



SLOVENSKI STANDARD

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8 [[]HJbc`ca fYy`n]bH[f]fUb]a]glcf]h] Ua]fG8 BŁ!`8 cdc`b] bUglcf]Hj .
bYdcgfYXbc`nV]fUb`fB 8 Ł!`Dfcfc`c`X][]HJbY`bUfc` b]y`Yg][bU]nUWY`y`h`%
fB GG%Ł!*`"XY.`5 VglfU`fb]dfYg_i`yU]b]b]n`f5 HGL]b`XcXUfbU]bZ`fa UWY`UnU
dfYg_i`yUb`XY`bY]nj YXVY`dfcfc`c`UfDŁ`Ł!`DfcZ`fa UgdYWZ`UWY`UnUca fYy`

Integrated Services Digital Network (ISDN); Direct Dialling In (DDI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 6: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network

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European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Direct Dialling In (DDI) supplementary service;
Digital Subscriber Signalling System No. one (DSS1) protocol;
Part 6: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)
proforma specification for the network**

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Contents

| | |
|--|----|
| Intellectual Property Rights..... | 5 |
| Foreword..... | 5 |
| 1 Scope | 6 |
| 2 Normative references..... | 6 |
| 3 Definitions and abbreviations | 7 |
| 3.1 Definitions | 7 |
| 3.2 Abbreviations | 7 |
| 4 Abstract Test Method (ATM)..... | 8 |
| 4.1 Description of ATM used | 8 |
| 4.1.1 Conventions for test components and PCOs | 8 |
| 4.1.2 Conventions for variables and parameters | 9 |
| 4.2 Alternative ATM..... | 10 |
| 5 Untestable test purposes | 10 |
| 6 ATS conventions | 11 |
| 6.1 Declarations part..... | 11 |
| 6.1.1 Type definitions..... | 11 |
| 6.1.1.1 Simple type definitions | 11 |
| 6.1.1.2 Structured type definitions | 11 |
| 6.1.1.2.1 TTCN structured type definitions | 11 |
| 6.1.1.2.2 ASN.1 structured type definitions | 11 |
| 6.1.1.3 ASP type definitions..... | 12 |
| 6.1.1.3.1 TTCN ASP type definitions | 12 |
| 6.1.1.3.2 ASN.1 ASP type definitions..... | 13 |
| 6.1.1.4 PDU type definitions..... | 13 |
| 6.1.1.4.1 TTCN PDU type definitions..... | 13 |
| 6.1.1.4.2 ASN.1 PDU type definitions..... | 13 |
| 6.1.2 Test suite constants..... | 13 |
| 6.1.3 Test suite parameters..... | 13 |
| 6.1.4 Variables..... | 13 |
| 6.1.4.1 Test suite variables..... | 13 |
| 6.1.4.2 Test case variables | 13 |
| 6.1.5 Test suite operation definitions | 14 |
| 6.2 Constraints part..... | 14 |
| 6.2.1 Structured type constraint declaration | 14 |
| 6.2.2 ASN.1 type constraint declaration..... | 14 |
| 6.2.2.1 Specification of encoding rules | 14 |
| 6.2.3 ASP type constraint declaration | 14 |
| 6.2.3.1 ASN.1 ASP type constraint declaration..... | 14 |
| 6.2.3.2 TTCN ASP type constraint declaration | 15 |
| 6.2.4 PDU type constraint declaration..... | 15 |
| 6.2.4.1 ASN.1 PDU type constraint declaration | 15 |
| 6.2.4.2 TTCN PDU type constraint declaration | 15 |
| 6.2.5 Chaining of constraints | 15 |
| 6.2.5.1 Static chaining | 15 |
| 6.2.5.2 Dynamic chaining | 15 |
| 6.2.6 Derived constraints | 15 |
| 6.2.7 Parameterized constraints..... | 15 |
| 6.2.8 Value assignment..... | 16 |
| 6.2.8.1 Specific values | 16 |
| 6.2.8.2 Matching values..... | 16 |
| 6.3 Dynamic part..... | 16 |
| 6.3.1 Test cases..... | 16 |
| 6.3.2 Test steps..... | 16 |

| | | |
|---|---|-----------|
| 6.3.2.1 | PTC1_IN | 16 |
| 6.3.2.2 | PTC1_OUT..... | 16 |
| 6.3.3 | Defaults | 16 |
| 7 | ATS to TP map..... | 17 |
| 8 | PCTR conformance | 17 |
| 9 | PIXIT conformance..... | 17 |
| 10 | ATS conformance..... | 17 |
| Annex A (normative): Protocol Conformance Test Report (PCTR) proforma | | 18 |
| A.1 | Identification summary..... | 18 |
| A.1.1 | Protocol conformance test report | 18 |
| A.1.2 | IUT identification..... | 18 |
| A.1.3 | Testing environment..... | 19 |
| A.1.4 | Limits and reservations..... | 19 |
| A.1.5 | Comments..... | 19 |
| A.2 | IUT conformance status | 19 |
| A.3 | Static conformance summary | 19 |
| A.4 | Dynamic conformance summary | 20 |
| A.5 | Static conformance review report..... | 20 |
| A.6 | Test campaign report..... | 20 |
| A.7 | Observations..... | 20 |
| Annex B (normative): Partial PIXIT proforma | | 22 |
| B.1 | Identification summary..... | 22 |
| B.2 | Abstract test suite summary | 22 |
| B.3 | Test laboratory..... | 22 |
| B.4 | Client (of the test laboratory)..... | 23 |
| B.5 | System Under Test (SUT) | 23 |
| B.6 | Protocol information | 24 |
| B.6.1 | Protocol identification | 24 |
| B.6.2 | Parameter values..... | 24 |
| B.6.3 | Number information parameter values | 25 |
| B.6.4 | Configuration of IUT..... | 25 |
| B.6.5 | Timer values | 26 |
| B.7 | Basic call PIXIT items | 26 |
| B.7.1 | Parameter values - information element codings..... | 26 |
| Annex C (normative): Abstract Test Suite (ATS)..... | | 27 |
| C.1 | The TTCN Graphical form (TTCN.GR) | 27 |
| C.2 | The TTCN Machine Processable form (TTCN.MP)..... | 27 |
| Annex D (informative): General structure of ATS | | 28 |
| Annex E (informative): Changes with respect to the previous ETS 300 064-6..... | | 29 |
| History..... | | 30 |

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS).

The present document is part 6 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Direct Dialling In (DDI) supplementary service, 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".**

The present version updates the references to the basic call specifications.

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| Date of adoption of this EN: | 19 June 1998 |
| Date of latest announcement of this EN (doa): | 30 September 1998 |
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1 Scope

This sixth part of EN 300 064 specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the Network side of the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [10]) of implementations conforming to the stage three standard for the Direct Dialling In (DDI) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 300 064-1 [2].

EN 300 064-5 [4] 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 User side of the T reference point or coincident S and T reference point of implementations conforming to EN 300 064-1 [2].

2 Normative references

References may be made to:

- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
- b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or
- c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or
- d) publications without mention of a specific version, in which case 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] EN 300 403-1: "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]".
- [2] EN 300 064-1 (V1.3): "Integrated Services Digital Network (ISDN); Direct Dialling In (DDI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [3] EN 300 064-2 (V1.3): "Integrated Services Digital Network (ISDN); Direct Dialling In (DDI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [4] EN 300 064-5 (V1.3): "Integrated Services Digital Network (ISDN); Direct Dialling In (DDI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 5: Test Suite Structure and Test Purposes (TSS&TP) specification for the network".
- [5] ISO/IEC 9646-1: "Information technology - OSI Conformance Testing Methodology and Framework; Part 1: General Concepts".
- [6] ISO/IEC 9646-2: "Information technology - OSI Conformance Testing Methodology and Framework; Part 2: Abstract Test Suite Specification".
- [7] ISO/IEC 9646-3: "Information technology - OSI Conformance Testing Methodology and Framework; Part 3: The Tree and Tabular Combined Notation".
- [8] ISO/IEC 9646-4: "Information technology - OSI Conformance Testing Methodology and Framework; Part 4: Test realization".
- [9] ISO/IEC 9646-5: "Information technology - OSI Conformance Testing Methodology and Framework; Part 5: Requirements on test laboratories and clients for the conformance assessment process".
- [10] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".

- [11] CCITT Recommendation X.209 (1988): "Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)".

3 Definitions and abbreviations

3.1 Definitions

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

Abstract Test Suite (ATS): See ISO/IEC 9646-1 [5].

Implementation Under Test (IUT): See ISO/IEC 9646-1 [5].

Lower Tester (LT): See ISO/IEC 9646-1 [5].

Point Of Control And Observation (PCO): See ISO/IEC 9646-1 [5].

Protocol Implementation Conformance Statement (PICS): See ISO/IEC 9646-1 [5].

PICS proforma: See ISO/IEC 9646-1 [5].

Protocol Implementation Extra Information For Testing (PIXIT): See ISO/IEC 9646-1 [5].

PIXIT proforma: See ISO/IEC 9646-1 [5].

System Under Test (SUT): See ISO/IEC 9646-1 [5].

Upper Tester (UT): See ISO/IEC 9646-1 [5].

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 |
| BER | Basic Encoding Rules |
| CM | Co-ordination Message |
| CP | Co-ordination Point |
| DDI | Direct Dialling In |
| ExTS | Executable Test Suite |
| 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 |
| TCP | Test Co-ordination Procedures |
| TP | Test Purpose |
| TTCN | Tree and Tabular Combined Notation |
| UT | Upper Tester |

4 Abstract Test Method (ATM)

4.1 Description of ATM used

The requirement for testing the network IUT is to focus on the behaviour of the network IUT at the user-network interface where a T reference point or coincident S and T reference point applies. Thus the IUT is the network DSS1 protocol entity at a particular user-network interface and is not the whole network.

It is possible to specify an ATS based on a Single party (remote) test method for such an IUT. However, it is considered that an ATS based on such an approach is of limited use as the only way to specify IUT generated PDUs is to use the "implicit send" statement. Many users of such an ATS would replace the "implicit send" statements with descriptions of the behaviour at other interfaces.

An ATS based on a multi-party test method is considered to be more useful in that it is closer to how a real test suite would be constructed. Such a test method specifies behaviour at multiple network interfaces. One very important limitation here is that tests are focused on one particular interface. Thus the test system is made up one Main Test Component (MTC) and one or more Parallel Test Components (PTC), see figure 1.

4.1.1 Conventions for test components and PCOs

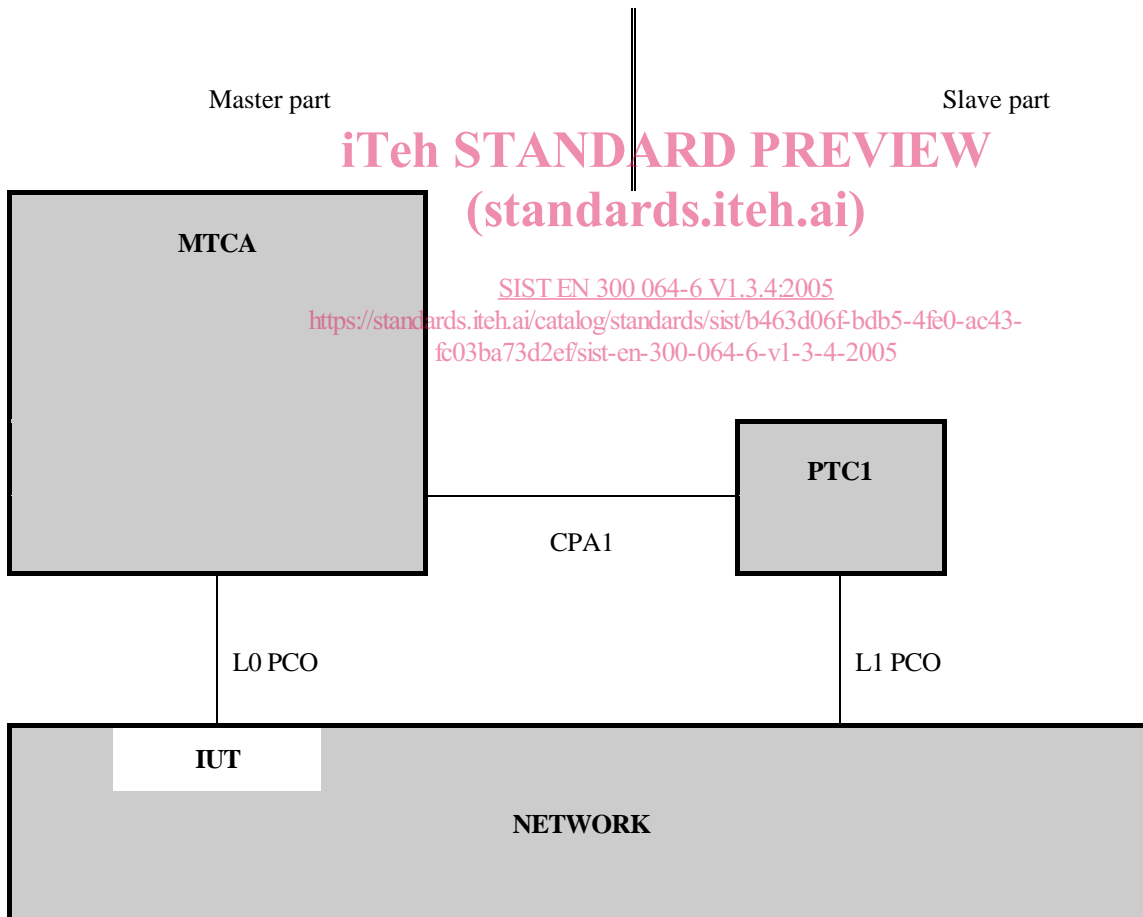


Figure 1: Multi-party test method

In a master/slave arrangement, the MTC is considered to be the master while the PTCs are the slaves. The "slave" testers are only an explicit description of how to deal with the "other" interfaces during the testing process, i.e. "how to make the IUT send the required message".

This means, in particular, that the verdict will only be assigned from the protocol aspects observed on the interface under test (i.e. by the "master" tester), as it would be observed by a terminal connected to this interface. A failure in the correlation between the protocol at the different interfaces to which the different testers are connected, i.e. in the mechanism of the functional service itself, will not cause a FAIL verdict. For instance, if the IUT fails to send a message on the tested interface after another interface has received the proper stimulus, the verdict will be INCONCLUSIVE.

The MTC MTCA has two functions in this configuration. Firstly, it has the MTC function of controlling the one or more PTCs. Thus it is responsible for starting the PTCs and afterwards co-ordinates activities by exchanging Co-ordination Messages (CM) with the PTCs. Secondly it is responsible for the behaviour of the Lower Tester (LT) at PCO L0.

A combination of the remote and multi-party test methods is applied. As can be seen from figure 1, several PCOs are used. All PCOs reside at the service access points between layers 2 and 3.

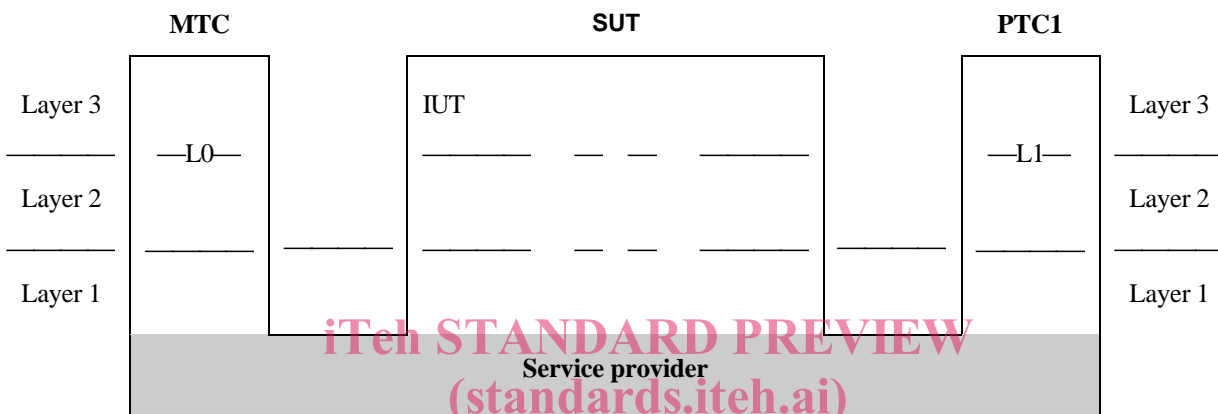


Figure 2: Combination of the remote and multi-party test methods

The MTC PCO is named "L0" ("L" for Lower). PCO L0 is used to control and observe the behaviour of the IUT and test case verdicts are assigned depending on the behaviour observed at this PCO. The PTC PTC1 uses PCO L1. This PCO is used to control and, in a limited way, observe the behaviour of the network equipment at interfaces other than the one under test. No verdicts are assigned at this PCO.

As stated in a previous paragraph, the non-receipt of network generated messages at L0, which are stimulated by events at the L1, will result in INCONCLUSIVE rather than FAIL verdicts being assigned.

4.1.2 Conventions for variables and parameters

MTCA

| | | |
|----------------------|-------------|-----------|
| call reference | CREF1 | (to PTC1) |
| B channel (basic) | bch_num1 | |
| channel nr (primary) | CH_NUM1 | |
| PCO L0 | IPN0, LIPN0 | |

PTC1

| | |
|----------------------|-------------|
| call reference | P1CREF |
| B channel (basic) | P1_bch_num |
| channel nr (primary) | P1_CH_NUM |
| PCO L1 | IPN1, LIPN1 |

4.2 Alternative ATM

As stated in subclause 4.1, an ATS based on a single-party (remote) ATM is possible. Such an ATS may be generated from the one specified in the present document. The following general steps should be taken:

- 1) remove all PTC behaviour;
- 2) remove all CREATE statements;
- 3) replace CMs which are used to provoke PDUs at the MTC, with implicit send statements.

An example, showing the difference between the multi-party ATM and single-party ATM for a single test case, is given in tables 1 and 2.

Table 1: Test case dynamic behaviour table using multi-party ATM

| TEST CASE DYNAMIC BEHAVIOUR | | | | |
|-----------------------------|----------|--|------------------------|--------------|
| Test Case Name | | HOLD_N04_001 | | |
| Group | | RemoteUser_ST_OR_T/Holding/ | | |
| Purpose | | Ensure that the IUT, while in the Active call state N10, to notify the non-served user that the call is held sends a NOTIFY message with a notification indicator coded as "remote hold" to user B and remains in the Active call state. | | |
| Default Configuration | | DF69901(1) | | |
| Comments | | CONFIG1 9.2.1 valid optional | | |
| Nr | Label | BEHAVIOUR DESCRIPTION | CREF | V |
| | COMMENTS | | | |
| 1 | | CREATE (PTC1: PTC1_IN_servedUser) | | |
| 2 | | +PR31002 | | preamble N10 |
| 3 | | CPA1!CP_M START TWAIT | S_HL | |
| 4 | | L0?NOTIFYr | A_NO20(CREF1,hold_NID) | (P) |
| 5 | | +CS59901(10,1) | | check N10 |
| 6 | | ?TIMEOUT TWAIT | | (I) |
| 7 | | +PO49901(1) | | postamble N0 |
| DETAILED COMMENTS: | | | | |

SIST EN 300 064-6 V1.3.4:2005

Table 2: Test case dynamic behaviour table using single-party ATM

| TEST CASE DYNAMIC BEHAVIOUR | | | | |
|-----------------------------|----------|--|------------------------|--------------|
| Test Case Name | | HOLD_N04_001 | | |
| Group | | RemoteUser_ST_OR_T/Holding/ | | |
| Purpose | | Ensure that the IUT, while in the Active call state N10, to notify the non-served user that the call is held sends a NOTIFY message with a notification indicator coded as "remote hold" to user B and remains in the Active call state. | | |
| Default Configuration | | DF69901(1) | | |
| Comments | | 9.2.1 valid optional | | |
| Nr | Label | BEHAVIOUR DESCRIPTION | CREF | V |
| | COMMENTS | | | |
| 1 | | +PR31002 | | preamble N10 |
| 2 | | <IUT!NOTIFY> | NO20(CREF1,hold_NID) | |
| 3 | | L0?NOTIFYr | A_NO20(CREF1,hold_NID) | (P) |
| 4 | | +CS59901(10,1) | | check N10 |
| 5 | | ?TIMEOUT TWAIT | | (I) |
| 6 | | +PO49901(1) | | postamble N0 |
| DETAILED COMMENTS: | | | | |

5 Untestable test purposes

There are no untestable test cases associated with this ATS and ATM.