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Digitalno omrežje z integriranimi storitvami (ISDN) – Avdiovizualne storitve – Postopki znotrajpasovnega krmiljenja pri avdiovizualnih terminalih, ki uporabljajo digitalne kanale s hitrostmi do 2 048 kbit/s

Integrated Services Digital Network (ISDN); Audiovisual services Inband signalling procedures for audiovisual terminals using digital channels up to 2 048 kbit/s

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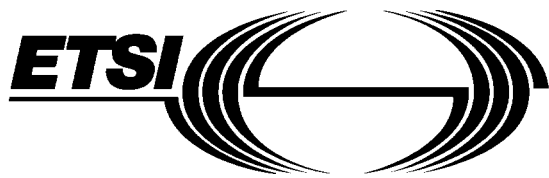
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**Inband signalling procedures for audiovisual terminals
using digital channels up to 2 048 kbit/s**

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).

The attention of the user of this ETS is drawn to the possibility that compliance may require the use of technology covered by patent or similar rights.

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1 Scope

This ETS specifies inband signalling procedures for establishing communication between audiovisual terminals using digital channels of up to 2 048 kbit/s. The system is based on the frame structure and associated syntax as specified in ETS 300 144 [1]. The procedures are required to establish a compatible mode upon call set-up, to switch between modes during a call and to allow for use of supplementary services as described in ETS 300 145 [2].

A separate ETS (DE/TE-04120) is under preparation which specifies the method of testing required to identify conformance to this ETS.

This ETS is applicable to terminals supporting the telephony 7 kHz or videotelephony teleservice and to other terminals designed for audiovisual communication.

NOTE: It is assumed within this ETS that, due to frame synchronisation and signalling overheads, the bit rate which can be used for user data in 2 048 kbit/s transmission systems is limited to 1 920 kbit/s.

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 300 144: "Integrated Services Digital Network (ISDN): Audiovisual services, Frame structure for a 64 to 1 920 kbit/s channel and associated syntax for inband signalling".
- [2] ETS 300 145: "Integrated Services Digital Network (ISDN): Audiovisual services, Videotelephone systems, and terminal equipment operating on one or two 64 kbit/s channels".
- [3] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".
- [4] CCITT Recommendation G.722 (1988): "7 kHz audio-coding within 64 kbit/s".
- [5] CCITT Recommendation G.725 (1988): "System aspects for the use of the 7 kHz audio codec within 64 kbit/s".
- [6] CCITT Recommendation G.728 (1992): "Coding of speech at 16 kbit/s using low-delay code-excited linear prediction".

3 Definitions

For the purposes of this ETS, the definitions given in Clause 3 of ETS 300 144 [1] and the following definition apply:

Capability: Ability to receive, demultiplex and decode the corresponding signal.

4 Symbols and abbreviations

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

BAS	Bit-rate Allocation Signal
C&I	Control and Indication
CIF	Common Intermediate Format
ECS	Encryption Control Signal
ETS	European Telecommunication Standard
ETSI	European Telecommunications Standards Institute
FAS	Frame Alignment Signal
FAW	Frame Alignment Word
H-MLP	High speed Multi Layer Protocol ¹⁾
H0	384 kbit/s channel
H11	1 536 kbit/s channel
H12	1 920 kbit/s channel
HSD	High Speed Data
ISDN	Integrated Services Digital Network
ITU-TS	International Communications Union Telecommunications Standardization
LSB	Least Significant Bit
LSD	Low Speed Data
MBE	Multi-Byte Extension
MCC	Multipoint Command Conference
MCS	Multipoint Command Symmetrical Data-transmission
MCU	Multipoint Control Unit
MLP	Multi Layer Protocol ²⁾
MPI	Minimum Picture Interval
MSB	Most Significant Bit
QCIF	Quarter Common Intermediate Format
SBE	Single Byte Extension
SC	Service Channel
TEA	Terminal Equipment Alarm
TS	Time Slot
TS1	Time Slot 1
VCF	Video Command "Freeze-picture request"
VCU	Video Command "Fast-update request"
(xxx) [yy]	Symbolism, coded representation of a BAS following table 8 of ETS 300 144 [1]. (xxx) corresponds to the binary attribute of the BAS, and [yy] corresponds to the value of the BAS in decimal

5 Basic principles and rules

The sequences and procedures in this ETS ensure that only those signals are transmitted which can be received and appropriately treated by the remote terminal, without ambiguity. This requires that the capabilities of each terminal to receive and decode be known to the other terminal, and that suitable commands be transmitted to set the demultiplexer and decoders accordingly.

The total capability of a terminal to receive and decode various signals is made known to the other terminal by transmission of its capability set (see subclause 5.1.9).

The frame structure described in ETS 300 144 [1] is used for mode initialisation and dynamic mode switching (see the following subclauses) and, more generally, to transmit capabilities and commands. ETS 300 144 [1] defines a Bit-rate Allocation Signal (BAS) which is used, inter alia, to indicate the coding algorithm(s) and to define the multiplex of the various bit streams (audio, video, data, Encryption Control Signal (ECS), frame structure) within the frame.

BAS codes are classified by attribute and value; the first three bits represent the BAS attribute: each attribute may therefore have up to 32 defined values.

1) MLP protocols are under discussion in ITU-TS.
2) MLP protocols are under discussion in ITU-TS.

Four BAS attributes are commands: they define the multiplex within the next and following sub-multiframe, as well as an audio coding algorithm, and therefore command the distant receiver to treat the signals accordingly. The four attributes are independent; that is, a value of one attribute does not modify that of another.

Further BAS attributes are defined to signal terminal capabilities to the distant terminal. When received, these attributes do not directly affect the current transmission mode. However, they may lead to the initiation of a specific action to be carried out by the terminal. This feature is used in the mode initialisation procedure and in the mode forcing procedure (see Clause 7).

The third bit of the Frame Alignment Signal (FAS) (see ETS 300 144 [1]) in odd frames of the initial channel, called the A-bit, is set to 0 on acquiring frame alignment and, if desired or necessary, multiframe alignment; the A-bit is set to 1 on loss of frame or multiframe alignment. Consequently, a terminal which is receiving a framed signal with the A-bit set to 0 can assume that the distant terminal is able to receive BAS capability sets and act upon changes of BAS.

A terminal having capabilities for single-channel working only, and without encryption capability, does not need to seek and gain multiframe alignment since the latter serves for numbering and synchronising multiple channels.

5.1 Capabilities

Capability values are defined in ETS 300 144 [1].

5.1.1 Audio capabilities

All audiovisual terminals claiming conformance to this ETS shall be capable of transmitting and receiving audio with both A-law and μ -law companding according to ITU-T Recommendation G.711 [3]. They shall transmit at least one audio capability.

Both ITU-T Recommendation G.711 [3] capabilities shall be sent, unless it is desired to force the remote terminal to transmit a particular one of the two. Receipt of just one value (A or μ) from the remote terminal shall be interpreted as an indication that it cannot decode signals to the other law. Receipt of no ITU-T Recommendation G.711 [3] capabilities shall be interpreted as an indication that it can decode signals to both laws.

Table 1: Meaning of the A-law and μ -law capability inside a capability set

A-law capability received	μ -law capability received	meaning (referring to the transmitting terminal)
No	No	can decode A-law and μ -law
Yes	No	cannot decode μ -law
No	Yes	cannot decode A-law
Yes	Yes	can decode A-law and μ -law

5.1.2 Video capabilities

For the picture format, a terminal may have either Quarter Common Interchange Format (QCIF) capability alone, or both QCIF and Common Interchange Format (CIF) capabilities.

The QCIF capability shall be followed by one Minimum Picture Interval (MPI) value. The CIF capability shall be followed by two MPI values, the first applicable to QCIF and the other to CIF.