SLOVENSKI STANDARD
SIST EN 301 144-4 V1.1.4:2005

01-januar-2005

Digitalno omrežje z integriranimi storitvami (ISDN) - Protokola digitalne naročniške signalizacije št. 1 (DSS1) in signalizacije št. 7 (SS7) - Aplikacija signalizacije za storitev upravljanja mobilnosti v vmesniku alfa - 4. del: Abstraktni preskusni niz (ATS) in delna dodatna informacija za preskušanje izvedbe protokola (PIXIT) - Proforma specifikacije za uporabnika

Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 protocols; Signalling application for the mobility management service on the alpha interface; Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user

Ta slovenski standard je istoveten z: **EN 301 144-4 Version 1.1.4**

ICS:

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)

SIST EN 301 144-4 V1.1.4:2005 **en**

ETSI EN 301 144-4 V1.1.4 (2000-05)

European Standard (Telecommunications series)

Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 protocols; Signalling application for the mobility management service on the alpha interface; Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user

Reference
DEN/SPS-05121-4

Keywords
ATS, CTM, DSS1, ISDN, PIXIT, SS7, user

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 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 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 EN covering the Integrated Services Digital Network (ISDN) Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocols; Signalling application for the mobility management service on the alpha interface as identified below:

Part 1: "Protocol specification";

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

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";

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

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

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

National transposition dates	
Date of adoption of this EN:	5 May 2000
Date of latest announcement of this EN (doa):	31 August 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	28 February 2001
Date of withdrawal of any conflicting National Standard (dow):	28 February 2001

1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the user of the Signalling application for the mobility management service on the alpha interface. It is applicable to all types of exchanges as defined in the reference specification.

EN 301 144-3 [7] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this protocol. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the Network side for implementations conforming to EN 301 144-1 [1].

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 301 144-1(V1.1): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7); Signalling application for the mobility management service on the alpha interface; Part 1: Protocol specification".

[2] ETSI EN 300 196-1 (V1.2): "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[3] ISO/IEC 9646: "Information technology - Open Systems Interconnection - Conformance Testing Methodology and Framework" (all parts).

[4] ETSI TR 101 101 (V1.1): "Methods for Testing and Specification (MTS); TTCN interim version including ASN.1 1994 support [ISO/IEC 9646-3] (Second Edition Mock-up for JTC1/SC21 Review)".

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

[6] ETSI ETS 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[7] ETSI EN 301 144-3: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 protocols; Signalling application for the mobility management service on the alpha interface; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user".

[8] ISO/IEC 9646-3 / AM2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".

[9] ISO/IEC 8825-1: "Information technology - Encoding Rules for Abstract Syntax Notation One (ASN.1) - Part 1: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)" (See also ITU-T Recommendation X.690 : 1994.)".

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

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ISO/IEC 9646 [3] apply.

3.2 Abbreviations

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

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BER	Basic Encoding Rules
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SUT	System Under Test
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester

4 Abstract Test Method (ATM)

The remote test method is applied for this user Abstract Test Suite (ATS).

A Point of Control and Observation (PCO) resides at the service access point between layers 2 and 3 in the test system. This PCO is named "L" (for Lower). The L PCO is used to control and observe the behaviour of the Implementation Under Test (IUT) and test case verdicts are assigned depending on the behaviour observed at this PCO.

A second "informal" PCO, called "O" (for Operator) is used to specify control but not observation above the IUT; events at this PCO are never used to generate test case verdicts. Messages sent by the tester at this PCO explicitly indicate to the operator actions which are to be performed on the System Under Test (SUT). This is regarded as a preferred alternative to the use of the implicit send event.

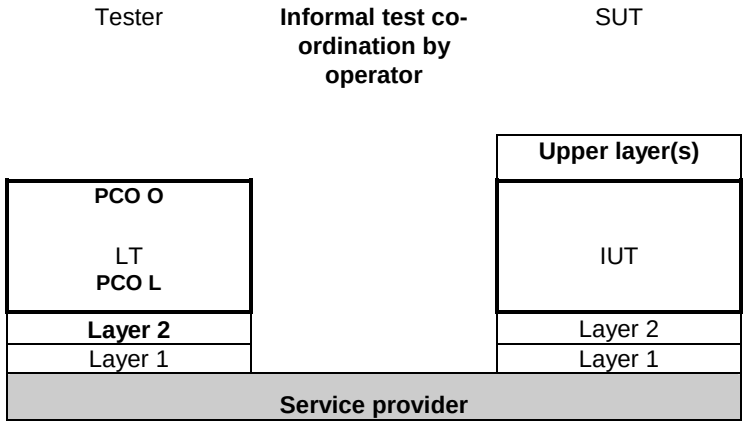

Figure 1: Remote test method with PCO O for test co-ordination

5 Untestable test purposes

There are no untestable test purposes associated with this ATS.

6 ATS conventions

6.1 Version of TTCN used

The version of TTCN used is that defined in TR 101 101 [4].

6.2 Naming conventions

6.2.1 Declarations part

Subclause 6.2.1 describes the naming conventions chosen for the elements of the ATS declarations part.

6.2.1.1 Test suite type and structured type definitions

The test suite type and test suite structured type identifiers are written in lowercase starting by an uppercase letter or completely in upper case letters.

6.2.1.2 Test suite operations definitions

The test suite operation identifiers are composed of strings in uppercase and lowercase letters starting by the string "TSO_".

EXAMPLE: TSO_CalcFieLength

6.2.1.3 Test suite parameter declarations

The test suite parameter identifiers are composed of strings in uppercase and lowercase letters starting by the uppercase string "PC_" for a PICS or "PX_" for a PIXIT.

6.2.1.4 Test case selection expression definitions

The naming conventions for the test case selection expression definitions use free text starting with the string : "TCSE_". The name of the expression shall explain clearly the selection rule. The test case selection expressions are generally logical combinations of the test suite parameter definitions.

6.2.1.5 Test suite constant declarations

The test suite constant identifiers are composed of strings in uppercase and lower letters starting by the uppercase string "TSC_".

6.2.1.6 Test suite variable declarations

The test suite variable identifiers are composed of string in lowercase letters starting by the lowercase string "tsv_".

6.2.1.7 Test case variable declarations

The test case variable identifiers are composed of strings in lowercase letters starting by the lowercase string "tcv_".

6.2.1.8 PCO declarations

The point of control and observation identifiers are composed of three to six capital letters, beginning with an "L", as there are only LTs.

6.2.1.9 Timer declarations

The timer names begin with the prefix "T_", followed by a string in lowercase or uppercase letters with each word in the following string starting with an uppercase letter.

6.2.1.10 ASP type definitions

The ASP types were defined in uppercase letters.

6.2.1.11 PDU type definitions

The type of a Protocol Data Unit (PDU) is given in uppercase letters.

6.2.2 Constraints part

Subclause 6.2.2 describes the naming conventions chosen for the elements of the ATS constraints part.

6.2.2.1 Structured type constraint

Structured Type constraint identifier begin with an uppercase letter followed by uppercase and lowercase letters. The meaning of the identifier represent the contents of the structured type constraint.

6.2.2.2 PDU constraint

Constraint identifier begin with the type of the PDU written in uppercase. The remaining part of the name is separated from the beginning with an underscore and is written in lowercase with each word starting with an uppercase letter.

The prefix _S or _R shall be added at the end of the identifier to indicate if the constraint is sent or received by the tester.

6.2.3 Dynamic part

Subclause 6.2.3 describes the naming conventions chosen for the elements of the ATS dynamic part.

6.2.3.1 Test step identifier

The test step identifier is built with a string of lowercase letters leaded by a string of capital letter and joined by an underscore character. The first string indicates the main function of the test step; e.g. PRE for preamble, PST for postamble and STP for a normal step. The second string indicates the meaning of the step.

EXAMPLES: PRE_Name;

PST_Name;

STP_Name.

6.3 Use of ASN.1

6.3.1 Situations where ASN.1 is used

ASN.1 has been used for three major reasons. First, types defined in ASN.1 can model problems that "pure" TTCN cannot. For instance, data structures modelling ordered or unordered sequences of data are preferably defined in ASN.1. Second, ASN.1 provides a better restriction mechanism for type definitions by using sub-type definitions. Third, it is necessary to use ASN.1 to reproduce the type definitions for remote operation components specified in the base standards in ASN.1.

The possibility to use TTCN and ASN.1 in combination is used, i.e. referring to an ASN.1 type from a TTCN type.

6.3.2 Specification of encoding rules

There is a variation in the encoding rules applied to ASN.1 types and constraints specified in this ATS and therefore a mechanism is needed to differentiate the encoding rules. However the mechanism specified in ISO/IEC 9646-3 [8]/AM2 and in TR 101 101 [4] does not facilitate definition of the encoding rules as needed for this ATS. A solution is therefore used which is broadly in the spirit of ISO/IEC 9646-3 [8]/AM2 in which comment fields have been used as a means of encoding rules.

For ASN.1 used in this ATS, two variations of encoding rules are used. One is the commonly known Basic Encoding Rules (BER) as specified in ISO/IEC 8825-1 [9], the second one is the encoding that correspond to the specification, i.e. the ASN.1 data types are a representation of structures contained within the specification. For example, if octets of an information element are specified in ASN.1 as a SEQUENCE then this should be encoded in an Executable Test Suite (ETS) as any other information element specified using tabular TTCN. This encoding variation is the default encoding rule for this ATS. This means that all ASN.1 constraint tables are encoded using this second (non-BER) encoding unless stated otherwise. BER encoding shall not be applied to an ASN.1 constraint where BER encoding has not been specified. This encoding rule is sometimes named "Direct Encoding".

For BER encoding, an indication is given in the comments field of the table header and in the encoding variation field.

Note that within BER, there are a number of variations for the encoding of lengths of fields. According to EN 300 196-1 [2], an IUT should be able to interpret all length forms within BER for received PDUs. When sending PDUs containing BER encoding, EN 300 196-1 [2] gives guidelines but makes no restrictions on the length forms within BER which an IUT may apply.

In this particular ATS all ASN.1 type constraints which are of type "Component" are to be encoded using BER.