

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 347-4 V3.1.1:2005

<https://standards.iteh.ai/catalog/standards/sist/ebc4fc00-e27c-4c6f-93de-068fd64d59b3/sist-en-300-347-4-v3-1-1-2005>

ETSI EN 300 347-4 V3.1.1 (2001-03)

European Standard (Telecommunications series)

**V interfaces at the digital Local Exchange (LE);
V5.2 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)**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 300 347-4 V3.1.1:2005](https://standards.iteh.ai/catalog/standards/sist/ebc4fc00-e27c-4c6f-93de-068fd64d59b3/sist-en-300-347-4-v3-1-1-2005)

<https://standards.iteh.ai/catalog/standards/sist/ebc4fc00-e27c-4c6f-93de-068fd64d59b3/sist-en-300-347-4-v3-1-1-2005>



Reference

REN/SPAN-09102-4

KeywordsAN, ATS, LE, PIXIT, testing, V interface,
V5 interface**ETSI**650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 347-4 V3.1.1:2005<https://standards.iteh.ai/catalog/standards/sist/ebc4fc00-e27c-4c6f-93de-068fd64d59b3/sist-en-300-347-4-v3-1-1-2005>

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <http://www.etsi.org/tb/status/>

If you find errors in the present document, send your comment to:
editor@etsi.fr

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2001.
All rights reserved.

Contents

Intellectual Property Rights	5
Foreword	5
1 Scope.....	6
2 References	6
3 Definitions and abbreviations	7
3.1 Definitions	7
3.2 Abbreviations.....	7
4 Abstract test method	8
4.1 ATM.....	8
4.2 NWK layer protocol testing.....	8
4.3 Data link Addresses.....	9
4.4 Execution of TCs.....	9
4.4.1 Handling of error indication	9
4.4.2 TC execution sequence.....	9
5 Untestable test purposes.....	10
5.1 Control protocol	10
5.2 PSTN protocol	11
5.3 Link control protocol	11
5.4 BCC Protocol.....	12
5.5 Protection protocol	12
6 Abstract test suite conventions	12
6.1 Naming conventions.....	12
6.1.1 Declaration part	12
6.1.2 Constraint part	13
6.1.3 Dynamic part	14
6.1.3.1 Test cases.....	14
6.1.3.2 Test steps.....	14
6.1.3.3 General aspects.....	14
6.1.4 ATS abbreviations	14
6.2 Implementation conventions	15
6.2.1 Declaration part	15
6.2.2 Constraint part	15
6.2.3 Dynamic part	16
6.2.4 Documentation.....	17
Annex A (normative): Abstract test suite for NWK testing	18
A.1 The TTCN Graphical form (TTCN.GR).....	18
A.2 The TTCN Machine Processable form (TTCN.MP)	18
Annex B (normative): Partial PIXIT proforma.....	19
B.1 Introduction	19
B.2 PIXIT proforma	19
B.2.1 Identification summary.....	19
B.2.2 Abstract test suite summary	19
B.2.3 Test laboratory	19
B.2.4 Client.....	20
B.2.5 SUT	20
B.2.6 Protocol layer information	21
B.2.6.1 Protocol identification	21
B.2.6.2 IUT information.....	21

History 30

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 347-4 V3.1.1:2005

<https://standards.iteh.ai/catalog/standards/sist/ebc4fc00-e27c-4c6f-93de-068fd64d59b3/sist-en-300-347-4-v3-1-1-2005>

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.org/ipr>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document is part 4 of a multi-part deliverable covering the V interfaces at the digital Local Exchange (LE); V5.2 interface for the support of Access Network (AN), as described below:

- Part 1: "V5.2 interface specification";
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- 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".

National transposition dates

Date of adoption of this EN:	23 March 2001
Date of latest announcement of this EN (doa):	30 June 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 December 2001
Date of withdrawal of any conflicting National Standard (dow):	31 December 2001

1 Scope

The present document 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 V5.2 interface and parts of the system management of the Access Network (AN) side of a V5.2 interface.

The objective of the present document 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 V5.2 interface.

ISO/IEC 9646-1 [7] and ISO/IEC 9646-2 [8] 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 [9].

The ATS in annex A describes a set of Test Cases (TCs) which are based on the Test Purposes (TPs) specified in EN 300 347-3 [6] (which is an extension of ETS 300 324-3 [2]). 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.

2 References

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

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

- [1] ETSI EN 300 324-1 (V1.2.3): "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] ETSI 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)".
- [3] ETSI ETS 300 324-4 (1999): "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)".
- [4] ETSI EN 300 347-1 (V2.2.2): "V interfaces at the digital Local Exchange (LE); V5.2 interface for the support of Access Network (AN); Part 1: V5.2 interface specification".
- [5] ETSI EN 300 347-2 (V2.1.3): "V interfaces at the digital Local Exchange (LE); V5.2 interface for the support of Access Network (AN); Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [6] ETSI EN 300 347-3: "V interfaces at the digital Local Exchange (LE); V5.2 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)".
- [7] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [8] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification".

- [9] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [10] 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".
- [11] ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [12] ETSI ETR 141: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; The Tree and Tabular Combined Notation (TTCN) style guide".
- [13] ETSI EN 300 377-1: "Q3 interface at the Local Exchange (LE) for configuration management of V5 interfaces and associated customer profiles; Part 1: Q3 interface specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETS 300 324-4 [3] apply.

3.2 Abbreviations

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

AN	Access Network
ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BCC	Bearer Channel Connection
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
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
LC	Line Circuit
LT1	Lower Tester 1
MPH	Management Physical layer
NWK	Network Layer
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
REQ	Request
SAP	Service Access Point
SUT	System Under Test
TP	Test Purposes
TSS	Test Suite Structure

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 V5.2 protocol for the AN components.

4.1 ATM

Principally, the remote test method is used for V5.2 AN NWK conformance testing. Certain V5.2 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.

4.2 NWK layer protocol testing

The V5.2 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.

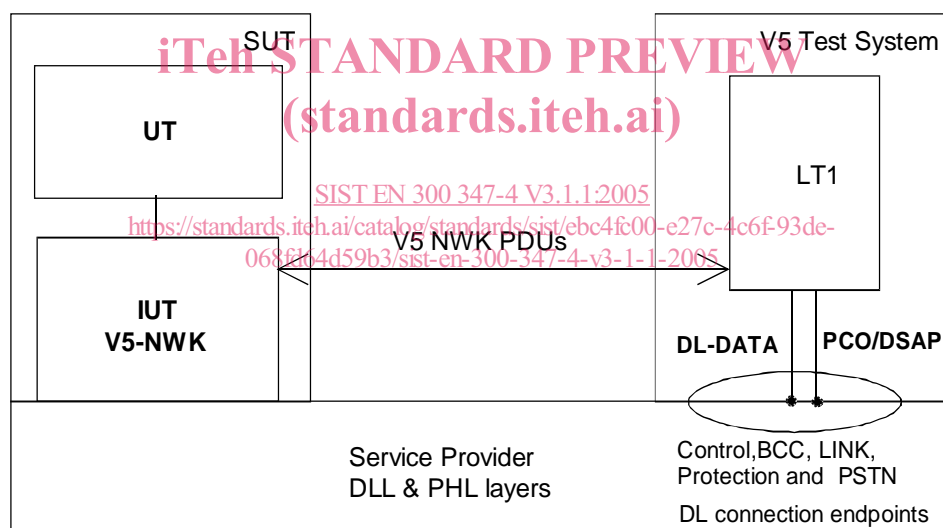


Figure 1: Remote single layer test method applied to the V5.2 NWK layer testing

- LT1:** A Lower Tester (LT1) is located in a remote V5.2 test system. It controls and observes the behaviours of the IUT.
- DSAP:** A unique Data link Service Access Point (DSAP) is defined at the V5.2 interface and commonly used for exchanging service data of the different network layer protocol functional entities.
- PCO:** The PCOs for NWK testing are located on the DSAP, PSAP, PSTN_ACCESS and PCM_ACCESS interfaces. All test events at the DSAP are specified in terms of Data Link Layer (DLL) Abstract Service Primitives (ASPs) and network layer PDUs. All test events at the PSAP are specified in terms of physical layer ASPs. All test events at PSTN_ACCESS and PCM_ACCESS are defined as ASPs.

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. Examples of such controls could be to provoke restarting IUT or blocking/unblocking procedures through Q interface.

V5-NWK: To test the PSTN and ISDN 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	BCC	Protection	Link Control
V5DLaddr	8176	8177	8178	8179	8180

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.

<https://standards.iteh.ai/catalog/standards/sist/ebc4fc00-e27c-4c6f-93de-068fd64d59b3/sist-en-300-347-4-v3-1-1-2005>

4.4.2 TC execution sequence

The following test sequence shall be applied:

The TC containing the start-up procedure 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 ⇒ LINK ⇒ PROTECTION ⇒ PSTN ⇒ BCC.
- Test groups: IT ⇒ CA ⇒ TI ⇒ BV ⇒ BO ⇒ 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

Table 2 lists TPs which are not covered by the ATS due to unknown reaction of the IUT after testing the TPs or due to the fact they have the same purpose of TC already implemented.

Table 2: Untestable TPs

Test Purpose
TP1311S1_01
TP1313S0_01
TP1321S2_01
TP1324S1001
TP1324S1002
TP1324SM_06
TP1324SM_07
TP1325SM_03
TP1325S2207
TP1325S2208
TP1325S2209
TP1326SM_07
TP1326S2008
TP1326S2009
TP1326S2010
TP1326S2011
TP1326S2012
TP1424S1101
TP1425SM_01
TP1426SM_01
TP1426SM_02
TP1426SM_03
TP1521S1-01

iTeh STANDARDS PREVIEW
(standards.iteh.ai)

SIST EN 300 347-4 V3.1.1:2005
<https://standards.iteh.ai/catalog/standards/sist/ebc4fc00-e27c-4c6f-93de-068fd64d5110/sist/300-347-4-v3-1-1-2005>