SLOVENSKI STANDARD
SIST ETS 300 324-5:1997

01-november-1997

Signalizacijski protokoli in komutacija (SPS) - Vmesniki "V" pri digitalnih krajevnih centralah (LE) - Vmesnik V5.1 za podporo dostopovnega omrežja (AN) - 5. del: Zgradba preskušalnega niza in namen preskušanja (TSS&TP) za omrežno plast na strani krajevne centrale (LE)

Signalling Protocols and Switching (SPS) - V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 5: Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (LE side)

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Ta slovenski standard je istoveten z: **ETS 300 324-5 Edition 1**

ICS:

33.040.30	Komutacijski in signalizacijski sistem	Switching and signalling systems
35.100.30	Omrežni sloj	Network layer

SIST ETS 300 324-5:1997 **en**

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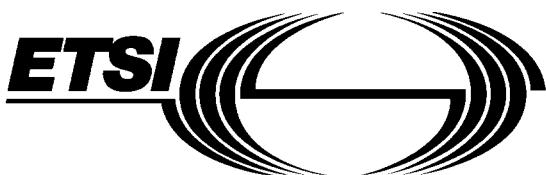
EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 324-5

October 1995

Source: ETSI TC-SPS

Reference: DE/SPS-03003.3-2

ICS: 33.020, 33.080, 35.100.30

Key words: V interface, V5 interface, PSTN, ISDN, LE, TSS&TP, testing, layer 3

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

Part 6:   "ATS and partial PIXIT proforma specification for the network layer (LE side)";

Part 7:   "TSS&TP specification for the data link layer";

Part 8:   "ATS and partial PIXIT proforma specification for the data link layer";

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

Transposition dates	
Date of adoption of this ETS:	27 October 1995
Date of latest announcement of this ETS (doa):	31 January 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 July 1996
Date of withdrawal of any conflicting National Standard (dow):	31 July 1996

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1   Scope

This fifth part of ETS 300 324 contains the Test Suite Structure (TSS) and Test Purposes (TPs) for the Network layer (NWK) and parts of the system management of the Local Exchange (LE) side of a V5.1 interface.

The objective of this ETS is to provide conformance tests giving a high probability of inter-operability of an Access Network (AN) and a LE from different manufacturers over the V5.1 interface. This ETS covers the procedures described in ETS 300 324-1 [1] only.

ISO/IEC 9646-1 [4] is used as the basis for the methodology of conformance testing.

Concerning the Public Switched Telephone Network (PSTN) protocol testing, only the procedures defined in ETS 300 324-1 [1] are covered by the tests defined in this ETS. An Implementation Under Test (IUT), however, will have implemented a national PSTN protocol part as well. This requires that the tester generates messages containing the national PSTN protocol specific optional Information Elements (IEs), otherwise the IUT would not act on messages according to the PSTN protocol procedure definition. However, this does not provide a comprehensive test of the national PSTN protocol mapping specification, which is outside the scope of this ETS.

As the tests use PSTN messages containing optional IEs according to national specifications, the test result is only valid for the implemented national mapping of the V5.1 PSTN protocol.

This ETS does not cover tests related to functions of the bearer channel. Those functions should be tested in conjunction with testing the national PSTN protocol mapping specification.

This ETS contains no requirements concerning NWK tests for Integrated Services Digital Network Basic Access (ISDN-BA).

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Annex A lists the bibliography. (standards.iteh.ai)

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: "Signalling Protocols and Switching (SPS), 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): "Signalling Protocols and Switching (SPS), 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]   ISO 7498: "Information Processing Systems - Open Systems Interconnection - Basic Reference Model".

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

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 [4].

Abstract Test Suite (ATS): Refer to ISO/IEC 9646-1 [4].

current provisioning variant: Identifier for the presently active data set.

data link layer: Refer to ISO 7498 [3].

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1 [4].

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

invalid IE: PSTN IE not according to national specific requirements.

Invalid Protocol Data Unit (PDU): 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 [4].

Network Layer (NWK): Refer to ISO 7498 [3].

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new provisioning variant: Identifier for the data set which was announced to the IUT to become the next active data set through reprovisioning.

physical layer: Refer to ISO 7498 [3].

Protocol Implementation Conformance Statement (PICS): Refer to ISO/IEC 9646-1 [4].

PICS proforma: Refer to ISO/IEC 9646-1 [4].

specified IE: IE identifier defined in ETS 300 324-1 [1].

System Under Test (SUT): Refer to ISO/IEC 9646-1 [4].

Test Purpose (TP): Refer to ISO/IEC 9646-1 [4].

unknown provisioning variant: Identifier for a non-available data set.

unspecified IE: IE identifier not defined in ETS 300 324-1 [1].

valid IE: 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
ATS	Abstract Test Suite
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
IT	Basic Interconnection
IUT	Implementation Under Test
L3addr	Layer 3 address
LE	Local Exchange
LT	Lower Tester
MDU	Management Data Unit
MPH	Management Physical Layer
NWK	Network Layer
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statements
PSTN	Public Switched Telephone Network
REST	Restart
REVY	Verify and Reprovisioning
SUT	System Under Test
TI	Timer
TP	Test Purpose
TSS	Test Suite Structure

4 Test Suite Structure (TSS)

4.1 TSS overview

Figure 1 shows the structure of the V5.1 LE side NWK test suite.
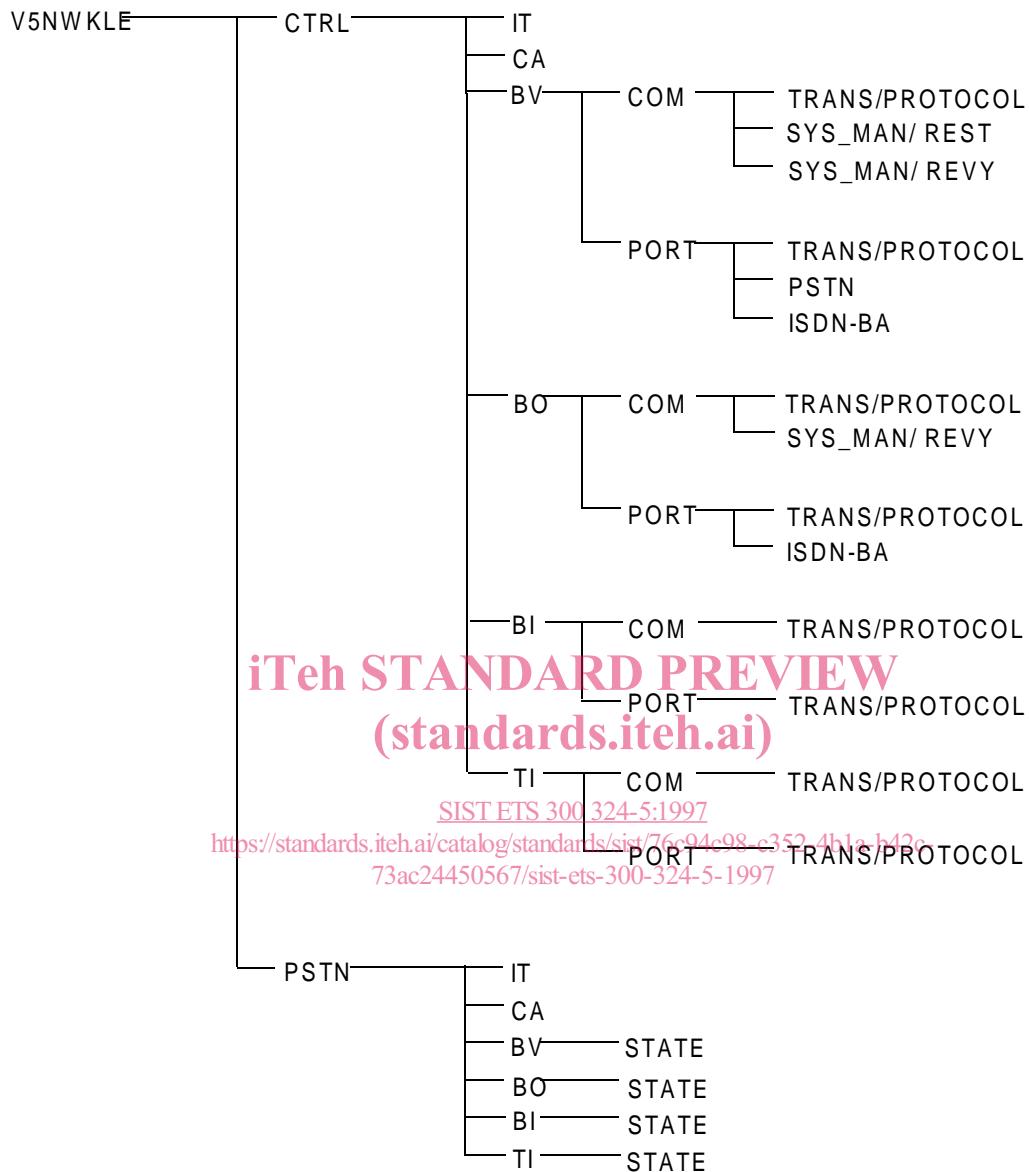
Figure 1: NWK LE TSS

4.2 Test groups

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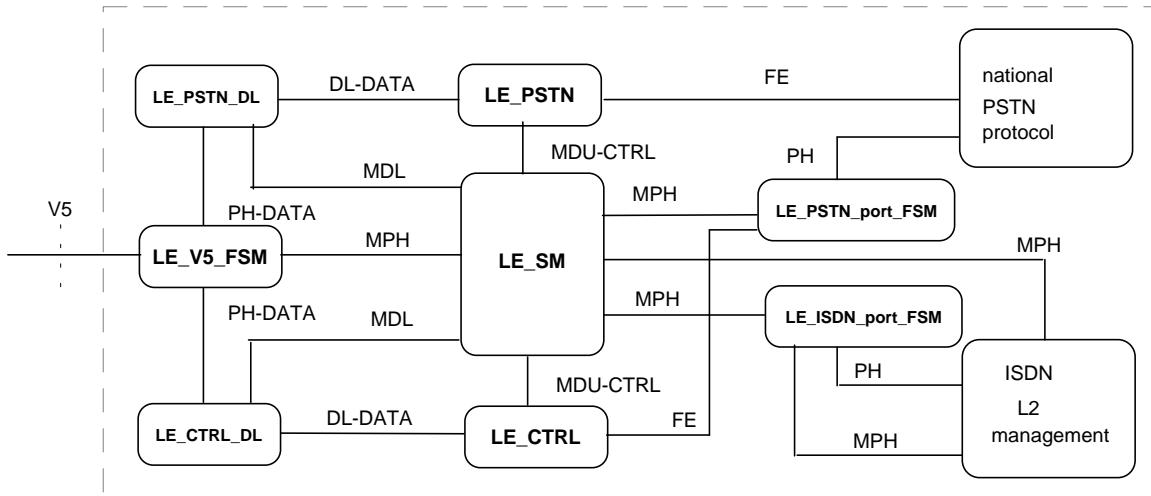

Figure 2: Network Layer LE - protocol entity overview

Table 1: Names used in figure 2 that correspond to ETS 300 324-1 [1]

NWK protocol entities	Protocol entities defined in ETS 300 324-1 [1]	Protocol group references
LE_PSTN_port_FSM	LE_PSTN_user_port_FSM	4.2.1.1
LE_ISDN_port_FSM	LE_ISDN-BA_user_port_FSM	4.2.1.1
LE_CTRL	LE_control_protocol	4.2.1.1
LE_SYS	LE_system_management	4.2.1.1
LE_PSTN	LE_PSTN_protocol	4.2.1.2

4.2.1 Protocol groups

4.2.1.1 Control protocol

All tests in the Control protocol (V5NWKLE/CTRL) test group are intended to verify as thoroughly as possible the various procedures of the LE_control_protocol entity. Depending on provisioning the following configurations are covered:

LE_system_management: the startup, restart, re-provisioning and verification procedures for normal operation of the LE_system_management (V5NWKLE/CTRL/BV/COM/REST, V5NWKLE/CTRL/ BV/COM/REVY and V5NWKLE/CTRL/BO/COM/REVY) are tested.

LE_control_protocol: the normal and exceptional procedures of the LE_control_protocol are verified in the test groups V5NWKLE/CTRL/BV/COM/TRANS, V5NWKLE/CTRL/BO/COM/TRANS, V5NWKLE/CTRL/TI/COM/TRANS, V5NWKLE/CTRL/BV/PORT/TRANS, V5NWKLE/CTRL/BO/ PORT/TRANS and V5NWKLE/CTRL/TI/PORT/TRANS. Contents of the LE_control_protocol values are not verified (e.g. the control function ID). The error handling procedures are verified in test groups V5NWLKE/CTRL/BI/COM/TRANS and V5NWLKE/CTRL/BI/PORT/TRANS.

LE_PSTN_user_port: the blocking, blocking request and co-ordinated unblocking procedures of the LE_PSTN_user_port_FSM are verified in the test group V5NWKLE/CTRL/BV/PORT/PSTN. The interworking of the LE_PSTN_user_port_FSM and the LE_PSTN protocol entity is tested via the LE_system_management.