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*Technical Specification*

**Telecommunications and Internet converged Services and  
Protocols for Advanced Networking (TISPAN);  
Network Integration Testing between  
SIP and ISDN/PSTN network signalling protocols;  
Part 2: Abstract Test Suite (ATS) and partial Protocol  
Implementation eXtra Information for Testing (PIXIT)  
proforma specification**

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**Reference**

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RTS/TISPAN-06052-2-NGN-R1

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**Keywords**

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ATS, interoperability, ISDN, PIXIT, PSTN, SIP,  
testing, TTCN**ETSI**

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## Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 2 of a multi-part deliverable covering the Network Integration Testing between SIP and ISDN/PSTN network signalling protocols, as identified below:

- Part 1: "Test Suite Structure and Test Purposes (TSS&TP) for SIP-ISDN";
- Part 2: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification";**
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) for SIP-SIP".
- Part 4: "Abstract Tests Suite (ATS) SIP-SIP".

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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 based on the Test Suite Structure and Test Purposes defined in [1].

The TSS&TP have been developed Network Integration Testing between SIP and ISDN/PSTN network signalling protocols. The ATS is sometimes referred to in the present document as "SIP-ISDN-Interworking ATS".

The test notation used in the ATS is TTCN-3 ([3]).

The following test specification- and design considerations can be found in the body of the present document:

- the overall test suite structure;
- the testing architecture;
- the test methods and port definitions;
- the test configurations;
- the design principles, assumptions, and used interfaces to the TTCN3 tester (System Simulator);
- TTCN styles and conventions;
- the partial PIXIT proforma;
- the modules containing the TTCN-3 ATS.

Annex A provides the Partial Implementation Extra Information for Testing (IXIT) Proforma of the ATS.

Annex B provides the Testing and Test Control Notation (TTCN-3) part of the ATS.

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# 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

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## 2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ETSI TS 186 001 (Parts 1 and 3): "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Network Integration Testing between SIP and ISDN/PSTN network signalling protocols".
- [2] ETSI TS 102 351 (V2.1.1): "Methods for Testing and Specification (MTS); Internet Protocol Testing (IPT); IPv6 Testing: Methodology and Framework".
- [3] ETSI ES 201 873-1 (V3.1.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 1: TTCN-3 Core Language".
- [4] ETSI ES 201 873-5 (V3.1.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 5: TTCN-3 Runtime Interface (TRI)".
- [5] ETSI ES 201 873-6 (V3.1.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 6: TTCN-3 Control Interface (TCI)".
- [6] ISO/IEC 9646-1 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [7] ISO/IEC 9646-7 (1995): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [8] ITU-T Recommendation Q.931 (1998): "ISDN user-network interface layer 3 specification for basic call control".
- [9] ETSI TS 102 027-3 (V3.1.1): "Methods for Testing and Specification (MTS); Conformance Test Specification for SIP (IETF RFC 3261); Part 3: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma".
- [10] IETF RFC 3261 (2002): "SIP: Session Initiation Protocol".
- [11] ETSI EN 383 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Interworking between Session Initiation Protocol (SIP) and Bearer Independent Call Control (BICC) Protocol or ISDN User Part (ISUP) [ITU-T Recommendation Q.1912.5, modified]".
- [12] ITU-T Recommendations Q.761 to Q.764 (1999): "Signalling System No.7 - ISDN User Part (ISUP)".
- [13] ITU-T Recommendation E.164 (2005): "The international public telecommunication numbering plan".
- [14] IETF RFC 4575: "A Session Initiation Protocol (SIP) Event Package for Conference State".

## 2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Not applicable.

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in SIP/ISUP interworking reference specification [11], ISDN layer 3 reference specification [8], ISDN User Part (ISUP) reference specification [12], [6], [7], [3] (TTCN-3) and the following apply:

**Abstract Test Case (ATC):** complete and independent specification of the actions required to achieve a specific test purpose, defined at the level of abstraction of a particular Abstract Test Method, starting in a stable testing state and ending in a stable testing state

**Abstract Test Method (ATM):** description of how an IUT is to be tested, given at an appropriate level of abstraction to make the description independent of any particular realization of a Means of Testing, but with enough detail to enable abstract test cases to be specified for this method

**Abstract Test Suite (ATS):** test suite composed of abstract test cases

**Implementation Under Test (IUT):** implementation of one or more OSI protocols in an adjacent user/provider relationship, being part of a real open system which is to be studied by testing

**Means of Testing (MOT):** combination of equipment and procedures that can perform the derivation, selection, parameterization and execution of test cases, in conformance with a reference standardized ATS, and can produce a conformance log

**PICS proforma:** document, in the form of a questionnaire, which when completed for an implementation or system becomes the PICS

**PIXIT proforma:** document, in the form of a questionnaire, which when completed for the IUT becomes the PIXIT

**Point of Control and Observation (PCO):** point within a testing environment where the occurrence of test events is to be controlled and observed, as defined in an Abstract Test Method

**pre-test condition:** setting or state in the IUT which cannot be achieved by providing stimulus from the test environment

**Protocol Implementation Conformance Statement (PICS):** statement made by the supplier of a protocol claimed to conform to a given specification, stating which capabilities have been implemented

**Protocol Implementation eXtra Information for Testing (PIXIT):** statement made by a supplier or implementor of an IUT (protocol) which contains or references all of the information related to the IUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the IUT

**SIP number:** number conforming to the numbering and structure specified in ITU-T Recommendation E.164 [13]

**System Under Test (SUT):** real open system in which the IUT resides

### 3.2 Abbreviations

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

ASP                    Abstract Service Primitive

NOTE:    Exchanged between entities inside the TS or between the user of the ATS (operator) and the TS.

|      |                                     |
|------|-------------------------------------|
| ATC  | Abstract Test Case                  |
| ATM  | Abstract Test Method                |
| ATS  | Abstract Test Suite                 |
| DSS1 | Digital Subscriber System No. 1     |
| ETS  | Executable Test Suite               |
| IETF | Internet Engineering Task Force     |
| ISDN | Integrated Services Digital Network |

|     |                                  |
|-----|----------------------------------|
| IUT | Implementation Under Test        |
| IWU | InterWorking Unit                |
| LAN | Local Area Network               |
| MOT | Means Of Testing                 |
| MTC | Main Test Component              |
| NGN | Next Generation Network          |
| PA  | Platform Adapter                 |
| PA  | Platform Adapter                 |
| PCO | Point of Control and Observation |

PDU Protocol Data Unit

NOTE: Message exchanged between TS and SUT at a signalling interface.

|        |   |
|--------|---|
| PICS   | Protocol Implementation Conformance Statement         |
| PIXIT  | Protocol Implementation eXtra Information for Testing |
| PTC    | Parallel Test Component                               |
| SA     | SUT Adapter   |
| SDP    | Session Description Protocol                          |
| SIP    | Session Initiation Protocol                           |
| SUT    | System Under Test                                     |
| TC     | Test Case   |
| TCI    | TTCN-3 Control Interface                              |
| TCP    | Test Coordination Procedures                          |
| TD     | Test Description                                      |
| TE     | Test Equipment  |
| TL     | Test Logging  |
| TP     | Test Purpose  |
| TS     | Test System   |
| TSS    | Test Suite Structure                                  |
| TSS&TP | Test Suite Structure and Test Purposes                |
| TTCN   | Tree and Tabular Combined Notation                    |
| TTCN-3 | Testing and Test Control Notation edition 3           |
| UDP    | Unreliable Datagram Protocol                          |

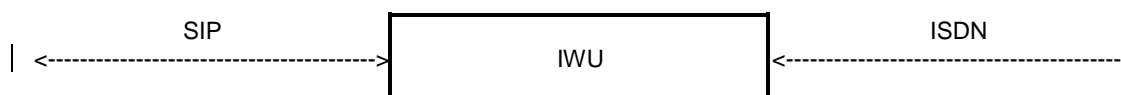
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## 4 Abstract Test Method (ATM)

### 4.1 Network architecture

Figures 1 and 2 show the network architecture for SIP-ISDN InterWorking Units (IWU).

Figure 1 shows the network architecture for SIP-ISDN Interworking.



**Figure 1: Interworking between SIP and ISDN**

### 4.2 Protocol architecture

Figure 1 shows that there are 2 interfaces of the IWU (representing the SUT in the testing environment described in the present document): a SIP interface and an ISDN interface.



Figure 2 shows the protocol architecture:

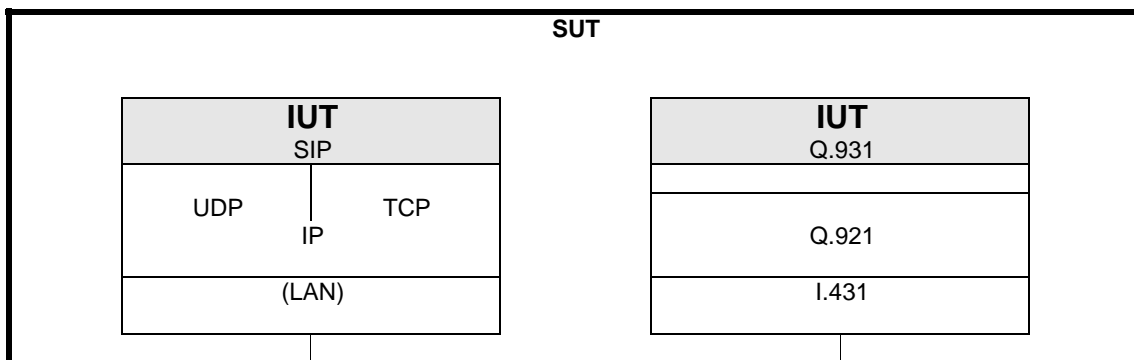


Figure 2: Protocol architecture of the SIP-ISDN-Interworking ATS

## 4.3 Test architecture

### 4.3.1 Interconnection of TS and SUT

Figure 3 shows the interconnection of TS and SUT in terms of signalling message flows.

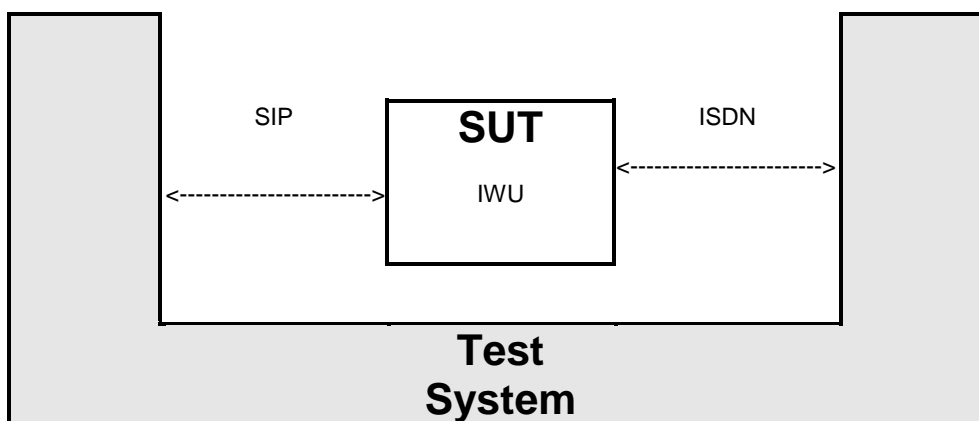
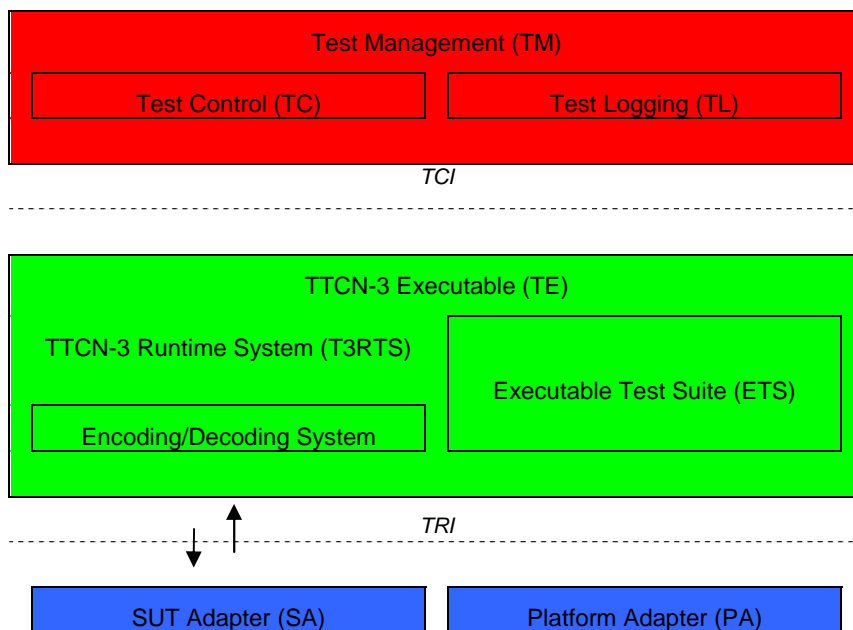


Figure 3: Interconnection of TS and SUT

### 4.3.2 Test System architecture

An abstract architecture for a Test System (TS) implementing a TTCN-3 ATS is displayed in figure 4 and also stated in [4].



**Figure 4: Abstract Test System Architecture**

A TS has two interfaces, the TTCN-3 Control Interface (TCI) and the TTCN-3 Runtime Interface (TRI), which specify the interface between Test Management (TM) and TTCN-3 Executable (TE) entities, and TE, SUT Adapter (SA) and Platform Adapter (PA) entities, respectively. Out of these two interfaces the TRI has been standardized in [4], whereas the specification and implementation of the TCI is in [5].

The part of TS that deals with interpretation and execution of TTCN-3 modules, i.e. the Executable Test Suite (ETS), is shown as part of the TTCN-3 Executable (TE). This ETS corresponds either to the executable code produced by a TTCN-3 compiler or a TTCN-3 interpreter from the TTCN-3 ATS in a TS implementation. The remaining part of the TS, which deals with any aspects that cannot be concluded from information being present in the TTCN-3 ATS alone, can be decomposed into Test Management (TM), SUT Adapter (SA), and Platform Adapter (PA) entities. In general, these entities cover a TS user interface, test execution control, test event logging, communication of test data with the SUT, and timer implementation.

The part of SA used for SIP message transfer shall implement the TRI adaptation as well as the SIP transport protocol architecture described in clause 4.2.

The Encoding/Decoding System (EDS) entity, as far as applied to SIP messages, with the TE and Test Logging (TL) entity within the TM shall comply with the conventions defined in clause 4.3.2 of [9].

The part of SA used for ISDN message transfer shall implement the TRI adaptation as well as the ISDN transport protocol architecture described in clause 4.2.

The Encoding/Decoding System (EDS) entity, as far as applied to ISDN messages, shall comply with the conventions and requirements defined in the following clauses.

---

## 5 The ATS development process

### 5.1 Requirements and Test Purposes

For each test purpose there is a table defined in clause 6 of [1]. The requirements applicable to this TP are given by a reference to the relevant base specification. There are no explicit formulations of requirements.

## 5.2 ATS structure

### 5.2.1 Test case grouping

The ATS structure defined in table 1 is based on the structuring of Test Purposes in clause 6 of [1]. The group names in columns 1 to 3 of table 1 are those assigned in the ATS; they are based on the names provided in clause 6 of [1], but use the naming conventions defined for the ATS (see clause 5.3.2.2).

**Table 1: ATS structure**

| Group    | Subgroup      | Sub-Subgroup             | Group Index |
|----------|---------------|--------------------------|-------------|
| ISDN-SIP |               |                          | 1           |
|          | Basic call    |                          | 11          |
|          |               | Successful - Speech      | 1101        |
|          |               | Codec negotiation        | 1102        |
|          |               | Successful - UPDATE      | 1103        |
|          |               | Successful - DTMF Tests  | 1104        |
|          |               | Successful - UDI         | 1105        |
|          |               | Unsuccessful             | 1106        |
|          | Sup. Services |                          | 12          |
|          |               | CLIP                     | 1201        |
|          |               | CLIR                     | 1202        |
|          |               | COLP/COLR                | 1203        |
|          |               | CFU                      | 1204        |
|          |               | CFB                      | 1205        |
|          |               | CFNR                     | 1206        |
|          |               | CFNL                     | 1207        |
|          |               | CD                       | 1208        |
|          |               | HOLD                     | 1209        |
|          |               | 3PTY                     | 1210        |
| CONF     |               | 1211                     |             |
| SIP-ISDN |               |                          | 2           |
|          | Basic call    |                          | 21          |
|          |               | Successful 3,1 kHz audio | 2101        |
|          |               | Codec negotiation        | 2102        |
|          |               | DTMF                     | 2103        |
|          |               | UDI                      | 2104        |
|          |               | Unsuccessful             | 2105        |
|          | Sup. Services |                          | 22          |
|          |               | CLIP/OIP                 | 2201        |
|          |               | OIR/CLIR                 | 2202        |
|          |               | TIP/COLP                 | 2203        |
|          |               | TIR/COLR                 | 2204        |
|          |               | CFU                      | 2205        |
|          |               | CFB                      | 2206        |
|          |               | CFNR                     | 2207        |
|          |               | CD                       | 2208        |
|          |               | TP                       | 2209        |
|          |               | 3PTY                     | 2210        |
|          |               | HOLD                     | 2211        |
|          |               | CONF                     | 2212        |
|          |               | CW                       | 2213        |
|          |               | ACR                      | 2214        |
| CUG      |               | 2215                     |             |

| Group   | Subgroup      | Sub-Subgroup      | Group Index |
|---------|---------------|-------------------|-------------|
| SIP-SIP |               |                   | 5           |
|         | Basic call    |                   | 51          |
|         |               | Successful        | 5101        |
|         |               | Codec negotiation | 5102        |
|         |               | Update            | 5103        |
|         |               | Unsuccessful      | 5104        |
|         | Sup. Services |                   | 53          |
|         |               | OIP               | 5201        |
|         |               | OIR               | 5202        |
|         |               | TIP               | 5203        |
|         |               | TIR               | 5204        |
|         |               | HOLD              | 5205        |
|         |               | CFU               | 5206        |
|         |               | CFB               | 5207        |
|         |               | CFNR              | 5208        |
|         |               | CFNL              | 5209        |
|         |               | CD                | 5210        |
| CONF    |               | 5211              |             |

## 5.2.2 Test case identifiers

The test case names are built up according to the following scheme:

<"TC"><Group path index>"\_"<TC number>

where:

- double quotes (") are used to enclose literal strings;
- <Group path index> is the 4-digit number which uniquely identifies the path of groups/subgroups;
- <TC number> is the identifier from the TSS&TP document.

EXAMPLE: TC1101\_IS\_\_XX\_\_001:

- the identifier has Group index "1101", i.e. it is in the subgroup having complete path: SIP-ISDN/BasicCall/Successful - Speech/;
- the identifier is the first test case of this group/subgroup.

NOTE: This naming scheme provides a 1-1 correspondence of TP identifiers as defined in [1] and test case names.

## 5.3 ATS specification framework

### 5.3.1 ATS Library

For this interworking ATS there are 2 applicable base protocols:

- SIP protocol ([10]); and
- ISDN protocol (ITU-T Recommendation Q.931 [8] series, plus associated standards for supplementary services etc.).

Since e.g. the data structures of these 2 base protocols are independent, and other objects like test cases are common, the TTCN-3 library modules are basically organized as:

- SIP modules;
- ISDN modules;
- Common modules (generated for the present ATS);

- 4) LibCommon modules (taken from [2]).

Table 2 shows the organization of the ATS as library of modules.

**Table 2: Library of modules**

| Module Class              | Module Id                     | Description  |
|---------------------------|-------------------------------|--|
| LibCommon                 | LibCommon_AbstractData        | Generic data types for a stack and its operations.   |
|                           | LibCommon_BasicTypesAndValues | Basic type and value definitions (integer and Boolean).  |
|                           | LibCommon_DataStrings         | Bit and Octet string types.  |
|                           | LibCommon_Sync                | Co-ordination/synchronization of test components.  |
|                           | LibCommon_TextStrings         | Basic character and string types with fixed length.  |
|                           | LibCommon_Time                | Time handling functions and moduleparameter.   |
|                           | LibCommon_VerdictControl      | Basic functions for setting of test component verdicts.  |
| AtsCommon                 | General_Types                 | Definitions are based on component type definitions from IPv6, SCOP and common synchronization libraries.  |
|                           | Siplsdn_PICS                  | Module Parameter declarations associated with PICS.  |
|                           | Siplsdn_PIXITS                | SIP-ISDN common Module Parameter declarations associated with PIXIT.   |
|                           | Siplsdn_Testcases             | Test case functions.   |
|                           | Siplsdn_TestConfiguration     | Functions which implement the configuration of the SUT adapter and mapping of test components for establishing and tearing down different test configurations. |
|                           | Siplsdn_TestExecution         | Module control: execute test cases depending on selection conditions; repeat parameterized test cases based on the "Variant-tables" defined in the test prose. |
| SipAts                    | Siplsdn_TestSystem            | Common functions, components, ASPs controlling the test system.  |
|                           | Siplsdn_SIP_SDPTypes          | SIP SDP data types.  |
|                           | Siplsdn_SIP_TCFFunctions      | PTC root functions for SIP-to-ISDN test cases.   |
|                           | Siplsdn_SIPSIP_TCFFunctions   | PTC root functions for SIP-to-SIP test cases.  |
|                           | Siplsdn_SIP_Types             | SIP data types (messages, header fields) and parallel test component (according to [9]).   |
|                           | Siplsdn_SIP_Templates         | Templates for SIP messages and header fields (according to [10]).  |
|                           | Siplsdn_SIP_Steps             | SIP auxiliary functions.   |
|                           | Siplsdn_SIP_XMLTypes          | SIP data types defined in XML (message body according to RFC 4575 [14]).   |
|                           | XSDAUX                        | Generic XML type system for TTCN-3.  |
|                           | IsdnAts                       | Siplsdn_ISDN_Types   |
| Siplsdn_ISDN_Templates    |                               | Templates for ISDN information elements, messages and ASPs.  |
| Siplsdn_ISDN_Steps        |                               | Test step declarations, including preambles, postambles and default.   |
| Siplsdn_ISDN_TCFFunctions |                               | Test case functions running on the Isdn component.   |
| SiplsdnASN1Types          |                               | ASN.1 definitions for ISDN message parts (ASN.1 and TTCN-3 notation).  |

## 5.3.2 Use of TTCN-3

### 5.3.2.1 General

TTCN-3 as defined in [3] is used as ATS specification language.

A number of requirements have been identified for the development and production of the TTCN-3 specification for the SIP/ISUP Interworking ATS:

- 1) Top-down design.
- 2) A uniquely defined testing architecture and test method.
- 3) Uniform TTCN-3 style and naming conventions.
- 4) TTCN-3 is human-readability.

- 5) TTCN-3 specification is feasible, implementable, compilable and maintainable.
- 6) Test cases shall be designed in a way to be easily adaptable, upwards compatible with the evolution of the base protocol and protocol interworking of future releases.
- 7) The test declarations, data structures and data values shall be largely reusable.
- 8) Modularity and modular working method.
- 9) Minimizing the requirements of intelligence on the emulators of the lower testers.
- 10) Giving enough design freedom to the test equipment manufacturers.

Fulfilling these requirements should ensure the investment of the test equipment manufacturers and users of the ATS having stable testing means for a relatively long period.

### 5.3.2.2 TTCN-3 naming conventions

Like in other software projects using a programming language, the use of naming conventions supports or increases:

- a) the readability;
- b) the detection of semantic errors;
- c) the shared work of several developers;
- d) the maintainability.

The naming conventions applied to the SIP/ISUP Interworking ATS are based on the following underlying principles:

- when constructing meaningful identifiers, the general guidelines specified for naming in clause 9 of [2] should be followed;
- for the SIP ATS part, which is based on a subset of [9], with extensions, the naming conventions defined in [9] should be followed;
- the names of TTCN-3 objects being associated with standardized data types (e.g. in the base protocols) should reflect the names of these data types as close as possible (of course not conflicting with syntactical requirements or other conventions being explicitly stated);
- the subfield names of TTCN-3 objects being associated with standardized data type should also be similar to corresponding element names in the base standards (be recognizable in the local context);
- in most other cases, identifiers should be prefixed with a short alphabetic string (specified in table 3) indicating the type of TTCN-3 element it represents;
- prefixes should be separated from the body of the identifier with an underscore ("\_");
- only test case names, module names, data type names and module parameters should begin with an upper-case letter. All other names (i.e. the part of the identifier following the prefix) should begin with a lower-case letter.

Table 3 specifies the naming guidelines for each element of the TTCN-3 language indicating the recommended prefix and capitalization.

Table 3: TTCN-3 naming conventions

| Language element   | Naming convention  | Prefix | Example                 | Notes  |
|--|--|--------|-------------------------|--------|
| Module   | Use upper-case initial letter  | none   | SipIstdn_ISDN_Types     |        |
| TSS grouping   | Use all upper-case letters as specified in clause 5.2.2                          | none   | TP_RT_PS_TR             |        |
| Item group within a module   | Use lower-case initial letter  | none   | messageGroup            |        |
| ISDN message type  | Use prefix PDU_DSS1 and upper-case initial letter and message name abbreviations | none   | PDU_DSS1_Setup          |        |
| ISDN parameter type  | Use prefix DSS1 and upper-case initial letter and parameter name                 | none   | DSS1_CallReference      |        |
| SIP message type   | Use upper-case initial letter  | none   | Request, Response       | note 4 |
| SIP header type  | Use upper-case initial letter  | none   | MaxForwards             | note 4 |
| Basic common data types (e.g. bit string types of fixed length)  | Use upper-case initial letter  | none   | Take from common module |        |
| Other Data types   | Use upper-case initial letter  | none   | SetupContents           |        |
| Template   | None   | m_     | m_IAM_Basic             | note 1 |
| Message template with wildcard or matching expression  | None   | mw_    | mw_AnyUserReply         | note 2 |
| Signature template   | Use lower-case initial letter  | s_     | s_callSignature         |        |
| Port instance  | Use lower-case initial letter  | none   | signallingPort          |        |
| Test component ref   | Use lower-case initial letter  | none   | userTerminal            |        |
| Constant   | Use lower-case initial letter  | c_     | c_maxRetransmission     |        |
| External constant  | Use lower-case initial letter  | cx_    | cx_maclD                |        |
| Function   | Use lower-case initial letter  | f_     | f_authentication()      |        |
| External function  | Use lower-case initial letter  | fx_    | fx_calculateLength()    |        |
| Altstep (incl. Default)  | Use lower-case initial letter  | a_     | a_receiveSetup()        |        |
| Test case  | Use naming as specified in clause 5.2.2  | TC_    | TC_101_001              |        |
| Variable (local)   | Use lower-case initial letter  | v_     | v_maclD                 |        |
| Variable (defined within a component)  | Use lower-case initial letters   | vc_    | vc_systemName           |        |
| Timer (local)  | Use lower-case initial letter  | t_     | t_wait                  |        |
| Timer (defined within a component)   | Use lower-case initial letters   | tc_    | tc_authMin              |        |
| Module parameter   | Use initial upper case letters   | PX     | PX_MAC_ID               | note 3 |
| Parameterization   | Use lower-case initial letter  | p_     | p_maclD                 |        |
| Enumerated Value   | Use lower-case initial letter  | e_     | e_syncOk                |        |
| NOTE 1: This prefix must be used for all template definitions which do not assign or refer to templates with wildcards or matching expressions, e.g. templates specifying a constant value, parameterized templates without matching expressions, etc. |  |        |                         |        |
| NOTE 2: This prefix must be used in identifiers for templates which either assign a wildcard or matching expression (e.g. ?, *, value list, if present, pattern, etc.) or reference another template which assigns a wildcard or matching expression.  |  |        |                         |        |
| NOTE 3: In this case it is acceptable to use underscore as a word delimiter.   |  |        |                         |        |
| NOTE 4: This convention has been used in [9] (SIP ATS).  |  |        |                         |        |

## 5.4 ATS archive

Annex B contains the ATS archive (.zip file expanding to text files with TTCN-3 code).

## Annex A (normative): Partial PIXIT proforma

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the PIXIT proforma in this annex so that it can be used for its intended purposes and may further publish the completed PIXIT proforma.

### A.1 Introduction

This partial PIXIT proforma contained in the present document is provided for completion, when the related Abstract Test Suite is to be used against the Implementation Under Test (IUT).

The completed partial PIXIT will normally be used in conjunction with the completed PICS, as it adds precision to the information provided by the PICS.

### A.2 PIXIT items

According to the interworking type of ATS defined in the present document, the PIXIT are divided in SIP-related PIXIT and ISDN-related PIXIT.

#### A.2.1 SIP-related PIXIT

The SIP-related PIXIT of table A.1 apply, which have been provided for the particular purposes of this ATS. Each PIXIT item corresponds to a Module Parameter of the ATS.

**Table A.1: SIP-related PIXIT items**

| Item                                  | Module Parameter            | Description   | Type       | Value |
|---------------------------------------|-----------------------------|---|------------|-------|
| <b>SDP Parameter</b>                  |                             |   |            |       |
| 1.1                                   | PX_SIP_SDP_dyn              | SDP dynamic port.   | integer    |       |
| 1.2                                   | PX_SIP_SDP_b_modifier       | SDP bandwidth modifier.                                   | charstring |       |
| 1.3                                   | PX_SIP_SDP_b_bandwidth      | SDP bandwidth value.                                      | integer    |       |
| 1.4                                   | PX_SIP_SDP_encoding         | SDP media attribute encoding supported by the IUT.        | charstring |       |
| 1.5                                   | PX_SIP_SDP_encoding_unavail | SDP media attribute encoding unavailable at the IUT.      | charstring |       |
| 1.6                                   | PX_SIP_SDP_encoding_unsup   | SDP media attribute encoding unsupported by the IUT.      | charstring |       |
| 1.7                                   | PX_SIP_SDP_transport        | SDP media T.38 transport (used in TC2101_IS__AU__09)      | charstring |       |
| <b>Supported options</b>              |                             |   |            |       |
| 1.8                                   | PX_SIP_100rel               | True if 100rel mechanism is supported in SIP.             | boolean    |       |
| 1.9                                   | PX_SIP_precondition         | True if precondition mechanism is supported in SIP.       | boolean    |       |
| 1.10                                  | PX_SIP_UDP                  | True if UDP Transport is used by the IUT to run campaign. | boolean    |       |
| 1.11                                  | PX_SIP_TRANSPORT            | Used Transport in upper case, i.e. "UDP" or "TCP".        | charstring |       |
| <b>Ports and addresses of the IUT</b> |                             |   |            |       |
| 1.12                                  | PX_SIP_IUT_PORT             | IUT port number to exchange SIP messages.                 | integer    |       |
| 1.13                                  | PX_SIP_IUT_IPADDR           | IUT IP address to exchange SIP messages.                  | charstring |       |
| 1.14                                  | PX_SIP_IUT_HOME_DOMAIN      | IUT domain.   | charstring |       |



| Item   | Module Parameter                    | Description   | Type       | Value |
|--|-------------------------------------|---|------------|-------|
| 1.15   | PX_SIP_IUT_HOME_DOMAIN_UNKNOW<br>WN | Unknown IUT domain.   | charstring |       |
| 1.16   | PX_SIP_IUT_USER                     | User identity at ISDN side.   | charstring |       |
| 1.17   | PX_SIP_IUT_USER_UNKNOWN             | Unknown user identity at ISDN side.                                     | charstring |       |
| <b>Ports and addresses of the ETS (tester), first access, used for SIP-ISDN and SIP-SIP testing</b>  |                                     |   |            |       |
| 1.18   | PX_SIP_ETS_PORT                     | Port number used by the ETS to exchange SIP messages.                   | integer    |       |
| 1.19   | PX_SIP_ETS_IPADDR                   | IP address used by the ETS to exchange SIP messages.                    | charstring |       |
| 1.20   | PX_ETS_LOCAL_DOMAIN                 | Identity of the tester local domain.                                    | charstring |       |
| 1.21   | PX_ETS_LOCAL_USER                   | Identity of the tester local user.                                      | charstring |       |
| 1.22   | PX_ETS_LOCAL_USER_DIV               | Identity of the user with active call diversion service.                | charstring |       |
| 1.23   | PX_SIP_ETS_LOCAL_USER_FULL          | Identity of the tester local user (format "+cc+ndc+sn).                 | charstring |       |
| 1.24   | PX_SIP_ETS_BEARER_PORT              | Port number used by the ETS to exchange media streams.                  | integer    |       |
| 1.25   | PX_SIP_ETS_BEARER_PORT2             | Second Port number used by the ETS to exchange media streams.           | integer    |       |
| 1.26   | PX_SIP_ETS_BEARER_IPADDR            | IP address used by the ETS to exchange media streams.                   | charstring |       |
| <b>Ports and addresses of the ETS2 (tester), second access, used for SIP-SIP testing only</b>        |                                     |   |            |       |
| 1.27   | PX_SIP_ETS2_PORT                    | Port number used by the ETS2 to exchange SIP messages.                  | integer    |       |
| 1.28   | PX_SIP_ETS2_IPADDR                  | IP address used by the ETS2 to exchange SIP messages.                   | charstring |       |
| 1.29   | PX_ETS2_LOCAL_DOMAIN                | Identity of the tester local domain.                                    | charstring |       |
| 1.30   | PX_ETS2_LOCAL_USER                  | Identity of the tester local user.                                      | charstring |       |
| 1.31   | PX_ETS2_LOCAL_USER_DIV              | Identity of the user with active call diversion service.                | charstring |       |
| 1.32   | PX_SIP_ETS2_LOCAL_USER_FULL         | Identity of the tester local user (format "+cc+ndc+sn).                 | charstring |       |
| 1.33   | PX_SIP_ETS2_BEARER_PORT             | Port number used by the ETS2 to exchange media streams.                 | integer    |       |
| 1.34   | PX_SIP_ETS2_BEARER_PORT2            | Second Port number used by the ETS2 to exchange media streams.          | integer    |       |
| 1.35   | PX_SIP_ETS2_BEARER_IPADDR           | IP address used by the ETS2 to exchange media streams.                  | charstring |       |
| <b>Ports and addresses of the ETS3 (tester), second access, used for SIP-SIP (CONF) testing only</b> |                                     |   |            |       |
| 1.36   | PX_SIP_ETS3_PORT                    | Port number used by the ETS2 to exchange SIP messages.                  | integer    |       |
| 1.37   | PX_SIP_ETS3_IPADDR                  | IP address used by the ETS2 to exchange SIP messages.                   | charstring |       |
| 1.38   | PX_ETS3_LOCAL_DOMAIN                | Identity of the tester local domain.                                    | charstring |       |
|  | PX_ETS3_LOCAL_USER                  | Identity of the tester local user.                                      | charstring |       |
| <b>Registration parameters</b>   |                                     |   |            |       |
| 1.39   | PX_SIP_REGISTRATION                 | Does the SIP user have to register itself before executing a test case? | boolean    |       |
| 1.40   | PX_SIP_REGISTRAR_PORT               | Registrar port number to exchange SIP messages.                         | integer    |       |
| 1.41   | PX_SIP_REGISTRAR_DOMAIN             | Registrar domain.   | charstring |       |
| <b>Release cause</b>   |                                     |   |            |       |
| 1.42   | PX_SIP_BYE_CAUSE                    | Release cause to be used in BYE and in Failure messages.                | integer    |       |
| <b>RTP stream control and check</b>  |                                     |   |            |       |
| 1.43   | PX_SIP_CheckConversation            | True, if conversation check is implemented.                             | boolean    |       |
| 1.44   | PX_SIP_CheckDTMF                    | True, if DTMF check is implemented.                                     | boolean    |       |
| 1.45   | PX_SIP_SendAnnouncement             | True, if Announcement sending is implemented.                           | boolean    |       |
| 1.46   | PX_SIP_CheckRinging                 | True, if ringing check is implemented.                                  | boolean    |       |

| Item                                      | Module Parameter                           | Description  | Type       | Value |
|---|--|--|------------|-------|
| <b>Parameters for HTTP authentication</b> |  |  |            |       |
| 1.47                                      | PX_SIP_REGISTRATION_AUTHENTICATION_ENABLED | Option controlling if authentication is enabled/disabled for registration messages.  | boolean    |       |
| 1.48                                      | PX_SIP_RFC2617_QOP                         | Quoted string of one or more tokens indicating the "quality of protection" values supported by the server. The value "auth" indicates authentication; the value "auth-int" indicates authentication with integrity protection. | charstring |       |
| 1.49                                      | PX_SIP_RFC2617_USERNAME                    | The name of user in the specified realm.   | charstring |       |
| 1.50                                      | PX_SIP_RFC2617_PASSWD                      | A known shared secret, the password of user of the specified username.   | charstring |       |
| 1.51                                      | PX_SIP_RFC2617_URI                         | URI for HTTP authentication.   | charstring |       |
| 1.52                                      | PX_SIP_RFC2617_USERNAME_T                  | The name of terminating user in the specified realm.   | charstring |       |
| 1.53                                      | PX_SIP_RFC2617_PASSWD_T                    | A known shared secret, the password of terminating user of the specified username.   | charstring |       |
| 1.54                                      | PX_SIP_RFC2617_URI_T                       | URI for HTTP authentication (terminating user).  | charstring |       |
| 1.55                                      | PX_SIP_RFC2617_USERNAME_T3                 | The name of 3rd user in the specified realm.   | charstring |       |
| 1.56                                      | PX_SIP_RFC2617_PASSWD_T3                   | A known shared secret, the password of 3rd user of the specified username.   | charstring |       |
| 1.57                                      | PX_SIP_RFC2617_URI_T3                      | URI for HTTP authentication (3rd user).  | charstring |       |
| <b>SIP Timers</b>                         |  |  |            |       |
| 1.58                                      | PX_SIP_T1                                  | T1 RTT estimate.   | float      |       |
| 1.59                                      | PX_T2                                      | T2 Maximum retransmit interval for non-INVITE requests and INVITE response.  | float      |       |
| 1.60                                      | PX_T4                                      | 4 Maximum duration a message will remain in the network.   | float      |       |
| 1.61                                      | PX_SIP_TWAIT                               | TWait default value for waiting an operator action.  | float      |       |
| 1.62                                      | PX_SIP_TACK                                | TAck default value for waiting an acknowledgement.   | float      |       |
| 1.63                                      | PX_SIP_TRESP                               | TResp default value for waiting for a response from the IUT.   | float      |       |
| 1.64                                      | PX_SIP_TNOACT                              | TNoAct default value for waiting no message from the IUT.  | float      |       |
| 1.65                                      | PX_SIP_TSYN                                | TSYNC default value to synchronize ptc.  | float      |       |
| 1.66                                      | PX_SIP_TGUARD                              | TGUARD default value for an extra long timer to limit test execution.  | float      |       |
| 1.67                                      | PX_TRespRetention                          | TRespRetention minimum time that a Proxy will wait before sending a final response.  | float      |       |
| <b>Test Case variant management</b>       |  |  |            |       |
| 1.68                                      | PX_TC_VA                                   | Testcase variant according to table entry in table to test purpose description, if present.  | integer    |       |
| 1.69                                      | PX_TC_HistoryInfoUsage                     | testcase variant on the use of the HistoryInfo-header field.   | boolean    |       |
| 1.70                                      | PX_TC_VA_NO180                             | testcase variant that do not use of 180 response for user-C (SSS-tests).   | boolean    |       |
| 1.71                                      | PX_TC_VA_NO181                             | testcase variant that do not expect of 181 response for SUT (SSS-tests).   | boolean    |       |
| 1.72                                      | PX_VA_IS__XX_U14                           | Value to choose SIP message from table below IS__XX_U14.<br><br>1 = 415 Unsupported Media type<br>2 = 420 Bad Extension<br>3 = 421 Extension Required.   | integer    |       |

| Item | Module Parameter              | Description  | Type    | Value |
|------|-------------------------------|--|---------|-------|
| 1.73 | PX_VA_IS__XX_U14_CV_SIP       | Cause value for SIP message sent in IS__XX_U14.  | integer |       |
| 1.74 | PX_VA_IS__XX_U14_CV_ISDN      | Cause value for ISDN RELEASE message received in IS__XX_U14.   | integer |       |
| 1.75 | PX_VA_IS__XX_U15              | Value to choose SIP message from table below IS__XX_U15.<br><br>1 = 415 Unsupported Media type<br>2 = 420 Bad Extension<br>3 = 421 Extension Required. | integer |       |
| 1.76 | PX_VA_SIP_IS__XXSSCOLP01_MSG  | Value to choose SIP message from table below IS__XXSSCOLP01.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.77 | PX_VA_SIP_IS__XXSSCOLP02_MSG  | Value to choose SIP message from table below IS__XXSSCOLP02.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.78 | PX_VA_SIP_IS__XXSSCOLP03_MSG  | Value to choose SIP message from table below IS__XXSSCOLP03.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.78 | PX_VA_SIP_IS__XXSSCOLP04_MSG  | Value to choose SIP message from table below IS__XXSSCOLP04.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.79 | PX_VA_SIP_IS__XXSSCOLP07_PRIV | Value to choose SIP Privacy header to be sent from table below IS__XXSSCOLP07.<br><br>1 = Id<br>2 = User<br>3 = Header.                                | integer |       |
| 1.80 | PX_VA_SIP_IS__XXSSCOLP08_MSG  | Value to choose SIP message from table below IS__XXSSCOLP08.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.81 | PX_VA_SIP_IS__XXSSCOLP09_MSG  | Value to choose SIP message from table below IS__XXSSCOLP09.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.82 | PX_VA_SIP_IS__XXSSCOLP10_MSG  | Value to choose SIP message from table below IS__XXSSCOLP10.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.83 | PX_VA_SIP_IS__XXSSCOLP11_MSG  | Value to choose SIP message from table below IS__XXSSCOLP11.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.                                       | integer |       |
| 1.84 | PX_VA_SIP_IS__XXSSCOLP14_PRIV | Value to choose SIP Privacy header to be sent from table below IS__XXSSCOLP14.<br><br>1 = Id<br>2 = User<br>3 = Header.                                | integer |       |

| Item | Module Parameter              | Description  | Type    | Value |
|------|-------------------------------|--|---------|-------|
| 1.85 | PX_VA_SIP_IS__XXSSCOLP16_PRIV | Value to choose SIP Privacy header to be sent from table below IS__XXSSCOLP16.<br><br>1 = Id<br>2 = User<br>3 = Header.      | integer |       |
| 1.86 | PX_VA_SIP_IS__XXSSCOLP17_MSG  | Value to choose SIP message from table below IS__XXSSCOLP17.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.             | integer |       |
| 1.87 | PX_VA_SIP_IS__XXSSCOLP19_MSG  | Value to choose SIP message from table below IS__XXSSCOLP19.<br><br>1 = 180 Ringing<br>2 = 183 Session Progress.             | integer |       |
| 1.88 | PX_VA_SIP_SS__XX__01_SDP      | Value to choose SDP parameters to be sent from table below SS__XX__04 for use in SS__XX__01.                                 | integer |       |
| 1.89 | PX_VA_SIP_SS__XX__01_CODEC    | Value to choose codec to be sent from table below SS__XX__04 for use in SS__XX__01.  | integer |       |
| 1.90 | PX_VA_SIP_SS__XX__02_SDP      | Value to choose SDP parameters to be sent from table below SS__XX__04 for use in SS__XX__02.                                 | integer |       |
| 1.91 | PX_VA_SIP_SS__XX__02_CODEC    | Value to choose codec to be sent from table below SS__XX__04 for use in SS__XX__02.  | integer |       |
| 1.92 | PX_VA_SIP_SS__XX__03_SDP      | Value to choose SDP parameters to be sent from table below SS__XX__04 for use in SS__XX__03.                                 | integer |       |
| 1.93 | PX_VA_SIP_SS__XX__03_CODEC    | Value to choose codec to be sent from table below SS__XX__04 for use in SS__XX__03.  | integer |       |
| 1.94 | PX_VA_SIP_SS__XX__04_SDP      | Value to choose SDP parameters to be sent from table below SS__XX__04 for use in SS__XX__04.                                 | integer |       |
| 1.95 | PX_VA_SIP_SS__XX__04_CODEC    | Value to choose codec to be sent from table below SS__XX__04 for use in SS__XX__04.  | integer |       |
| 1.96 | PX_SIP_CallClearingMsg        | Value to choose call clearing message to be sent from table below SI__XX__U10.<br><br>Valid choices are: 404, 500, 410, 484. | integer |       |
| 1.97 | PX_SIP_phonecontext           | SIP URL should include phone-context (compare SIP parameter value).  | boolean |       |

## A.2.2 ISDN-related PIXIT

Tables A.2 to A.5 list the ISDN-related PIXIT items associated with the ATS. Each PIXIT item corresponds to a Module Parameter of the ATS. Default values are not provided.

**Table A.2: General SS/SUT-related ISDN PIXIT items**

| Item | Module Parameter    | Description  | Type    | Value |
|------|---------------------|--|---------|-------|
| 2.1  | PX_Isdn_Basic1      | Select whether basic or primary rate access applies on the ISDN side for the first ISDN access.<br><br>True = Basic access<br>False = Primary Rate Access  | boolean |       |
| 2.2  | PX_Isdn_PtP1        | Select whether point-to-point or point-to-multipoint configuration applies on the ISDN side for the first ISDN access.<br><br>True = point-to-point<br>False = point-to-multipoint               | boolean |       |
| 2.3  | PX_Isdn_Basic2      | Select whether basic or primary rate access applies on the ISDN side for the second ISDN access.<br><br>True = Basic access<br>False = Primary Rate Access                                       | boolean |       |
| 2.4  | PX_Isdn_PtP2        | Select whether point-to-point or point-to-multipoint configuration applies on the ISDN side for the second ISDN access.<br><br>True = point-to-point<br>False = point-to-multipoint              | boolean |       |
| 2.5  | PX_Isdn_L2Init      | Select whether the data link has to be released and re-established at the start of each test on the ISDN side.<br><br>True = Data link reset for each test<br>False = Keep data link established | boolean |       |
| 2.6  | PX_Isdn_WaitRestart | Select whether the IUT sends RESTART messages after re-establishment of the multiple frame operation.<br><br>True = Wait for RESTART<br>False = Do not wait for RESTART                          | boolean |       |

Table A.3: Timer-related ISDN PIXIT items

| Item | IModule Parameter            | Description  | Type  | Value |
|------|------------------------------|--|-------|-------|
| 3.1  | PX_Isdn_TAC                  | Time to control the reception of a message.  | float |       |
| 3.2  | PX_Isdn_TNOAC                | Time to control that IUT sends nothing.  | float |       |
| 3.3  | PX_Isdn_TWAIT                | Time to control that IUT reacts prior to Upper Tester action.  | float |       |
| 3.4  | PX_Isdn_TSYNC                | Time to control synchronization.   | float |       |
| 3.5  | PX_TDelay                    | Time to delay messages before sending.   | float |       |
| 3.6  | PX_Isdn_WaitRestart_Duration | Time to wait for RESTART messages after L2 re-establishment.   | float |       |
| 3.7  | PX_Isdn_T301                 | Maximum time for ISDN protocol timer T301, T301 is started on receipt of ALERTING and stopped on receipt of CONNECT.                           | float |       |
| 3.8  | PX_Isdn_T304                 | Maximum time for ISDN protocol timer T304, T304 is started on sending of SETUP ACKNOWLEDGE and stopped on receipt of INFORMATION.              | float |       |
| 3.9  | PX_Isdn_T307                 | Maximum time for ISDN protocol timer T307, T307 is started on sending of SUSPEND ACKNOWLEDGE and stopped on receipt of RESUME.                 | float |       |
| 3.10 | PX_Isdn_T_CFNR               | Maximum time for ISDN protocol timer T_CFNR, T_CFNR is started on receipt of ALERTING, if CFNR is activated and stopped on receipt of CONNECT. | float |       |

Table A.4: Operator-check-related ISDN PIXIT items

| Item   | IModule Parameter         | Description   | Type    | Value |
|--|---------------------------|---|---------|-------|
| 4.1  | PX_Isdn_CheckConversation | True if conversation check is implemented and used. Otherwise false (see note 1). | boolean |       |
| 4.2  | PX_Isdn_CheckRinging      | True if ringing check is implemented and used. Otherwise false (see note 2).      | boolean |       |
| 4.3  | PX_Isdn_CheckDTMF         | True if DTMF tone check is implemented and used. Otherwise false (see note 3).    |         |       |
| NOTE 1: If true, test execution will stop at positions where the TP indicates "conversation" until the operator enters the check result. |                           |   |         |       |
| NOTE 2: If true, test execution will stop at positions where the TP indicates "ringing" until the operator enters the check result.      |                           |   |         |       |
| NOTE 3: If true, test execution will stop at positions where the TP indicates "DTMF" until the operator enters the check result.         |                           |   |         |       |

Table A.5: ISDN PIXIT items associated with message fields

| Item                                       | Module Parameter                                | Description   | Type         | Value |
|--|---|---|--------------|-------|
| <b>Called Party Number</b>                 |   |   |              |       |
| 5.1.1                                      | PX_Isdn_CDPN_numberingPlanIdentificationDefault | Default value of the numbering plan field of the called party number information.   | bitstring(4) |       |
| 5.1.2                                      | PX_Isdn_CDPN_TypeOfNumber_SIP_Access            | Default value of the type of number field of the called party number information to call a (first) SIP access.                      | bitstring(3) |       |
| 5.1.3                                      | PX_Isdn_CDPN_SIP_Access                         | Default value of the digits field of the called party number information to call a (first) SIP access.                              | charstring   |       |
| 5.1.4                                      | PX_Isdn_CDPN_DigitsFirstPortion                 | Value of the digits field of an incomplete called party number information. The number digits do not allow routing to the SIP side. | charstring   |       |
| 5.1.5                                      | PX_Isdn_CDPN_DigitsSecondPortion                | Value of the digits field of a called party number information complementing the number given in PX_Isdn_CDPN_DigitsFirstPortion.   | charstring   |       |
| 5.1.6                                      | PX_Isdn_CDPN_TypeOfNumber_1stISDN_Access        | Default value of the type of number field of the called party number information to call the first ISDN access.                     | bitstring(3) |       |
| 5.1.7                                      | PX_Isdn_CDPN_1stISDN_Access                     | Default value of the digits field of the called party number information to call the first ISDN access.                             | charstring   |       |
| 5.1.8                                      | PX_Isdn_CDPN_TypeOfNumber_2ndISDN_Access        | Default value of the type of number field of the called party number information to call the second ISDN access.                    | bitstring(3) |       |
| 5.1.9                                      | PX_Isdn_CDPN_2ndISDN_Access                     | Default value of the digits field of the called party number information to call the second ISDN access.                            | charstring   |       |
| 5.1.10                                     | PX_Isdn_CDPN_TypeOfNumber_3rdISDN_Access        | Default value of the type of number field of the called party number information to call the third ISDN access.                     | bitstring(3) |       |
| 5.1.11                                     | PX_Isdn_CDPN_3rdISDN_Access                     | Default value of the digits field of the called party number information to call the third ISDN access.                             | charstring   |       |
| 5.1.12                                     | PX_Isdn_CDPN_TypeOfNumber_2ndSIP_Access         | Default value of the type of number field of the called party number information to call a second SIP access.                       | bitstring(3) |       |
| 5.1.13                                     | PX_Isdn_CDPN_2ndSIP_Access                      | Default value of the digits field of the called party number information to call a (second) SIP access.                             | charstring   |       |
| <b>Calling Party Number and Subaddress</b> |   |   |              |       |
| 5.2.1                                      | PX_Isdn_CGPN_numberingPlanIdentificationDefault | Default value of the numbering plan field of the calling party number information.  | bitstring(4) |       |
| 5.2.2                                      | PX_Isdn_CGPN_TypeOfNumberDefault                | Default value of the type of number field of the calling party number information.  | bitstring(3) |       |
| 5.2.3                                      | PX_Isdn_CGPN_DigitsDefault                      | Default value of the digits field of the calling party number information.  | charstring   |       |
| 5.2.4                                      | PX_Isdn_CGPS_DigitsDefault                      | Default value of the digits field of the calling party subaddress information.  | charstring   |       |
| 5.2.5                                      | PX_Isdn_CGPS_TypeDefault                        | Default value of the type of subaddress field of the calling party subaddress information.  | bitstring(3) |       |

| Item                     | Module Parameter                                | Description  | Type         | Value |
|--------------------------|---|--|--------------|-------|
| <b>Connected number</b>  |   |  |              |       |
| 5.3.1                    | PX_Isdn_CODN_numberingPlanIdentificationDefault | Default value of the numbering plan field of the connected number information.   | bitstring(4) |       |
| 5.3.2                    | PX_Isdn_CODN_TypeOfNumberDefault                | Default value of the type of number field of the connected number information.   | bitstring(3) |       |
| 5.3.3                    | PX_Isdn_CODN_DigitsDefault                      | Default value of the digits field of the connected number information.   | charstring   |       |
| <b>Bearer Capability</b> |   |  |              |       |
| 5.4.1                    | PX_Isdn_BCAP_TransferCapability_tx              | Default value of the transfer capability of the bearer capability information (to be sent when the TP does not specify a specific value for that field).     | bitstring(5) |       |
| 5.4.2                    | PX_Isdn_BCAP_TransferCapability_rx              | Default value of the transfer capability of the bearer capability information (to be received when the TP does not specify a specific value for that field). | bitstring(5) |       |

### A.2.3 General PIXIT

The PIXIT of table A.6 are general timer items that control the synchronization between the SIP and the ISDN test components. Each PIXIT item corresponds to a Module Parameter of the ATS.

**Table A.6: General PIXIT items**

| Item | Module Parameter         | Description   | Type  | Value |
|------|--------------------------|---|-------|-------|
| 6.10 | PX_TSYNC_TIME_LIMIT      | Default time limit for a sync client to reach a synchronization point.                | float |       |
| 6.11 | PX_TSHUT_DOWN_TIME_LIMIT | Default time limit for a sync client to finish its execution of the shutdown default. | float |       |



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## Annex B (informative): TTCN-3 library modules

### B.1 Electronic annex, zip file with TTCN-3 code

The TTCN-3 library modules are contained in archive ts\_18600102v010201p0.zip which accompanies the present document.

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## Annex A (informative): Change history

| Date | WG Doc. | CR | Rev | CAT | Title / Comment          | Current Version | New Version |
|------|---------|----|-----|-----|--------------------------|-----------------|-------------|
|      |         |    |     |     | STF306 validation output | 1.1.1           | 1.2.1       |

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## History

| <b>Document history</b> |                |             |
|-------------------------|----------------|-------------|
| V1.1.1                  | July 2008      | Publication |
| V1.2.1                  | September 2009 | Publication |
|                         |                |             |
|                         |                |             |
|                         |                |             |