SLOVENSKI STANDARD
SIST EN 300 347-3 V3.1.1:2005

01-januar-2005

Vmesniki V pri digitalnih krajevnih centralah (LE) – Vmesnik V5.2 za podporo dostopovnemu omrežju (AN) – 3. del: Zgradba preskušalnega niza in namen preskušanja (TSS&TP) – Specifikacija za omrežno plast na strani dostopovnega omrežja (AN)

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)

Ta slovenski standard je istoveten z: **EN 300 347-3 Version 3.1.1**

ICS:

33.040.30	Komutacijski in signalizacijski sistem	Switching and signalling systems

SIST EN 300 347-3 V3.1.1:2005 **en**

ETSI EN 300 347-3 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 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (AN side)

Reference
REN/SPAN-09102-3

Keywords
AN, LE, testing, TSS&TP, 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

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

Contents

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 3 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 Test Suite Structure and Test Purposes (TSS&TP) for the network layer 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 conformance tests giving a high probability of inter-operability of an AN and a Local Exchange (LE) from different manufacturers over the V5.2 interface. The present document covers only the procedures described in EN 300 347-1 [2].

ISO/IEC 9646-1 [4] and ISO/IEC 9646-2 [5] are used as the basis for the test methodology.

The present document needs to be read in conjunction with ETS 300 324-3 [1]. The two documents share a common format and clauses within ETS 300 324-3 [1] are directly referenced.

2 References

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

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

[1] ETSI ETS 300 324-3 (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)".

[2] 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".

[3] 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".

[4] ISO/IEC 9646-1 (1995): "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[5] ISO/IEC 9646-2 (1995): "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification".

[6] ETSI ETS 300 347-7 (1999): "V interfaces at the digital Local Exchange (LE); V5.2 interface for the support of Access Network (AN); Part 7: Test Suite Structure and Test Purposes (TSS&TP) specification for the data link layer".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETS 300 324-3 [1], EN 300 347-1 [2] and the following apply.

incorrect information element: specified information element carrying information element types which are not defined in EN 300 347-1 [2]

specified information element: information element identifier as defined in EN 300 347-1 [2]

unspecified information element: information element identifier which is not defined in EN 300 347-1 [2]

3.2 Abbreviations

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

AIS	Alarm Indication Signal
AN	Access Network
ASP	Abstract Service Primitive
ATS	Abstract Test Suite
BCC	Bearer Channel Connection
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability
COM	Common control protocol
CTRL	Control
FE	Function Element
FSM	Finite State Machine
ID	Identifier
IE	Information Element
ISDN	Integrated Services Digital Network
ISDN-BA	ISDN Basic Access
ISDN-PRA	ISDN Primary Rate Access
IT	Basic Interconnection
IUT	Implementation Under Test
L3addr	Layer 3 address
LE	Local Exchange
LT1	Lower Tester 1
MDU	Management Data Unit
MPH	Management Physical layer
NWK	Network layer
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PSTN	Public Switched Telephone Network
RAI	Remote Alarm Indication
REQ	Request
SN	Sequence Number
SUT	System Under Test
TE	Terminal Equipment (ISDN or PSTN)
TI	Timer
TP	Test Purpose
TS	Time Slot
TSS	Test Suite Structure
UP	User Port

4 Test Suite Structure (TSS)

4.1 Overview

Figure 1 shows the structure of the V5.2 NetWorK layer (NWK) test suite.

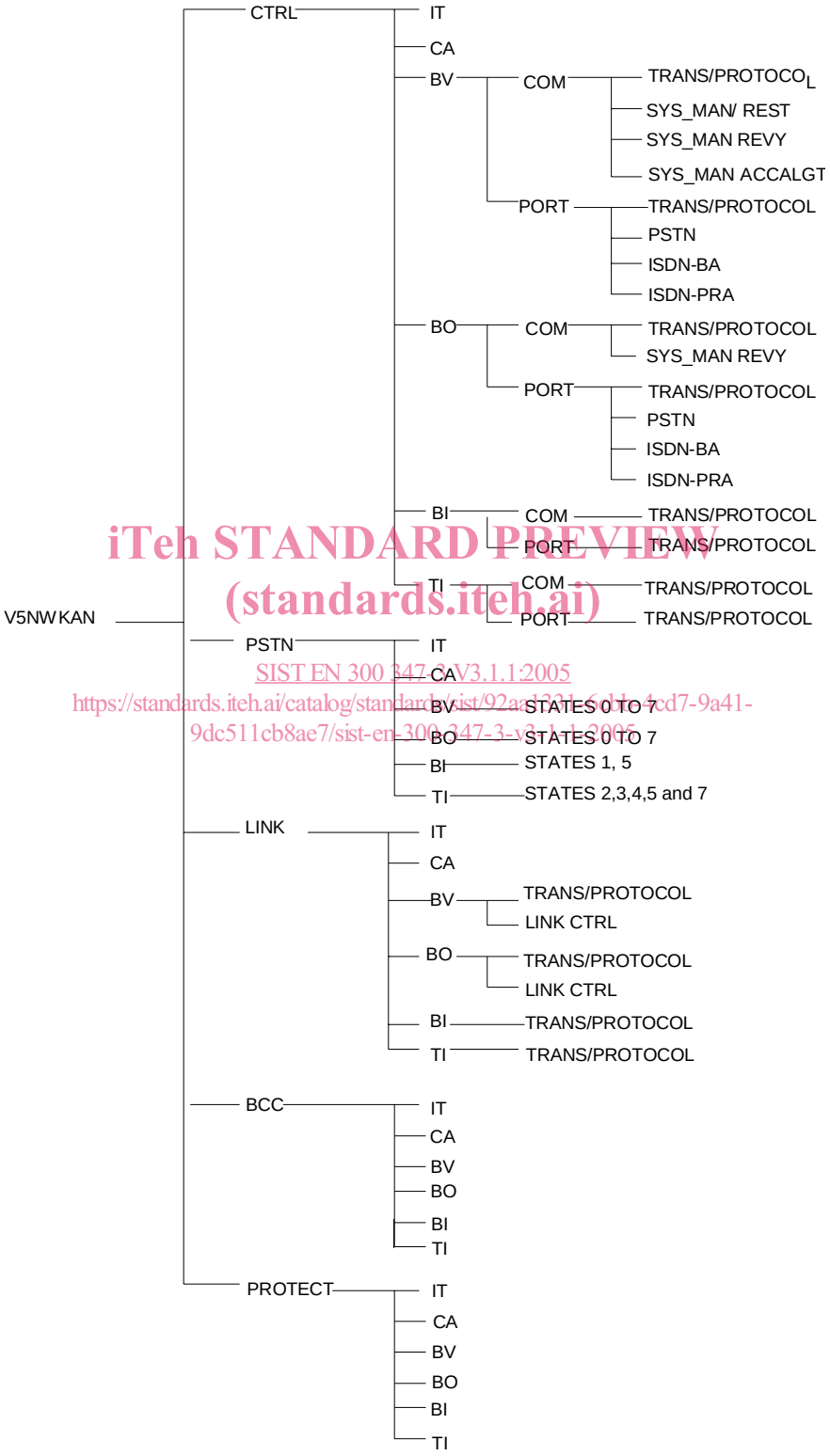

Figure 1: NWK AN test suite structure

4.2 Test groups

Figure 2 gives an overview of the various protocol entities of a V5.2 interface. Table 1 maps each protocol entity on tested protocol groups.

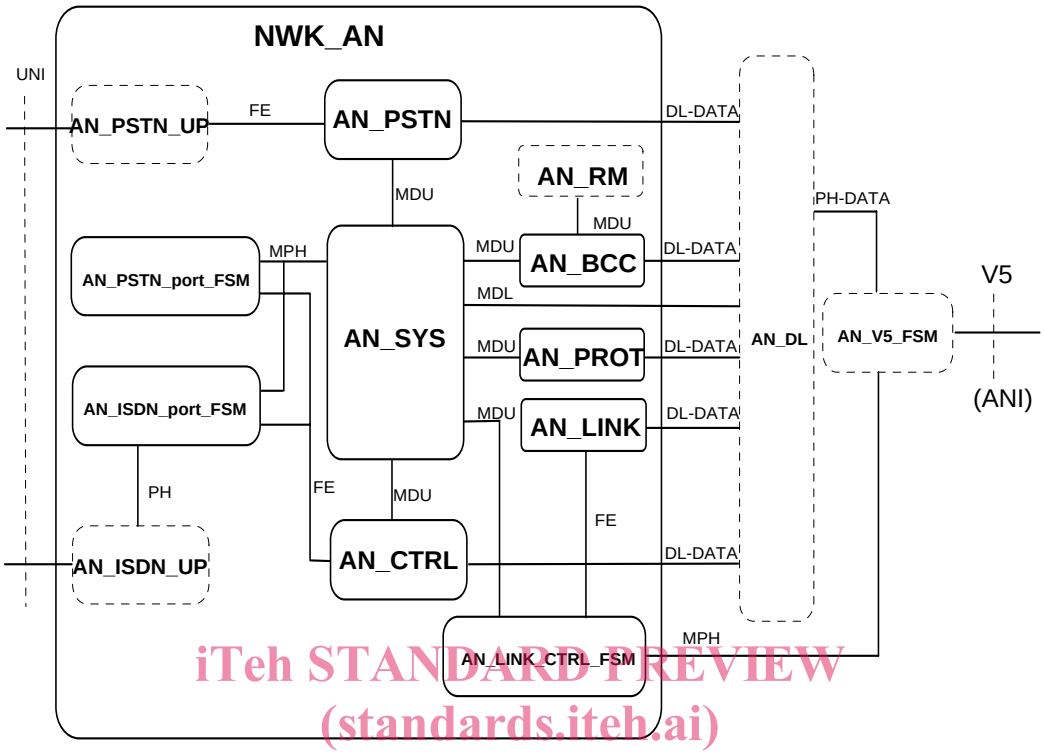

Figure 2: NWK AN - protocol entity overview

Table 1: Names used in figure 2 that correspond to EN 300 347-1 [2]

Network layer protocol entity	Protocol entity defined in EN 300 347-1 [2]	Protocol group reference
AN_PSTN_UP	AN_PSTN_user_port	4.2.1.1
AN_PSTN_port_FSM	AN_PSTN_user_port_FSM	4.2.1.1
AN_ISDN_port_FSM	AN_ISDN_BA_user_port_FSM AN_ISDN_PRA_user_port_FSM	4.2.1.1
AN_ISDN_UP	AN_ISDN_BA_user_port AN_ISDN_PRA_user_port	4.2.1.1
AN_CTRL	AN_control_protocol	4.2.1.1
AN_SYS	AN_system_management	4.2.1.1
AN_PSTN	AN_PSTN_protocol	4.2.1.2
AN_LINK	AN_link_control_protocol	4.2.1.3
AN_LINK_CTRL_FSM	AN_link_control_FSM	4.2.1.3
AN_RM	AN_rescource_manager	4.2.1.4
AN_BCC	AN_BCC_protocol	4.2.1.4
AN_PROT	AN_protection_protocol	4.2.1.5

4.2.1 Protocol groups

4.2.1.1 Control protocol

The contents of this clause are identical to clause 4.2.1.1 of ETS 300 324-3 [1] with the following additions for the ISDN-PRA user port Finite State Machine (FSM).

Depending on provisioning the following configuration is tested:

AN_ISDN-PRA_user_port: The blocking, blocking request and co-ordinated unblocking procedures of the AN_ISDN-PRA_user_port_FSM are verified in the test group V5NWKAN/CTRL/BV/PORT/ISDNPRA and V5NWKAN/CTRL/BO/PORT/ISDNPRA.

4.2.1.2 Public Switched Telephone Network (PSTN) protocol

The contents of this clause are identical to clause 4.2.1.2 of ETS 300 324-3 [1].

4.2.1.3 Link control protocol

All tests in the Link control protocol (V5NWKAN/LINK) test group are intended to verify as thoroughly as possible the various procedures of the AN_link_control_protocol entity.

Depending on provisioning the following configurations are covered:

AN_link_control_protocol: The normal and exceptional procedures of the AN_link_control_protocol are verified in the test groups V5NWKAN/LINK/BV/TRANS, V5NWKAN/LINK/BO/TRANS and V5NWKAN/LINK/TI/TRANS. The error handling procedures are verified in the test group V5NWKAN/LINK/BI/TRANS.

AN_link_control_FSM: The link blocking, link blocking request, co-ordinated link unblocking and link identification procedures of the AN_link_control_FSM are verified in the test groups V5NWKAN/LINK/BV/LINK and V5NWKAN/LINK/BO/LINK.

4.2.1.4 Bearer Channel Connection (BCC) protocol

All tests in the BCC protocol (V5NWKAN/BCC) test group are intended to verify as thoroughly as possible the various procedures of the AN_BCC protocol entity.

The following BCC procedures are covered:

- normal and exceptional bearer channel allocation procedure;
- normal and exceptional bearer channel de-allocation procedure;
- audit procedure;
- AN internal failure notification procedure;
- error handling procedures.

4.2.1.5 Protection protocol

All tests in the Protection protocol (V5NWKAN/PROTECT) test group are intended to verify as thoroughly as possible the various procedures of the AN Protection protocol entity.

The following Protection protocol procedures are covered:

- transmission of Protection protocol messages;
- normal and exceptional sequence number reset procedure;
- normal and exceptional standard protection switch-over procedure initiated by AN side;

- normal and exceptional dedicated protection switch-over procedure initiated by OS AN;
- normal and exceptional switch-over procedure requested by AN side;
- error handling procedures.

4.2.2 Main test groups

4.2.2.1 Basic Interconnection tests (IT)

The contents of this clause are identical to clause 4.2.2.1 of ETS 300 324-3 [1].

4.2.2.2 Capability tests (CA)

The contents of this clause are identical to clause 4.2.2.2 of ETS 300 324-3 [1].

4.2.2.3 Valid Behaviour tests (BV)

The contents of this clause are identical to clause 4.2.2.3 of ETS 300 324-3 [1].

4.2.2.4 Inopportune Behaviour tests (BO)

The contents of this clause are identical to clause 4.2.2.4 of ETS 300 324-3 [1].

4.2.2.5 Invalid Behaviour tests (BI)

The contents of this clause are identical to clause 4.2.2.5 of ETS 300 324-3 [1].

4.2.2.6 Timer expiry and counter mismatch tests (TI)

The contents of this clause are identical to clause 4.2.2.6 of ETS 300 324-3 [1].

4.2.2.6.1 Timers and counters of the Control protocol

The contents of this clause are identical to clause 4.2.2.6.1 of ETS 300 324-3 [1] the addition for the accelerated alignment procedure. Additional timers are given in EN 300 347-1 [2], annex C, table C.1.

TU1A MDU-CTRL(UNBLOCK ALL RELEVANT PSTN AND ISDN PORTS REQUEST) to all PSTN and ISDN user port FSMs

TU2A MDU-CTRL(UNBLOCK ALL RELEVANT PSTN AND ISDN PORTS COMPLETED) to all PSTN and ISDN user port FSMs

TU1B MDU-CTRL(UNBLOCK ALL RELEVANT PSTN PORTS REQUEST) to all PSTN user port FSMs

TU2B MDU-CTRL(UNBLOCK ALL RELEVANT PSTN PORTS COMPLETED) to all PSTN user port FSMs

TU1C MDU-CTRL(UNBLOCK ALL RELEVANT ISDN PORTS REQUEST) to all ISDN user port FSMs

TU2C MDU-CTRL(UNBLOCK ALL RELEVANT ISDN PORTS COMPLETED) to all ISDN user port FSMs

TU1D MDU-CTRL(BLOCK ALL PSTN PORTS REQUEST) to all PSTN user port FSMs

TU2D MDU-CTRL(BLOCK ALL PSTN PORTS COMPLETED) to all PSTN user port FSMs

TU1E MDU-CTRL(BLOCK ALL ISDN PORTS REQUEST) to all ISDN user port FSMs

TU2E MDU-CTRL(BLOCK ALL ISDN PORTS COMPLETED) to all ISDN user port FSMs

4.2.2.6.2 Timers and counters of the PSTN protocol

The contents of this clause are identical to clause 4.2.2.6.2 of ETS 300 324-3 [1].

4.2.2.6.3 Timers and counters of the Link control protocol

Refer to EN 300 347-1 [2], table 23.

LCTO1 LINK CONTROL message sent

4.2.2.6.4 Timers and counters of the BCC protocol

Refer to EN 300 347-1 [2], table 46.

TBCC5 AN fault sent

4.2.2.6.5 Timers and counters of the Protection protocol

Refer to EN 300 347-1 [2], table 64.

TSO3 SWITCH-OVER REQ sent

TSO4 RESET SN COM sent

TSO5 RESET SN COM received

Refer to EN 300 347-1 [2], clause 18.6.2.

VP(S) Send State Variable

VP(R) Receive State Variable

4.2.2.6.6 Timers and counters of the AN system management

Refer to EN 300 347-1 [2], annex C, table C.1.

TR1 MDU-CTRL(restart request) to all PSTN protocol FSMs

TR2 MDU-CTRL(restart request) to or from CTRL protocol

TC1 MDL-RELEASE-INDICATION from CONTROL-DL

TC2 Expiry of TC1

TC3 MDL-RELEASE-INDICATION from PSTN-DL

TC4 MDL-RELEASE-INDICATION from LINK_CONTROL-DL

TC5 Expiry of TC4

TC6 MDL-RELEASE-INDICATION from BCC-DL

TC7 Expiry of TC6

TC8 Expiry of TC2, TC5 or TC7

TC9 Cold restart of V5 interface

TC10 First MDL-ESTABLISH-CONFIRM or MDL-ESTABLISH-INDICATION from the first of all V5.2 Data links startup