

Digitalno omrežje z integriranimi storitvami (ISDN) – Preskušanje znotrajpasovne signalizacije pri avdiovizualnih storitvah – 1. del: Zgradba preskušalnega niza in nameni preskušanja (TSS&TP) – Specifikacija

Integrated Services Digital Network (ISDN); Audiovisual services in-band signalling testing; Part 1: Test Suite Structure and Test Purposes (TSS&TP) specification

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Foreword

This Interim European Telecommunication Standard (I-ETS) has been produced by the Terminal Equipment (TE) Technical Committee and approved by Multimedia Terminals and Applications (MTA) Project 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it can be converted into an ETS, have its life extended for a further two years, be replaced by a new version, or be withdrawn.

This I-ETS is part 1 of a multipart standard covering "Integrated Services Digital Network (ISDN); audiovisual services in-band signalling testing", as described below:

- Part 1:** "Test Suite Structure and Test Purpose (TSS & TP) specification";
- Part 2: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma";
- Part 3: "Protocol Implementation Conformance Statement (PICS) proforma specification".

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1 Scope

This Interim European Telecommunication Standard (I-ETS) is part 1 of a three part I-ETS dealing with conformance testing of Integrated Services Digital Network (ISDN) Videotelephony terminals. Part 2 contains the Abstract Test Suite (ATS) in Tree and Tabular Combined Notation (TTCN) and the partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma. Part 3 provides the Protocol Implementation Conformance Statement (PICS) proforma specification.

This I-ETS contains the Test Suite Structure and Test Purposes (TSS & TP) for conformance testing the in-band signalling aspects of an ISDN Videotelephony terminal which uses one or two B channels, and which implements the frame structure and associated syntax as specified in ETS 300 144 [2] and the in-band signalling procedures as specified in ETS 300 143 [1]. No testing of data commands or applications is included among the tests. Test Purposes (TPs) for signal content of the B-channel are included in this part of the I-ETS but no corresponding test cases have been included in part 2. Restricted network operation is outside the scope of this I-ETS.

It may be possible to use these TPs in order to test a non-ISDN Videotelephony terminal, as long as it provides one or two 64 kbit/s digital channels for transmission. It may also be possible to use the majority of these TPs to test in-band signalling implementations according to ETS 300 143 [1] and ETS 300 144 [2] using single or multiple channels up to 1 920 kbit/s.

2 Normative references

This I-ETS incorporates by dated and 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 I-ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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- [1] ETS 300 143 (1994): "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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- [2] ETS 300 144 (1994): "Integrated Services Digital Network (ISDN); Audiovisual services, Frame structure for a 64 kbit/s to 1 920 kbit/s channel and associated syntax for inband signalling".
- [3] ETS 300 145 (1994): "Integrated Services Digital Network (ISDN); Audiovisual services, Videotelephone systems and terminal equipment operating on one or two 64 kbit/s channels".
- [4] ISO/IEC 9646 Parts 1 to 7 (1994): "Information technology - Open systems interconnection - Conformance testing methodology and framework".
- [5] CCITT Recommendation G.711 (1990): "Pulse code modulation (PCM) of voice frequencies".
- [6] CCITT Recommendation G.722 (1988): "7 KHz audio-coding within 64 kbit/s".
- [7] CCITT Recommendation G.725 (1988): "System aspects for the use of the 7 KHz audio codec within 64 kbit/s".
- [8] CCITT Recommendation G.728 (1988): "Coding of speech at 16 kbit/s using low-delay code excited linear prediction".
- [9] ITU-T Recommendation H.261 (1993): "Video codec for audiovisual services at p x 64 kbit/s".

3 Definitions

For the purposes of this I-ETS, all the definitions in ISO/IEC 9646 [4] apply, as well as the following:

additional channel: The second or subsequent channels established in a videophone call.

bit-rate allocation signal: Bit position within the frame structure to transmit commands, control and indication signals, capabilities.

capability marker; cap marker: The first code in a capability set.

capability set; cap set: A sequence of capability codes started by the capability marker code.

ECS channel: Optional 800 kbit/s channel for use in encryption.

initial channel: The first channel established in a videophone call.

mode 0F: Transmission mode in which the initial channel contains framing, and 7-bit CCITT Recommendation G.711 [5] audio signal is being transmitted.

mode 0U: Transmission mode in which the initial channel does not contain framing, and 8-bit CCITT Recommendation G.711 [5] audio is being transmitted.

remote terminal: The terminal with which the IUT is communicating, i.e. the test tool.

4 Abbreviations

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

AIA	Audio Indicate Active
AIM	Audio Indicate Muted
ATS	Abstract Test Suite
BAS	Bit rate Allocation Signal
C&I	Control and Indication
CHAR	Character Information Element
CIF	Common Intermediate Format (picture format defined in ITU-T Recommendation H.261 [9])
CRC	Cyclic Redundancy Check
CTP	Combined Test Purpose
ECS	Encryption Control Signal
FAS	Frame Alignment Signal
FAW	Frame Alignment Word
H0	384 kbit/s channel
H11	1 536 kbit/s channel
H12	1 920 kbit/s channel
H-MLP	High speed Multi Layer Protocol
HSD	High Speed Data
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
LCA	Loopback Command "Audio loop request"
LCD	Loopback Command "Digital loop request"
LCO	Loopback Command "Loop off request"
LCV	Loopback Command "Video loop request"
LSB	Least Significant Bit
LSD	Low Speed Data
MBE	Multiple Byte Extension
MCC	Multipoint Command Conference
MCU	Multipoint Conference Unit
MCV	Multipoint Command Visualization-Forcing
MIS	Multipoint Indication Secondary-status
MIV	Multipoint Indication Visualization
MIZ	Multipoint Indication Zero-communication

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MLP	Multi Layer Protocol
MPI	Minimum Picture Interval
MSB	Most Significant Bit
PCO	Point of Control and Observation
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
QCIF	Quarter Common Intermediate Format (picture format defined in ITU-T Recommendation H.261 [9])
SBE	Single Byte Extension
SC	Service Channel
SP	Super test Purpose
TEA	Terminal Equipment Alarm
TP	Test Purpose(s)
TSS	Test Suite Structure
TTCN	Tree & Tabular Combined Notation
VCF	Video Command "Freeze-picture request"
VCU	Video Command "fast-Update request"
VIA	Video Indicate Active
VIR	Video Indicate Ready-to-activate
VIS	Video Indicate Suppressed

5 Naming convention and document structure

This I-ETS is structured into 9 clauses. Clauses 1 to 3 deal with the scope, references and abbreviations. Clause 4 onwards forms the main body. Clause 5 contains the Test Suite Structure (TSS). Clauses 6 and 7 contain the complete list of TPs which apply to the in-band signalling specifications referenced above: clause 6 applying to 1B communication and clause 7 applying to 2B communication. Clauses 8 and 9 also refer to 1B and 2B respectively, but contain the list of combined TPs.

In this I-ETS, TPs are referenced with TP, Combined Test Purposes are referenced with CTP. Super Test Purposes are referenced with SP, with corresponding derived Test Purposes having D appended to the reference. SPs are only used if they provide clarification of an obscure TP.

Each TP contained in clauses 6 and 7 also appears in clauses 8 and 9 respectively. Clauses 8 and 9 contain combined TPs, i.e. TPs which can be tested together in one test case. Each combined TP contains references to the original, uncombined TPs contained within it, from clauses 6 and 7. Any TPs which cannot be combined with others have been copied from clauses 6 and 7 into clauses 8 and 9 respectively, with unchanged references. Therefore, clauses 8 and 9 contain the complete set of TPs, and there is a one to one mapping between these TPs and the corresponding test cases in the ATS in part 2 of this I-ETS.

TPs which do not have abstract test cases written for them are listed in italics. The usual reason for not writing a test case lies in the fact that they are testing transmission or reception of audio or video signals by the Implementation Under Test (IUT). The selected test method used in the abstract test suite does not have a Point of Control and Observation (PCO) for sending and receiving audio or video signals. The testing of audio or video signal content is outside the scope of testing in-band signalling content and to specify a sample audio or video content in the ATS would introduce unnecessary complication. Of course, if another test method is being used to implement the TPs contained in this I-ETS, then these test cases shown in italics could be implemented.

It is recommended that, despite the fact that testing audio and video signal content is outside the scope of this I-ETS, a test tool implementing the in-band signalling test cases should include audio and video signals to match the Bit rate Allocation Signal (BAS) commands which it is sending. This avoids a terminal implementing a mode mismatch procedure when it does not detect the correct audio or video signal, which would prevent any testing from being carried out.

Test Purposes carry the following numbering scheme:

TP1-1-001D or CTP2-3-001:

- the first digit following TP or CTP refers to whether the test is for 1 B-channel operation or 2 B-channel operation (1 or 2);
- the second digit refers to:
 - 1) capability tests;
 - 2) valid behaviour tests; or
 - 3) invalid behaviour tests;
- the number following that is a sequence number.

The numbering used in each TP will also be used in its corresponding test case, but a TC prefix will be used, rather than TP or CTP. Of the two examples above, the first refers to a TP in 1B Capability clause, derived from a SP, the second refers to a test from 2B Invalid behaviour clause, a combined TP.

The separation of the tests into 1B-channel operation and 2B-channel operation has the following explanation: Almost all of the tests of the 1 B-channel operation clause will also apply to terminals offering a 2B service. These tests will only be performed when one B channel is operational however. Therefore, 2B terminals will have to satisfy tests from both the 1B and the 2B clauses. This approach was adopted because much of the frame structure, mode initialization and mode switching tests do not refer to 2B specifically. Indeed much of this operation needs to be performed on the initial channel before a second channel is established. Thus, there is no duplication of tests between 1B and 2B channel operation.

In the following TPs, the statement "verify IUT accepts.." occurs regularly. The IUT is considered to have accepted a capability set containing the capability BAS code under test when Sequence A has been completed successfully and commands are being exchanged. The IUT is considered to have accepted a BAS command if it does not initiate a mode mismatch procedure within 2 seconds of receiving the command.

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6 Test Suite Structure standards.iteh.ai/catalog/standards/sist/34891db8-9329-4fdb-9e24-7516dba1776b/sist-i-ets-300-763-1-e1-2003

Two versions of the Test Suite Structure are presented here. The first is the structure which applies to the TPs in clauses 6 and 7 of this I-ETS, i.e. the full list of TPs. The second Test Suite Structure is that which applies to the set of combined TPs, i.e. clauses 8 and 9 of this I-ETS. As there is a one-to-one mapping between these combined TPs and the test cases in the ATS, this second Test Suite Structure also applies to the ATS. The two structures exist because certain groups of TPs were merged during the combination of TPs.

6.1 Test Suite Structure - full version

Single Channel Communication

Capability

- Frame and Multiframe
 - Frame and Multiframe Alignment Signal
 - Alignment
 - Bits N1-N5
 - E_Bit, C1-C4

BAS

- Basic Sequences and Procedures
 - Capability Exchange (Sequence A)
 - Audio capabilities (100)
 - Transfer-rate capabilities (100)
 - Video capabilities (100)
 - Mode Switching (Sequence B)
 - Mode Initialization Procedure

Valid Behaviour

Frame and Multiframe

BAS

Transfer-rate capabilities (100)
 Video and MBE capabilities (101)
 LSD/MLP capabilities (101)
 Escape table values (111)
 Aggregate Capabilities (111) [15]-(100)
 Aggregate Capabilities (111) [15]-(101)
 Escape_16 Capabilities (111) [16]-(100)
 Escape_16 Capabilities (111) [16]-(101)
 Escape_16 Capabilities (111) [16]-(110)
 Audio command values (000)
 Video, loopback and other commands (010)
 Escape_16 Commands (111) [16]-(001)
 C&I related to video (111) [17]-(000)
 C&I related to audio (111) [17]-(000)
 C&I related to simple multipoint conferences not using MLP (111) [17]-(001)
 Data-apps (111) [18]-(101)
 NUM (111) [19]
 CHAR (111) [20]

Basic Sequences and Procedures

Capability Exchange (Sequence A)
 Mode Switching (Sequence B)
 Frame Reinstatement (Sequence C)
 Mode Forcing Procedure
 Mode 0 Forcing Procedure

Encryption Control Signal

Invalid Behaviour

Frame and Multiframe

Alignment

E_Bit, C1-C4

BAS

Basic Sequences and Procedures

Capability Exchange (Sequence A)
 Mode Switching (Sequence B)
 Mode Initialization Procedure

Two Channels Communication

Capability

Frame and Multiframe

Frame and Multiframe Alignment Signal
 Bits N1-N5
 Alignment and Synchronization
 Bits L1-L3
 E-bit,C1-C4
 Terminal Equipment Alarm (TEA)

BAS

Basis Sequences and Procedures

Capability Exchange (Sequence A)
 Mode Switching (Sequence B)
 Mode Initialization Procedure

Valid Behaviour

Frame and Multiframe

BAS

Audio command values (000)
 Video, loopback and other commands (010)
 C&I related to simple multipoint conferences not using MLP (111) [17]-(001)

Basic Sequences and Procedures