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V interfaces at the digital Local Exchange (LE);
V5.1 interface for the support of Access Network (AN);
Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network layer (AN side)

Contents

Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is part 4 of a multi-part standard covering the V5.1 interface as described below:

Part 1:   "V5.1 interface specification";

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

Part 3:   "Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (AN side)";

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

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

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

Part 7:   "Test Suite Structure and Test Purposes (TSS&TP) specification for the data link layer";

Part 8:   "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the data link layer";

Part 9:   "Test specification for the physical layer".

Transposition dates	
Date of adoption of this ETS:	26 March 1999
Date of latest announcement of this ETS (doa):	30 June 1999
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Date of withdrawal of any conflicting National Standard (dow):	31 December 1999

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1 Scope

This fourth part of ETS 300 324 contains the Abstract Test Suite (ATS) as well as the Abstract Test Method (ATM) and the partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the Network layer (NWK) of the V5.1 interface and parts of the system management of the Access Network (AN) side of a V5.1 interface.

The objective of this ETS is to provide an ATS containing conformance tests which give a high probability of inter-operability of an AN and a Local Exchange (LE) from different manufacturers over the V5.1 interface.

ISO/IEC 9646-1 [5] and ISO/IEC 9646-2 [6] are used as the basis for the test methodology. The ATS is defined using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [7].

The ATS in annex A describes a set of Test Cases (TCs) which are based on the Test Purposes (TPs) specified in ETS 300 324-3 [3]. The TCs provide the implementation of the TPs and can be converted into an executable test suite by using available TTCN translators and the corresponding tools.

Annex B provides the partial PIXIT proforma.

Annex C lists the bibliography.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1]   ETS 300 324-1 (1994) including amendment A1: "V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 1: V5.1 interface specification".

[2]   ETS 300 324-2 (1994): "V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 2: Protocol Implementation Conformance Statement (PICS) proforma".

[3]   ETS 300 324-3 (1999): "V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (AN side)".

[4]   ISO 7498: "Information Processing Systems - Open Systems Interconnection - Basic Reference Model".

[5]   ISO/IEC 9646-1: "Information Technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[6]   ISO/IEC 9646-2: "Information Technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification".

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

[8]   ISO/IEC 9646-5: "Information Technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 5: Requirements on test laboratories and clients for the conformance assessment process".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply, together with those given in ETS 300 324-1 [1]:

Abstract Test Case (ATC): Refer to ISO/IEC 9646-1 [5]

> NOTE: In this ETS, the commonly used term TC is applied in the same way as ATC.

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

current provisioning variant: ID for the presently active data set

Data Link Layer (DLL): Refer to ISO 7498 [4]

embedded variant: Refer to ISO/IEC 9646-2 [6]

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

incorrect information element: Specified IE carrying IE types not defined in ETS 300 324-1 [1]

invalid PSTN information element: PSTN IE not according to national specific requirements

invalid protocol data unit: Protocol Data Unit (PDU) which contains an incorrect message format

invalid PSTN message: PSTN message carrying IEs not according to national specific requirements

Lower Tester (LT): Refer to ISO/IEC 9646-1 [5]

Network Layer (NWK): Refer to ISO 7498 [4]

new provisioning variant: ID for the data set which was announced to the IUT to become the next active data set through re-provisioning

Physical Layer (PHL): Refer to ISO 7498 [4]

PICS proforma: Refer to ISO/IEC 9646-1 [5]

PIXIT proforma: Refer to ISO/IEC 9646-1 [5]

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

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

Protocol Implementation eXtra Information For Testing (PIXIT): Refer to ISO/IEC 9646-1 [5]

remote test method: Refer to ISO/IEC 9646-2 [6]

specified information element: IE ID defined in ETS 300 324-1 [1]

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

Test Purpose (TP): Refer to ISO/IEC 9646-1 [5]

unknown provisioning variant: ID for a non-available data set

unspecified information element: IE ID not defined in ETS 300 324-1 [1]

valid information element: PSTN IE according to national specific requirements

valid PSTN message: PSTN message carrying IEs according to national specific requirements

3.2 Abbreviations

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

AN	Access Network
ASP	Abstract Service Primitive
ATC	Abstract Test Case
ATM	Abstract Test Method
ATS	Abstract Test Suite
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	CApability test
CTRL	Control
DLL	Data Link Layer
DSAP	Data link SAP
FE	Function Element
FSM	Finite State Machine
ID	Identifier
IE	Information Element
IEI	Information Element Identifier
ISDN	Integrated Services Digital Network
ISDN-BA	ISDN-Basic Access
IT	basic Interconnection Test
IUT	Implementation Under Test
L3addr	Layer 3 address
LE	Local Exchange
LT1	Lower Tester 1
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PHL	Physical Layer
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PSTN	Public Switched Telephone Network
SAP	Service Access Point
SUT	System Under Test
TC	Test Case, the same definition as for ATC applies
TP	Test Purposes
TTCN	Tree and Tabular Combined Notation
UL	Upper Layer
UT	Upper Tester
V5DLaddr	V5 Data Link address

4 Abstract test method

This clause describes the Abstract Test Method (ATM) and the Point of Control and Observation (PCO) used to test the NWK of the V5.1 protocol for the AN components.

4.1 ATM

Principally, the remote test method is used for V5.1 AN NWK conformance testing. Certain V5.1 AN NWK TPs need also part of the service and national functions. Therefore, the embedded variant of the remote test method is applied.

The national dependant information is defined in the PIXIT.

NOTE: The multi-party testing ATM (MPyT) (ISO/IEC 9646-2 [6], subclause 12.7, was also considered for this ATS. But as the interfaces on the user port side may be implemented on national specific standards the MPyT ATM was not applicable for this ATS. To solve this need for operations on the user port interfaces, terminals will be connected to the user ports. All necessary functions which would have been provided by a lower tester connected to the user ports can be achieved by manual operations on the connected terminal.

4.2 NWK protocol testing

The V5.1 implementations do not offer a direct access to the upper service boundary. The remote test method was chosen because any co-ordination procedures can only be expressed in an informal way.
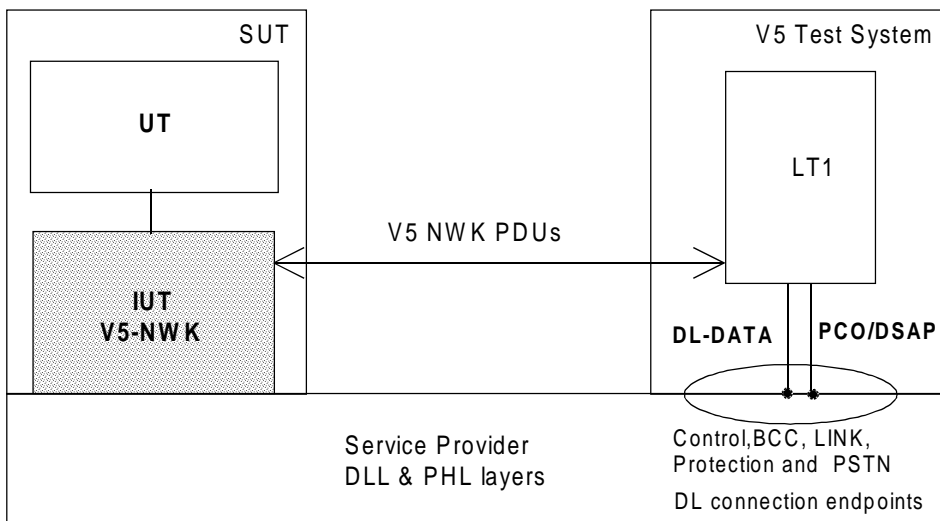
Figure 1: Remote single layer test method applied to the V5.1 NWK testing

LT1:   A Lower Tester (LT1) is located in a remote V5.1 test system. It controls and observes the behaviours of the IUT.

DSAP: A unique Data link Service Access Point (DSAP) is defined at the V5.1 interface and commonly used for exchanging service data of the different Network layer protocol functional entities: PSTN, Control protocols.

PCO: The PCO for NWK testing is located on the DSAP. All test events at the PCO are specified in terms of data link Abstract Service Primitives (ASPs) and network layer PDUs.

UT:	No explicit Upper Tester (UT) exists in the test system. However, the SUT needs to carry out some UL functions to achieve some effects of test co-ordination procedures. Designing ATS, the capability of the system management functions, such as controls of the IUT, its interactions with the Q interface may be taken into account. The controls of the IUT will be implied or informally expressed in the ATS, but no assumption shall be made regarding their feasibility or realization. An example of such controls could be to provoke restarting of the IUT through the Q interface.
V5-NWK:	To test the PSTN and ISDN-BA protocols, a simulator shall be attached to relevant User Port (UP).

4.3 Data link addresses

Within the DSAP, different V5DLaddr are used to identify each corresponding data link connection. Each network layer protocol functional entity can have only one data link connection, e.g. all PSTN signalling information shares one data link connection.

Table 1 shows the allocated V5DLaddr used by protocol function entities.

Table 1: V5DLaddr

Protocol	PSTN	Control
V5DLaddr	8176	8177

4.4 Execution of TCs

4.4.1 Handling of error indication

During the execution of the NWK ATS many error indications will be sent to the system management due to the invalid and the inopportune TCs. It is up to the IUT supplier to take the necessary precautions to avoid any impact on the test result.

4.4.2 TC execution sequence

The following test sequence shall be applied:

The TC containing the start-up procedure (TC11__SM_01) shall always be the first TC executed. Also in any case where the IUT has to be restarted this TC shall be first executed.

Protocol groups: CTRL $\Rightarrow$ PSTN.
Test groups: IT $\Rightarrow$ CA $\Rightarrow$ TI $\Rightarrow$ BV $\Rightarrow$ BO $\Rightarrow$ BI.

Interactions between the different test groups are not considered. It is up to the IUT supplier to take the necessary precautions to avoid any impact on the test result.

> NOTE: This applies in particular to PORT CONTROL messages from ISDN ports while testing PSTN-related protocols and vice versa.

5 Untestable test purposes

This clause gives a list of TPs which are not implemented in the ATS due to the chosen abstract test method or other restrictions.

5.1 Control protocol

The test purposes listed in table 2 are not implemented in the ATS due to unknown reaction of the IUT after testing the TPs.

Table 2: Untestable TPs

Test Purpose
TP1311S1_01
TP1313S0_01
TP1321S2_01
TP1324S1001
TP1324S1002
TP1324SM_06
TP1324SM_07
TP1325SM_03
TP1325S2207
TP1325S2208
TP1325S2209
TP1424S1101
TP1425SM_01
TP1511S1_11

5.2 PSTN protocol

The test purposes listed in table 3 are not implemented in the ATS due to unknown reaction of the IUT after testing the TPs.

Table 3: Untestable TPs

Test Purpose
TP23__S0_04
TP23__S0_05
TP23__S0_06
TP23__S0_07
TP23__S1_08
TP23__S1_09
TP23__S2_11
TP23__S3_10
TP23__S3_11
TP23__S4_06
TP23__S4_09
TP23__S4_10
TP23__S6_05
TP23__S7_11
TP24__S2_03
TP24__S2_04
TP24__S3_04
TP24__S3_05
TP24__S4_05
TP24__S5_03
TP24__S5_04
TP24__S5_05
TP24__S5_06
TP24__S7_02
TP26__S5_01

6 Abstract test suite conventions

The ATS conventions are intended to give a better understanding of the ATS but they describe also the conventions made for the development of the ATS, thus for any later maintenance purposes or further development of the ATS the conventions described in this clause shall be considered.

The ATS conventions contain two clauses, the naming conventions and the implementation conventions. The naming conventions describe the structure of the naming of all ATS elements. The implementation conventions describe the functional structure of the ATS.

> NOTE: To define the ATS, the guidelines given in ETS 300 406 and ETR 141 were considered.

6.1 Naming conventions

6.1.1 Declaration part

The ID names of the following definitions are written in lowercase:

- structured type definitions;
- ASP type definitions;
- PDU type definitions.

The ID names of the following definitions are written in uppercase:

- Test Suite Parameter Declarations;
- Test Case Selection Expression Definitions;
- Test Suite Constant Declarations;
- Test Case Variable Declarations.

ID names of PDUs and structured types commence with a protocol identifier to define which protocol they are belonging to. The following identifiers are used:

- control protocol: ctrl   e.g. crtl_common_control_ack;
- PSTN signalling: pstn   e.g. pstn_signal_ack.

ID names of PDUs and structured types which are used for invalid tests commence with "bi".

EXAMPLE 1:   bi_com_ctrl_two_mety.

Complete names as defined in the specifications are used for ID names of declarations.

EXAMPLE 2:   ctrl_control_function_element.

Test suite parameter ID names commence with TSP:

- PICS are identified by adding the letter "C":   TSPC_. (e.g.: TSPC_PSTN);
- PIXIT are identified by adding the letter "X":   TSPX_. (e.g.: TSPX_PORT_ADDRESS).

If the test suite parameter is representing a system parameter or value, only the parameter name is used.

EXAMPLE 3:   MR (receive sequence number in signal message).

Test suite operations commence with TSO.

EXAMPLE 4:   TSO_INTEGER_TO_O_1.

Test suite constant ID names commence with TSC.

EXAMPLE 5:   TSC_CFE_FE201_2_UNBL.

If the constant is representing a system parameter or value, only the parameter name is used.

EXAMPLE 6:   N01.

ID names of timers commence with T. The same names as in the specification are used.

EXAMPLE 7:   T01.

6.1.2   Constraint part

Constraint names commence with uppercase. The remaining part of the ID name is written in lowercase.

ID names of elements concerning the same subject have equivalent names in the declaration and the constraint part:

Declaration part: ctrl_control_function_element;
Constraint part: Ctrl_control_function_element.

The name of the modified constraint describes the particularity of the modified constraint.

EXAMPLE: Ctrl_cc_mand_only (common control message which contains only the mandatory IEs).

If formal parameter lists are used, the variable names are written in lowercase. The variable name is the same as the name of the element it is representing.

6.1.3   Dynamic part

6.1.3.1   TC

The identifier of the TCs is constructed in the same way as for the TPs described in ETS 300 324-3 [3], subclause 5.1.1, with the exception that "TP" is replaced by "TC":

TP identifier: TP1324S1106;
TC identifier: TC1324S1106.

6.1.3.2   Test steps

In TCs, test steps as well as local trees are used. To allow an easy distinction, the following naming is applied:

local tree: LTS_[local_tree_name];
test step: STEP_[test-step_name].

6.1.3.3   General aspects

All verdict assignments are labelled. To allow an exact identification in which table the verdict was assigned, the following name convention is applied:

B   test Body
CS   Check State test steps
D   Default
E   Error handling test steps
PO   POstamble
PR   PReamble
S   test Step

Combinations of labels are also possible.

EXAMPLE: DPR --> label which is used in a default for preambles.

6.1.4 ATS abbreviations

These abbreviations are used to shorten identifier names:

addr	address
act	activate
acc	access
ack	acknowledgement
cau	cause
cc	common control
cfe	control function element
cfi	control function identifier
com	common
ctrl	control
dl	data link
enq	enquiry
est	establish
func	function
ind	indication
interf	interface
mand	mandatory
mety	message type
mod	modified
par	parameter
pc	port control
pd	protocol discriminator
perform	performance
prog	progress
prot	protocol
prov	provisioned
repro	re-provisioning
req	request
rest	restart
rsp	response
var	variant
verify	verifying
vid	variant & interface ID

6.2 Implementation conventions

6.2.1 Declaration part

The comment line of single element TTCN tables (e.g. test suite constants) is used to give a reference where the format and content of the element is described in the relevant protocol specifications. Any particularity of the element format or content is described in the comment line.

The comment line in the header of multi-element TTCN tables (e.g. ASPs) is used to reference to the protocol specification. The detailed comments are used to describe any particularity of the table.

In the ASP and PDU declarations, the comments column is used to identify if an element is mandatory or optional:

m: mandatory;
o: optional.

In the ASP and PDU declarations the comments column is further used to give information about the element value, in particular if the element contains a fixed spare value.

In tables where structure types are used the information element and the relevant structured type have always the same name, that allows to have the same structure as in the protocol standards is used to document the relation between information elements in a table and their specific description in an other clause of the protocol standard.

6.2.2 Constraint part

The ASPs and PDUs are defined in a way that all relevant element are parameterized. That improves the transparency of the constraints in the dynamic part, as all values which are relevant for the test are always present.

Generally the base constraint contains all possible parameters and the relevant formal parameter list which goes with the base constraint. In case where a specific message IE is not used at all in the ATS, the base constraint will not contain such an IE. The base constraints of the PSTN protocol contain all mandatory IEs. The optional IEs are defined in one element of type OCTETSTRING. The actual value and format of the optional IE has to be defined in the PIXITs according to the PSTN specifications which is implemented in the IUT.

Modified constraints have the same parameter list as the base constraint. Unused elements of the parameter list are set to a default value OMIT ("-") in the dynamic part. The number of base constraints is reduced to a minimum.

The comment line of a constraint contains always the reference to the used specifications. The detailed comments sector is used to describe any particularity of the table.

6.2.3 Dynamic part

Some TCs need a particular initialization of the IUT environment conditions to run the actual test, e.g. for testing re-provisioning procedures. Such message sequence can be quite complicated and long. In cases where a Local Test Step (LTS) facilitates the TC structure, the preamble and the condition setting are described in a LTS called **LTS_pre_step**. All LTS_pre_steps are described in the detailed comment part of the TTCN table.

Some TCs need after the actual test a particular re-initialization of the IUT, e.g. after re-provisioning. Such message sequence can be quite complicated and long. In cases where a Local Test Step (LTS) facilitates the TC structure, the postamble and the re-initialization are described in a LTS called **LTS_post_step**. All LTS_post_steps are described in the detailed comment part of the TTCN table.

All events which are defined as a conformance requirements by the TP, cause a preliminary verdict PASS if the requirement is met.

All invalid events are handled in the default tree. FAIL verdicts are only assigned in the default tree.

The preamble, the test body and the postamble have different defaults, what allows a specific verdict handling, e.g. only INCONC verdicts are assigned in the preamble.

All verdict assignments are labelled. According to ISO/IEC 9646-3 [7], clause E.2, labels should be written to the conformance log. This allows to identify were the test failed. To allow an exact identification in which table the verdict was assigned, the naming convention as described in subclause 6.1.3.3 is applied.

The labels of the same type are numbered sequentially if they are in the same TC, test step or default.

TPs which only reference to an other TP, e.g. BV TPs which were already defined as CA TPs, are only implemented ones, thus the numbering of the TCs is not always continues.

TPs which are listed in the untestable TP list in clause 5, or which reference to an other TP, e.g. BV TPs which were already defined as CA TPs, are not considered in the ATS, thus these TC identifiers are missing in the ATS and the numbering of the TCs is not always continuos.

NWK implementation:

1)   the ATS rebuilds the PSTN functions. Therefore the signal message sequence numbers M(S) and M(R) are implemented and used according to their function described in ETS 300 324-1 [1];

2)   TCs of the */PORT/TRANS test group which have to be applied either to the PSTN user port or the ISDN-BA user port depending on the provisioned application in the IUT, use a common TC definition where the L3addr is parameterized (TCV_l3_addr). The L3_addr to be used during the execution is assigned in the test step STEP_Ctrl_pc_trans_init depending on the setting of the PICS which describe the provisioned data set. All of the TCs in the test groups */PORT/TRANS begin with the test step STEP_Ctrl_pc_trans_init.

Implicit send events:

Implicit send events are used within the ATS. Most of them can be invoked from the PSTN or ISDN-BA terminals connected to the IUT. As these implicit send events are not internal events and thus configuration and implementation independent, no PIXITs are defined as requested in ISO/IEC 9646-3 [7], subclause 14.9.6. The exception are the implicit messages mph_ar_isdn and mdu_system_start_up for which a PIXIT was created.

mph_ar_isdn:	TSPX_IMPLICIT_PL_ACTIVATION (see note).
mdu_ctrl_data_set_available:	TSPX_IMPLICIT_DATA_SET_AVAILABLE (see note).
mdu_system_start_up:	TSPX_IMPLICIT_SYSTEM_START_IP (see note).

> NOTE: Some implicit messages (mph_ar_isdn, mdu_ctrl_data_set_available, mdu_system_ start_up, te_off_hock_pstn, te_on_hock_pstn) cause no event on the V5.1 interface because they cause only state changes in the Finite State Machine (FSM) or they are applied in a state where no external events are invoked. The roles of ISO/IEC 9646-3 [7], subclause 14.9.6 request that an implicit event shall describe the event which will be invoked at the PCO. For the case that IUT internal events should be invoked the implicit send messages mentioned above where created. This is a suitable solution as it is not possible to specify such events according to ISO/IEC 9646-3 [7], subclause 14.9.6.

6.2.4   Documentation

The comment line of the TC or test step header contains a reference to the relevant protocol specification.

The comment column of the dynamic behaviour part is used to number the test events which are relevant for the particular test or test operation. Based on the numbering in the comment column, the relevant events for a TC are described in the detailed comments part of each TTCN table.

Test procedures which cover a conformance requirement and lead to a preliminary or final verdict assignment are described as follows in the detailed comments part:

Expected event: a specific receive event is expected.

Expected behaviour: no event or a timer expiry is expected.

Expected status: the IUT is expected to be in a particular status.

Annex A (normative): Abstract test suite for NWK testing

This ATS has been produced using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [7].

The ATS was developed on a separate TTCN software tool and therefore the TTCN tables are not completely referenced in the contents table. The ATS itself contains a test suite overview part which provides additional information and references.

A.1 The TTCN Graphical form (TTCN.GR)

The TTCN.GR representation of this ATS is contained in an Adobe Portable Format™ file (v51nan05.PDF contained in archive 3244_e1.ZIP) which accompanies the present document.

A.2 The TTCN Machine Processable form (TTCN.MP)

The TTCN.MP representation corresponding to this ATS is contained in a text file (v51nan05.MP contained in archive 3244_e1.ZIP) which accompanies the present document.

NOTE: According to ISO/IEC 9646-3 [7], in case of a conflict in interpretation of the operational semantics of TTCN.GR and TTCN.MP, the operational semantics of the TTCN.GR representation takes precedence.

Annex B (normative): Partial PIXIT proforma

B.1   Introduction

The PIXIT proforma are based on ISO/IEC 9646-5 [8]. Any additional information needed can be found in this ETS.

B.2   PIXIT proforma

B.2.1   Identification summary

PIXIT Number:

....

Test Laboratory Name:

....

Date of Issue:

....

Issued to:

....

B.2.2   Abstract test suite summary

Protocol Specification: ETS 300 324-1

Protocol to be tested: V5.1, AN network layer

ATS Specification: ETS 300 324-3

Abstract Test Method: Remote test method, embedded variant

B.2.3   Test laboratory

Test Laboratory Identification:

....

Test Laboratory Manager:

....

Means of Testing:

....

SAP Address:

....

B.2.4   Client

Client Identification:

....

Client Test manager:

....

Test Facilities required:

....

B.2.5   SUT

Name:

....

Version:

....

SCS Number:

....

Machine configuration:

....

Operating System Identification:

....

IUT Identification:

....

PICS Reference for IUT:

....

Limitations of the SUT:

....

Environmental Conditions:

....

B.2.6   Protocol layer information

B.2.6.1   Protocol identification

Name: V5.1, network layer protocol for Control and PSTN

Version: ....

PICS References: ETS 300 324-2

B.2.6.2 IUT information

Table B.1: Addresses

Address name	Parameter type	Reference to ETS 300 324-1 [1]	Value
TSPX_CTRL_ISDNBA_ PORT_ADDR	OCTETSTRING[2]	Port address of the ISDN-BA user port provisioned (subclause 14.4.2.3)	
TSPX_CTRL_PSTN_ PORT_ADDR	OCTETSTRING[2]	Port address of the PSTN user port provisioned (subclause 14.4.2.3)	
TSPX_CTRL_PSTN_ PORT_ADDR_NOT_ PROV	OCTETSTRING[2]	Port address of the PSTN user port which is not provisioned (subclause 14.4.2.3)	
TSPX_V5DL_ADDR_ CTRL	OCTETSTRING[2]	V5DLaddr for the Control protocol (see note)	
TSPX_V5DL_ADDR_ PSTN	OCTETSTRING[2]	V5DLaddr for the PSTN protocol (see note)	
NOTE: The TSPX_V5DL_ADDR is used to address either the control or the PSTN NWK entity. The TSPX V5DL_ADDR is part of the ASP send or received. Depending on the V5DLaddr format requested by the target implementation (LT1), the TSPX_V5DL_ADDR shall be coded according to ETS 300 324-1 [1], table 1.			

Table B.2: Parameter values

Parameter name	Parameter type	Reference to ETS 300 324-1 [1]	Parameter value
TSPX_CTRL_INTERF_ ID	OCTETSTRING[3]	Interface ID (figure 40, table 57)	
TSPX_CTRL_VAR	OCTETSTRING[1]	Presently active variant of the IUT (figure 39, table 55)	
TSPX_CTRL_VAR_ NEW	OCTETSTRING[1]	Variant announced to become next active variant of the IUT (figure 39, table 55)	
TSPX_CTRL_VAR_ NOT_PROV	OCTETSTRING[1]	Not available variant in the IUT (not provisioned) (figure 39, table 55)	

Table B.3: Timer values

Timer name type	Reference to ETS 300 324-1 [1]	Timer range	Timer value
TSPX_TIMER_T01_max	table 58	value: 1 200 [ms] T01 + T01 tolerance + test environment tolerance	
TSPX_TIMER_T02_max	table 58	value: 1 200 [ms] T02 + T02 tolerance + test environment tolerance	
TSPX_TIMER_T1_max	table 28	value: 1 200 [ms] T1 + T1 tolerance + test environment tolerance	
TSPX_TIMER_T3_max	table 28	value: 2 400 [ms] T3 + T3 tolerance + test environment tolerance	
TSPX_TIMER_T4_max	table 28	value: 2 400 [ms] T4 + T4 tolerance + test environment tolerance	
TSPX_TIMER_AC_short	Watch dog timer if immediate ACtion is expected from the IUT.	value: 1 000 [ms]	

Timer name type	Reference to ETS 300 324-1 [1]	Timer range	Timer value
TSPX_TIMER_NOAC_short	Guard timer used if NO ACtion shall appear.	value: 1 000 [ms]	
TSPX_TIMER_T2_MAX	table 28	value: 5,5 - 36 [s] T2 + T2 tolerance + test environment tolerance	
TSPX_TIMER_T2_MIN	table 28	value: 4,5 - 27 [s] T2 - T2 tolerance - test environment tolerance	
TSPX_TIMER_WAIT_SONV_BACK	Time to wait before Switch-Over to New Variant is invoked to get initial provisioning variant.		
TSPX_TIMER_AC_long	Watch dog timer if an ACtion from the IUT is expected after an undefined time period.		

Table B.4: Procedural information

Procedural name	Reference to ETS 300 324-1 [1]	Valid?
TSPX_EDITION_1	Is IUT implemented based on V5.1 specification, edition 1?	
TSPX_PSTN_LINE_INFORMATION	PSTN state Line information (AN4) is supported by the IUT.	
TSPX_PSTN_TERMINATING_CALL_PRIORITY	Terminating calls have priority (val: TRUE) (subclause 13.5.3.3). If the parameter is not set (val: FALSE), originating calls have priority.	
NOTE: All parameters are of type BOOLEAN.		

Table B.5 requests the national specific optional PSTN data, which shall be coded according to the PSTN standard to which the PSTN application of the IUT shall conform.

Table B.5: Optional information

PIXIT name	Related message	Reference to ETS 300 324-1 [1]	Specific requirements	Value
TSPX_PSTN_OPT_ INFO_EST	ESTABLISH	13.3.1, table 5	Optional part of ESTABLISH message received by LT1	
TSPX_PSTN_OPT_ INFO_EST_SEND	ESTABLISH	13.3.1, table 5	Optional part of ESTABLISH message sent by LT1	
TSPX_PSTN_OPT_ INFO_EST_4_ REP_OPT_IE	ESTABLISH	13.3.1, table 5 13.5.2.5 (error conditions) see also note	The optional part shall contain four repeated optional IEs which are valid for the IUT to be tested	
TSPX_PSTN_OPT_ INFO_EST_IEI_4_ TIMES_REP	ESTABLISH	table 17	IEI of 4 times repeated IE in optional info: TSPX_PSTN_OPT_INFO_ EST_4_REP_OPT_IE	
TSPX_PSTN_OPT_ INFO_EST_ONE_ VALID_ONE_ INCORR_OPT_ IE	ESTABLISH	13.4.5, table 17 13.5.2.9 (error conditions) see also note	The optional part shall contain one valid and one incorrect optional IE	
TSPX_PSTN_OPT_ INFO_EST_IEI_ INCORR_OPT_ IE	ESTABLISH	table 17	IEI of incorrect IE in optional info: TSPX_PSTN_OPT_INFO_ EST_ONE_VALID_ONE_ INCORR_OPT_IE	
TSPX_PSTN_OPT_ INFO_EST_ONE_ VALID_ONE_ UNSPEC_ OPT_IE	ESTABLISH	13.4.5, table 17 13.5.2.7 (error conditions) see also note	The optional part shall contain one valid and one unspecified optional IE	
TSPX_PSTN_OPT_ INFO_EST_IEI_ UNSPEC_ OPT_IE	ESTABLISH	table 17	IEI of unspecified IE in optional info: TSPX_PSTN_OPT_INFO_ EST_ONE_VALID_ONE_ UNSPEC_OPT_IE	
TSPX_PSTN_OPT_ INFO_EST_TWO_ DIFF_OPT_ IE	ESTABLISH	13.3.1, table 5 13.5.2.11 (error conditions) see also note	The optional part shall contain two different optional IEs	
TSPX_PSTN_OPT_ INFO_EST_ACK	ESTABLISH_ACK	13.3.2, table 6	Optional information of ESTABLISH_ACK message	
TSPX_PSTN_OPT_I NFO_DISC_S	DISCONNECT		Optional information of the DISCONNECT message which is sent from the LE to AN.	
TSPX_PSTN_EST_L INE_INFO	ESTABLISH		Optional information of the ESTABLISH message to be send by the LT1, length [1] that corresponds to the FE-line_information message sent to the NWK entity.	

PIXIT name	Related message	Reference to ETS 300 324-1 [1]	Specific requirements	Value
TSPX_PSTN_OPT_ INFO_PROTOCOL_ PARAMETER	PROTOCOL_ PARAMETER	13.3.9, table 13	Optional information of a PROTOCOL_PARAMETER message	
TSPX_OPT_INFO_ SIGNAL_DIGIT1	SIGNAL	13.3.3, table 7	Optional information of a SIGNAL message which is sent from the AN to the LE and which represents the line signal of digit 1	
TSPX_OPT_INFO_ SIGNAL_IEI_DIGIT1	SIGNAL	table17	IEI of the optional IE used in the parameter TSPX_OPT_INFO_SIGNAL_ DIGIT1	
TSPX_OPT_INFO_ SIGNAL_LE	SIGNAL	13.3.3, table 7	Optional information of a SIGNAL message which is send from the LE to the AN	
NOTE: The PSTN messages which contain invalid optional information shall be coded according to the national PSTN specifications but the optional information shall be modified according to ETS 300 324-1 [1], subclause 13.5.2.				

Table B.6: Implicit send events

PIXIT name	Description	Selection
TSPX_IMPLICIT_ EVENT_CTRL	This PIXIT is used to select/deselect CTRL test cases which use implicit send events and thus need manual operations (no automatic execution)	
TSPX_IMPLICIT_ EVENT_PSTN	This PIXIT is used to select/deselect PSTN test cases which use implicit send events and thus need manual operations (no automatic execution)	
NOTE: All parameters are of type BOOLEAN.		

Table B.7: Implicit send event procedures

Implicit event	Description	Procedural information
<IUT ! ctrl_com_ctrl> Ctrl_cc_no_interf_id(TSC_CFI_ SWITCH_OVER_TO_NEW_VAR, TSPX_CTRL_VAR_NEW, - , -	How can the sending of an COMMON CONTROL message (cfi: switch over to new variant) by the IUT be invoked?	
<IUT ! ctrl_com_ctrl> Ctrl_cc_no_interf_id(TSC_CFI_ REST_REQ, SPX_CTRL_VAR, -, -)	How can the sending of an COMMON CONTROL message (cfi: restart request) by the IUT be invoked?	
<IUT ! ctrl_com_ctrl> Ctrl_cc_mand_only(TSC_CFI_REQ_ VID, -, -, -)	How can the sending of an COMMON CONTROL message (cfi: request variant & interface ID) by the IUT be invoked?	
<IUT ! ctrl_port_ctrl> Ctrl_pc_isdnba(TSC_CFE_FE102_ ACT_INIT)	How can the sending of an PORT CONTROL message (cfi: FE2, access activation initiated by user) by the IUT (ISDN-BA entity) be invoked?	
<IUT ! ctrl_port_ctrl> Ctrl_pc_isdnba(TCV_l3_addr, TSC_CFE_FE203_4_BL)	How can the sending of an PORT CONTROL message (cfe: block command) by the IUT (ISDN-BA entity) be invoked?	
<IUT ! ctrl_port_ctrl> Ctrl_pc_isdnba(TSC_CFE_FE205_ BL_REQ)	How can the sending of an PORT CONTROL message (cfe: block request) by the IUT (ISDN-BA entity) be invoked?	
<IUT ! ctrl_port_ctrl> Ctrl_pc_isdnba(TSC_CFE_FE201_ 2_UNBL)	How can the sending of an PORT CONTROL message (cfi: unblock request/ack) by the IUT (ISDN-BA entity) be invoked?	
<IUT ! ctrl_port_ctrl> Ctrl_pc_pstn(TCV_l3_addr,TSC_ CFE_FE203_4_BL)	How can the sending of an PORT CONTROL message (cfe: block command) by the IUT (PSTN entity) be invoked?	
<IUT ! ctrl_port_ctrl> Ctrl_pc_pstn(TSC_CFE_FE205_BL_ REQ)	How can the sending of an PORT CONTROL message (cfe: block request) by the IUT (PSTN entity) be invoked?	
<IUT ! ctrl_port_ctrl> Ctrl_pc_pstn(TSC_CFE_FE201_2_ UNBL)	How can the sending of an PORT CONTROL message (cfi: unblock request/ack) by the IUT (PSTN entity) be invoked?	
<IUT ! pstn_est> Pstn_est	How can the sending of an PSTN ESTABLISH message by the IUT be invoked? (sending of a FE-subscriber_seizure message to the NWK entity)	
<IUT ! pstn_signal> Pstn_signal(S_R, TSPX_PSTN_OPT_INFO_SIGNAL_ DIGIT1)	How can the sending of an PSTN SIGNAL message (digit 1) by the IUT be invoked? (sending of a FE-line_signal message (digit 1) message to the NWK entity)	

Implicit event	Description	Procedural information
<IUT ! mdu_ctrl_data_set_available>	How can the IUT internal status "data set available" be invoked?	
<IUT ! mdu_system_start_up>	How can a system start-up procedure in the IUT be invoked as described in ETS 300 324-1 [1], annex C, item 17?	
<IUT ! mph_ar_isdn>	How can the IUT internal event "MPH_AR, activate access from AN" be invoked? (New state AN3.1)	
<IUT ! te_off_hook_pstn>	How can the IUT internal event "sending of a FE-subscriber_seizure message" be invoked?	
<IUT ! te_on_hook_pstn>	How can the IUT internal event "sending of a FE-subscriber_release message message" be invoked?	
NOTE: *Procedural information* part shall provide the necessary information required to provoke the *Implicit event* described in *Description* part of this table.		

Table B.8: PICS information

PIXIT name	PICS item	Valid ?
TSPC_ISDNBA	ETS 300 324-2, M1	
TSPC_PSTN	ETS 300 324-2, M2	
TSPC_PL_CAPABILITY	ETS 300 324-2, M7	
TSPC_VERIFY_REPRO	ETS 300 324-2, P5.2	
TSPC_REPRO_SYNC	ETS 300 324-2, P5.3	
TSPC_PSTN_PROTOCOL_PARAMETER	ETS 300 324-2, U1.9	
NOTE: All parameters are of type BOOLEAN.		

Annex C (informative): Bibliography

- ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

- ETR 141 (1994): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; The Tree and Tabular Combined Notation (TTCN) style guide".

History

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