SLOVENSKI STANDARD
SIST EN 300 267-4 V1.2.4:2005

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Digitalno omreġje z integriranimi storitvami (ISDN) - Daljinske storitve: telefonija 7 kHz, videotelefonija, avdiografiļ na konferenca in videokonferenca - Protokol digitalne naroļ niġke signalizacije ġt. 1 (DSS1) - 4. del: Abstraktni preskuġalni niz (ATS) in dodatna informacija za preskuġanje delne izvedbe protokola (PIXIT) - Proforma specifikacija za uporabnika

Integrated Services Digital Network (ISDN); Telephony 7 kHz, videotelephony, audiographic conference and videoconference teleservices; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 4 of a multi-part EN covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) telephony 7 kHz, videotelephony, audiographic conference and videoconference teleservices, as described below:

Part 1: "Protocol specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";

Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

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1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the User side of the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [16]) of implementations conforming to the stage three standard of the telephony 7 kHz, videotelephony, audiographic conference and videoconference teleservices for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 300 267-1 [5].

EN 300 267-3 [7] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the Network side of the T reference point or coincident S and T reference point of implementations conforming to EN 300 267-1 [5].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ETSI ETS 300 143: "Integrated Services Digital Network (ISDN); Audiovisual services Inband signalling procedures for audiovisual terminals using digital channels up to 2 048 kbit/s".

[2] ETSI 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 inband signalling".

[3] ETSI ETS 300 145: "Integrated Services Digital Network (ISDN); Audiovisual services; Videotelephone systems and terminal equipment operating on one or two 64 kbit/s channels".

[4] ETSI EN 300 196-1 (V1.2): "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[5] ETSI EN 300 267-1 (V1.2): "Integrated Services Digital Network (ISDN); Telephony 7 kHz, videotelephony, audiographic conference and videoconference teleservices; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[6] ETSI EN 300 267-2 (V1.2): "Integrated Services Digital Network (ISDN); Telephony 7 kHz, videotelephony, audiographic conference and videoconference teleservices; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[7] ETSI EN 300 267-3 (V1.2): "Integrated Services Digital Network (ISDN); Telephony 7 kHz, videotelephony, audiographic conference and videoconference teleservices; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user".

[8] ETSI EN 300 403-1 (V1.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".

[9] ETSI ETS 300 403-5: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 5: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user".

[10] ETSI I-ETS 300 763-2: "Integrated Services Digital Network (ISDN); Audiovisual services in-band signalling testing; Part 2: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

[11] ISO/IEC 9646-1 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts".

[12] ISO/IEC 9646-2 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 2: Abstract Test Suite specification".

[13] ISO/IEC 9646-3 (1998): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".

[14] ISO/IEC 9646-4 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 4: Test realization".

[15] ISO/IEC 9646-5 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 5: Requirements on test laboratories and clients for the conformance assessment process".

[16] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".

[17] ETSI EN 300 403-3 (V1.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 3: Protocol Implementation Conformance Statement (PICS) proforma specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the definitions given in EN 300 267-1 [5], ISO/IEC 9646, parts 1 [11] to 5 [15] and the following terms and definitions apply:

additional B-channel: second or subsequent B-channel established in a videotelephony call.

initial B-channel: first channel established in a videotelephony call.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BAS	Bit rate Allocation Signal
CES	Connection Endpoint Suffix
CM	Co-ordination Message
CP	Co-ordination Point
CRC	Cyclic Redundancy Check
ExTS	Executable Test Suite
FAW	Frame Alignment Word
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing

MTC	Main Test Component
PCO	Point of Control and Observation
PCTR	Protocol Conformance Test Report
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PTC	Parallel Test Component
SUT	System Under Test
TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation

4 Introduction

Implementations Under Test (IUTs) which are to be tested using this ATS are required to have previously been tested for conformity against and passed the test suite for EN 300 403-1 [8], and the ATS related to ETS 300 143 [1], ETS 300 144 [2] and ETS 300 145 [3] which is contained in I-ETS 300 763-2 [10].

Any messages or fields within messages which are introduced by ETS 300 403-1 [8] are included in this ATS. Behaviours in test cases have been described in such a way to be able to take into account ETS 300 403-1 [8] basic call standard. This ATS also takes into account messages defined for the supplementary services, in particular ETS 300 196-1 [4]. When such messages are received, they are ignored by the ATS as this is not within the scope of the present document.

5 Abstract Test Method (ATM)

5.1 Description of ATM used

This ATS describes the testing specification of the protocol procedures and switching functions needed to support the videotelephony, telephony 7 kHz, audiographic conference and videoconference teleservices at T or coincident S and T reference points for the user.

Testing activity will take place on the D-channel and on one or two B-channels depending on which teleservice is supported and where the service is provided. The videotelephony, audiographic conference and videoconference teleservices can employ two or more B-channels and telephony 7 kHz teleservice up to one B-channel. Only S and T reference point has an associated in-band protocol entity and has to follow requirements on B-channels.

As a consequence of testing multiple channels simultaneously, the concurrent testing method is used. A test configuration includes at least a master test component for controlling co-ordination and D-channel activity and eventually one or two PTCs for each involved B-channel. Each of the MTC and PTCs has got a Point of Control and Observation (PCO). The remote test method as defined in ISO/IEC 9646-2 [12] is applied.

5.2 Conventions for test components and PCOs

Figure 1 shows a logical view of the complete configuration of the MTC, PTCs, and PCOs. The Co-ordination Point (CP) relationships between the various components are also indicated. The test method used is very close to the test method used in I-ETS 300 763-2 [10].

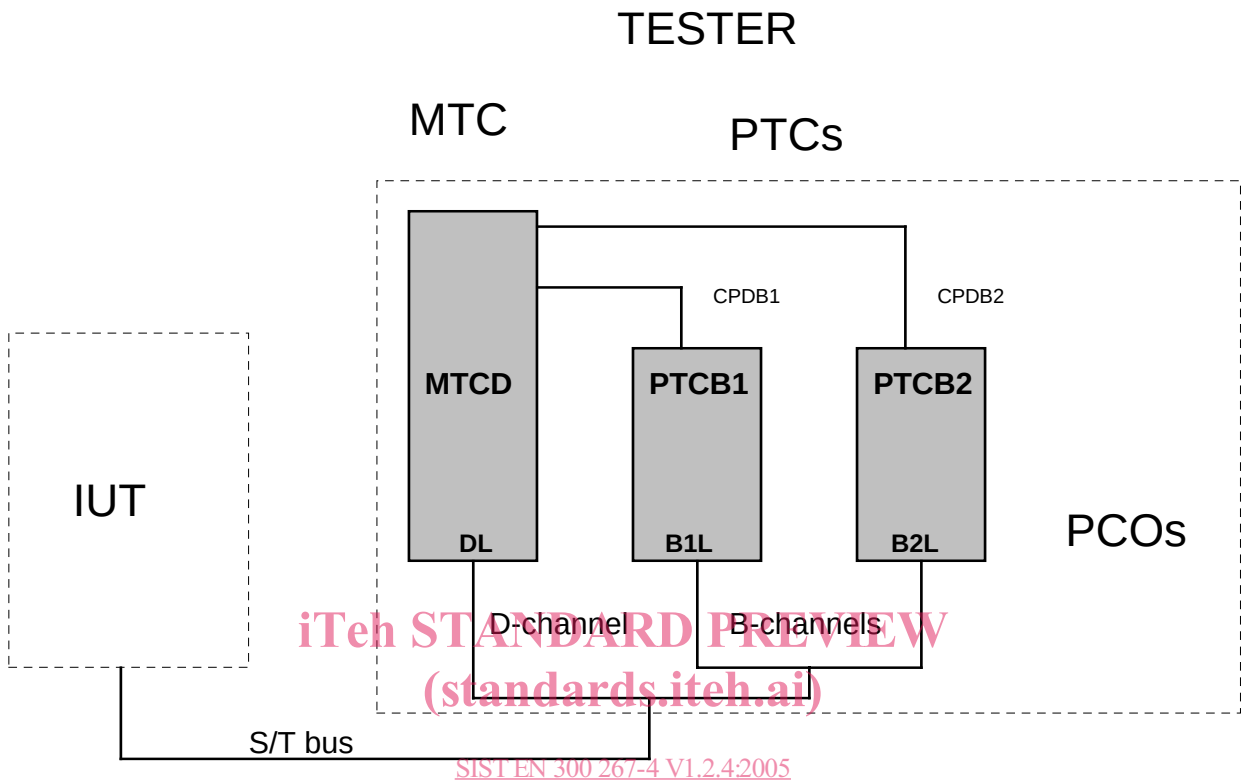

Figure 1: Multi-party test method

In a master/slave arrangement, the MTC is considered to be the master while the PTCs are the slaves.

There are communication paths or CPs between the MTC and each PTC (ie. CPDB1 and CPDB2). The MTC handles all scheduling of test components and exchanges messages with PTCs to start or to stop the running of their associated tree. Also, messages concerning more functional synchronization like advising the initial B-channel that it can expand the mode on two B-channels when the additional B-channel is set up.

5.3 Description of PCOs

The PCOs are used to control and observe the behaviour of the IUT. Preliminary test case verdicts are assigned depending on the behaviour observed at those points. The final verdict is set by the MTC at the end of the test.

5.3.1 D-channel PCO

For the D-channel, the PCO resides at the service access point between layers 2 and 3. This PCO is named "DL" (L for Lower). The same Abstract Service Primitives (ASPs) as defined in EN 300 403-5 [9] are used.

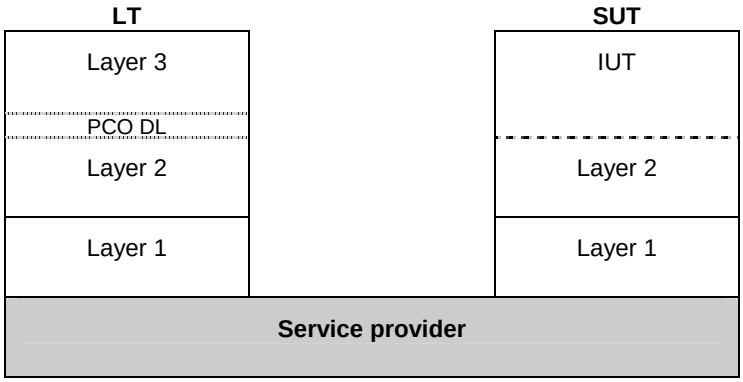

Figure 2: Remote test method

5.3.2 B-channels PCOs

For the in-band signalling protocol there is no explicit layered structure. However, there is an implicitly defined structure: a lower layer dealing with frame and multiframe structure, bit encoding of BAS codes and their corresponding CRC codes, FAW etc., and a higher layer dealing with the various sequences and procedures which make use of BAS codes to control the communication.

Lower layer PCOs and the corresponding declarations have been reused from the ATS specified in I-ETS 300 763-2 [10]. When a test case needs description behaviour at a higher layer which cannot be easily expressed at a lower layer, e.g. a complete initialization procedure, and because it is not the purpose of this ATS to check in-band signalling, references to the test step included in the ATS specified in I-ETS 300 763-2 [10] are made instead of importing all of the ASN.1 descriptions.

The audio and video signal contents in the frames and multiframes are ignored. Audio encoding/decoding is out of scope of the present document and requires specific test tools. As it is not possible to analyse the unframed mode, this is not described in the present document.

In the B-channel, frames or multiframes are required to be sent and received continuously to maintain frame alignment and this is achieved by looping until the expected frame or multiframe is received or the timer expires.

A procedure for the detection of incorrect CRC4 is described in this ATS. This depends on the detection of an ASP which is generated when the tester implements CRC4 and detects incorrect bit values in bits C1-C4.

5.4 Naming conventions

5.4.1 Test cases

Test cases have exactly the same reference as the corresponding combined test purpose, see EN 300 267-3 [7].

The structure of a test case identifier is as follows:

- CT<digit><digit><digit>_<digit><digit> test case covering a telephony 7 kHz requirement;
- CV<digit><digit><digit>_<digit><digit> test case covering a videotelephony requirement;
- CA<digit><digit><digit>_<digit><digit> test case covering an audiographic conference requirement;
- CC<digit><digit><digit>_<digit><digit> test case covering a videoconference requirement.