 2
0	0	0	0	0	0	1	1	
Length of information element								Octet 3
1	0	0	1	0	0	0	0	
Length of information element								Octet 4
1	0	0	1	0	0	0	0	
Length of information element								Octet 5
1	0	1	0	0	0	1	1	

Figure 2: Coding of Bearer capability (BC) information element indicating 3,1 kHz audio