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Digitalno omrežje z integriranimi storitvami (ISDN) – Avdiovizualne storitve – Videotelefonski sistemi in terminalna oprema, ki delujejo z enim ali dvema kanaloma s hitrostjo 64 kbit/s

Integrated Services Digital Network (ISDN); Audiovisual services; Videotelephone systems and terminal equipment operating on one or two 64 kbit/s channels

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Digitalno omrežje z
integriranimi storitvami
(ISDN)

Integrated Services Digital
Network (ISDN)

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Foreword

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

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1 Scope

This 2nd edition of ETS 300 145 specifies the system requirements for a Videotelephone using one or two B-channels, when connected to the S point or coincident S and T reference point of the pan-European Integrated Services Digital Network (ISDN). These requirements ensure end-to-end compatibility of terminals supporting the videotelephony teleservice described in ETS 300 264 [1].

This ETS is applicable in whole to Terminal Equipment (TE) supporting the videotelephony teleservice; subclauses 5.3, 6.1, 6.2 and clause 8 are also applicable to Multipoint Control Units (MCUs) using one or two B-channels.

The specific requirements which apply to a terminal in order to support various options related to videoconference and/or data transmission are specified in other documents (e.g. Draft prETS 300 483 [2]).

Conformance to this ETS allows interworking with terminals supporting the telephony 3,1 kHz teleservice described in ETS 300 111 [3], the telephony 7 kHz teleservice described in ETS 300 263 [4] and Public Switched Telephone Network (PSTN) telephony terminals. Interworking with other audio-visual terminals can take place if their operation on one or two B-channels is according to this ETS.

NOTE 1: Terminals in accordance with ITU-T Recommendation H.320 can interwork, if one or two 64 kbit/s (unrestricted or restricted) digital channels can be established between the terminals (e.g. using a remote Channel Aggregation Unit in case of a 128 kbit/s H.320 single channel terminal).

NOTE 2: Interworking with terminals according to CCITT Recommendation G.725 [5] is optional; it may be restricted to mode 0.

NOTE 3: Audio and video signal interfaces are outside the scope of this ETS.

NOTE 4: Interfaces and protocols used for optional data transmission are outside the scope of this ETS.

The in-band signalling procedures are described in ETS 300 143 [6], and the syntax for these procedures is defined in ETS 300 144 [7]. The video coding algorithm is described in ITU-T Recommendation H.261 [8].

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 apply.

- [1] ETS 300 264: "Integrated Services Digital Network (ISDN); Videotelephony teleservice, Service description".
- [2] Draft prETS 300 483: "Terminal Equipment (TE); Integrated Services Digital Network (ISDN); Multipoint Communications for Audiovisual Services; Main functionalities and basic requirements for Multipoint Control Units and audiovisual terminals".
- [3] ETS 300 111 (1992): "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice, Service description".
- [4] ETS 300 263: "Integrated Services Digital Network (ISDN); Telephony 7 kHz teleservice, Service description".
- [5] CCITT Recommendation G.725 (1988): "System aspects for the use of the 7 kHz audio codec within 64 kbit/s".
- [6] ETS 300 143: "Integrated Services Digital Network (ISDN); Audiovisual services; In-band signalling procedures for audiovisual terminals using digital channels up to 2 048 kbit/s".

- [7] ETS 300 144: "Integrated Services Digital Network (ISDN); Audiovisual services; Frame structure for a 64 kbit/s to 1 920 kbit/s channel and associated syntax for in-band signalling".
- [8] ITU-T Recommendation H.261: "Video codec for audiovisual services at p x 64 kbit/s".
- [9] ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface, layer 3, Specifications for basic call control".
- [10] ETS 300 012 (1991): "Integrated Services Digital Network (ISDN); Basic user-network interface, Layer 1 specification and test principles".
- [11] ETS 300 125 (1991): "Integrated Services Digital Network (ISDN); User-network interface data link layer specification, Application of CCITT Recommendations Q. 920/I. 440 and Q.921/I. 441".
- [12] ITU-T/T.120 series of Recommendations:
- ITU-T Recommendation T.122: "Multipoint communication service for audiographics and audiovisual conferencing, service definition";
 - ITU-T Recommendation T.123: "Protocol stacks for audiographic and audiovisual teleconference applications";
 - ITU-T Recommendation T.125: "Multipoint communication service protocol specification".
- [13] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".
- [14] CCITT Recommendation G.722 (1988): "7 kHz audio-coding within 64 kbit/s".
- [15] CCITT Recommendation G.728 (1992): "Coding of speech at 16 kbit/s using low-delay code-excited linear prediction".
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- [16] I-ETS 300 302, Parts 1 to 4: "Integrated Services Digital Network (ISDN); Videotelephony teleservice".
- [17] ETS 300 267-1: "Integrated Services Digital Network (ISDN); Telephony 7 kHz and videotelephony teleservices, Digital Subscriber Signalling System No. one (DSS1), Part 1: Protocol specification".
- [18] I-ETS 300 245-5: "Integrated Services Digital Network (ISDN); Technical characteristics of telephony terminals, Part 5: Wideband (7kHz) handset telephony".
- [19] I-ETS 300 245-2: "Integrated Services Digital Network (ISDN); Technical characteristics of telephony terminals, Part 2 - PCM A-law handset telephony".
- [20] ITU-T Recommendation H.233: "Confidentiality system for audiovisual services".

3 Definitions

For the purposes of this ETS, the definitions given in clause 3 of both ETS 300 143 [6] and ETS 300 144 [7] apply along with the following:

additional channel: One of the channels between two users, which is not the I-channel (see ETS 300 144 [7]).

audio mute: Muting the loudspeaker of a terminal.

channel: A unidirectional link between two users.

connection: A bi-directional link between two users: it carries both (unidirectional) channels.

Control and Indication (C&I): End-to-end signalling between terminals, consisting of Control, which causes a state change in the receiver, and Indication which provides for information as to the state or functioning of the system (see also ETS 300 144 [7] for additional information and abbreviations).

data: Refer to any of these: Low Speed Data (LSD), High Speed Data (HSD), Multi Layer Protocol (MLP), High Speed Multi Layer Protocol (H-MLP) as defined in ETS 300 144 [7].

I-channel: The initial or only B-channel as defined in ETS 300 144 [7].

In-band signalling: Signalling via the Bit-rate Allocation Signal (BAS) of the frame structure, as defined in ETS 300 144 [7].

lip synchronisation: Operation to provide the feeling that the speaking motion of the displayed person is synchronised with his speech.

man-machine interface: Interface between human user and terminal/system, consisting of a physical section (electro-acoustic, electro-optic transducer, keys, etc.) and a logical section dealing with functional operation states.

4 Abbreviations

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

BAS	Bit-rate Allocation Signal
C&I	Control and Indication
CLIP	Calling Line Identification Presentation
COLP	Connected Line Identification Presentation
CONNECT	D-channel message (as in ETS 300 102-1 [9])
ECS	Encryption Control Signal
ECT	Explicit Call Transfer
FAS	Frame Alignment Signal
H-MLP	High Speed Multi Layer Protocol
HOLD	Supplementary service
HSD	High Speed Data
ISDN	Integrated Services Digital Network
LSD	Low Speed Data
MCU	Multipoint Control Unit
MLP	Logical data sub channel named "MLP"

NOTE: MLP previously referred to the ITU-T Recommendation T.120 [12] Multilayer Protocol, but now this is just a name for the logical subchannel which may contain T.120 or H.224 protocol, or Dummy data (see ETS 300 143 [6] and ETS 300 144 [7]).

MSB	Most Significant Bit
MSN	Multiple Subscriber Number
PSTN	Public Switched Telephone Network
SC	Service Channel
TEA	Terminal Equipment Alarm
TERM A, TERM B	Terminals
TERM C	Terminal

TP Terminal Portability

5 System description

A videotelephony terminal conforming to this ETS shall be connected to an ISDN basic access in accordance with ETS 300 012 [10], ETS 300 102-1 [9] and ETS 300 125 [11]; then it cannot use more than 2 B-channels.

5.1 Block diagram and identification of elements (informative)

A generic videotelephony system is shown in figure 1. It consists of several (at least two) videotelephony terminals, the ISDN, and possibly a Multipoint Control Unit (MCU).

A configuration of a complete videotelephony terminal consisting of several functional units is also shown in figure 1.

- Video I/O equipment includes camera(s), monitor(s), and video processing units to provide functions such as split-screen scheme.
 - Audio I/O equipment includes the handset and/or microphone(s), loud-speaker(s) and/or earphone(s), and audio processing units to provide such functions as acoustic echo cancellation.
 - Data I/O adaptor may be used for additional services, such as facsimile, or additional facilities (e.g. far end camera control): it is optional.
 - Telematic equipment includes visual aids such as an electronic blackboard and a still picture transceiver to enhance the basic videotelephone communication as defined in ITU-T T.120 series of Recommendations [12]: these are optional.
 - The system control unit carries out such functions as:
 - network access through user-to-network signalling,
 - end-to-end in-band signalling to establish a suitable mode of operation,
 - audio and video signal processing and multiplexing,
 - data transmission and/or application.
 - The video codec carries out redundancy reduction coding and decoding for video signals: the algorithm is as defined in ITU-T Recommendation H.261 [8].
 - The audio codec carries out redundancy reduction coding and decoding for audio signals: the algorithms are defined in CCITT Recommendations G.711 [13], G.722 [14] and G.728 [15]. The audio characteristics are defined in I-ETS 300 302, Parts 1 to 4 [16].
- NOTE 1: Part 4 of this prI-ETS is still under study.
- NOTE 2: Delay may be introduced into the audio path equal to the video codec delay, to maintain lip synchronisation (see subclause 6.2.4.5).
- The Mux/dmux unit multiplexes transmitted video, audio, data and control signals into a single bit stream and demultiplexes a received bit stream into constituent multimedia signals, as defined in ETS 300 144 [7].
 - The network interface makes the necessary adaptation between the network and the terminal according to the user-network interface requirements, as defined in ETS 300 012 [10], ETS 300 102-1 [9] and ETS 300 125 [11].