



SLOVENSKI STANDARD
SIST EN 302 094-4 V1.1.1:2005
01-januar-2005

8 [[]HJbc`ca fYy`n]bhY[f]fUb]a]gfcf]hj Ua]fG8 BŁĚ Dfcfc_c`UX[[]HJbY
bUfc b]ý_Yg[[bU]nUWY`ýH`%f8 GG%Ł]b`g[[bU]nUWY`ýH`+`Ě 8 cdc`b] bUgfcf]Hj .
dcXUU`_]WŁĚ_c`b]XcgY[`]j cgj]f7 : BF WŁnUa cV]bcghVfYnj fj] bY[UHfya]bUU
f7 HA ŁĚZnU`%Ě ("XY. 5 VgfU`fb]dfYg_i ýUb]b]n`f5 HGŁ]b`XYbUXcXUfbU
]bŁfa UWY`UnUdfYg_i ýUb`Y]nj YXVY`dfcfc_c`UfDŁ+ŁĚ DfcŁfa UgdYWZ]_UWY`UnU
i dcfUVb]_U

Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocols; Call Forwarding on Not Reachable (CFNRc) supplementary service for Cordless Terminal Mobility (CTM) phase 1; Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user

<https://standards.itih.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55092cf0a241/sist-en-302-094-4-v1-1-1-2005>

Ta slovenski standard je istoveten z: EN 302 094-4 Version 1.1.1

ICS:

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

SIST EN 302 094-4 V1.1.1:2005 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 302 094-4 V1.1.1:2005

<https://standards.iteh.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55092cf0a241/sist-en-302-094-4-v1-1-1-2005>

ETSI EN 302 094-4 V1.1.1 (2002-02)

European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Digital Subscriber Signalling System No. one (DSS1) and
Signalling System No.7 (SS7) protocols;
Call Forwarding on Not Reachable (CFNRc)
supplementary service for
Cordless Terminal Mobility (CTM) phase 1;
Part 4: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)
proforma specification for the user**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 302 094-4 V1.1.1:2005](https://standards.iteh.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55092cf0a241/sist-en-302-094-4-v1-1-1-2005)

<https://standards.iteh.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55092cf0a241/sist-en-302-094-4-v1-1-1-2005>



Reference

DEN/SPAN-130222-4

KeywordsATS, CF, CTM, ISDN, PIXIT, supplementary
service, testing, 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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 302 094-4 V1.1.1:2005<https://standards.iteh.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55092cf0a241/sist-en-302-094-4-v1-1-1-2005>

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://portal.etsi.org/tb/status/status.asp>

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 2002.
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 (ATM).....	8
5 Untestable test purposes	8
6 ATS conventions	8
6.1 Version of TTCN used	8
6.2 Use of ASN.1	8
6.2.1 Situations where ASN.1 is used.....	8
6.2.2 Specification of encoding rules.....	9
7 ATS to TP map.....	9
8 PCTR conformance	10
9 PIXIT conformance	10
10 ATS conformance	10
Annex A (normative): Protocol Conformance Test Report (PCTR) proforma.....	11
A.1 Identification summary.....	11
A.1.1 Protocol conformance test report.....	11
A.1.2 IUT identification.....	11
A.1.3 Testing environment.....	11
A.1.4 Limits and reservations	12
A.1.5 Comments.....	12
A.2 IUT conformance status	12
A.3 Static conformance summary	12
A.4 Dynamic conformance summary.....	12
A.5 Static conformance review report.....	13
A.6 Test campaign report.....	13
A.7 Observations.....	14
Annex B (normative): Partial PIXIT proforma	15
B.1 Identification summary.....	15
B.2 Abstract test suite summary	15
B.3 Test laboratory.....	15
B.4 Client (of the test laboratory)	16
B.5 System Under Test (SUT)	16
B.6 Protocol information.....	17
B.6.1 Protocol identification	17
B.6.2 Basic call parameter values	17

B.6.3	Actions required by IUT.....	17
B.6.4	Timer values.....	18
B.6.5	CFNRc Parameter values - information element codings	18
Annex C (normative):	Abstract Test Suite (ATS)	19
C.1	The TTCN Graphical form (TTCN.GR)	19
C.2	The TTCN Machine Processable form (TTCN.MP).....	19
Annex D (informative):	Bibliography.....	20
History		21

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 302 094-4 V1.1.1:2005](https://standards.iteh.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55092cf0a241/sist-en-302-094-4-v1-1-1-2005)

<https://standards.iteh.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55092cf0a241/sist-en-302-094-4-v1-1-1-2005>

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://webapp.etsi.org/IPR/home.asp>).

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 Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No. 7 (SS7) protocols for the Call Forwarding on Not Reachable supplementary service for Cordless Terminal Mobility (CTM) phase 1, 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:	15 February 2002
Date of latest announcement of this EN (doa):	31 May 2002
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2002
Date of withdrawal of any conflicting National Standard (dow):	30 November 2002

1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the User side of Implementations conforming to the stage three standard for the Call Forwarding on Not Reachable (CFNRc) supplementary services for the signalling application for the mobility management service phase 1 protocol, EN 302 094-1 [1].

EN 302 094-3 [3] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the Network side of implementations conforming to EN 302 094-1 [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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] ETSI EN 302 094-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocols; Call Forwarding on Not Reachable (CFNRc) supplementary service for Cordless Terminal Mobility (CTM) phase 1; Part 1: Protocol specification".
- [2] ETSI EN 302 094-2: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocols; Call Forwarding on Not Reachable (CFNRc) supplementary service for Cordless Terminal Mobility (CTM) phase 1; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [3] ETSI EN 302 094-3: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocols; Call Forwarding on Not Reachable (CFNRc) supplementary service for Cordless Terminal Mobility (CTM) phase 1; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user".
- [4] ETSI EN 301 144-1: "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; Part 1: Protocol specification".
- [5] ETSI EN 300 196-1: "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".
- [6] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [7] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
- [8] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [9] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".
- [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] ITU-T Recommendation X.209: "Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Abstract test case: Refer to ISO/IEC 9646-1 [6].

Abstract Test Suite (ATS): Refer to ISO/IEC 9646-1 [6].

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1 [6].

Implicit send event: Refer to ISO/IEC 9646-3 [8].

Lower tester: Refer to ISO/IEC 9646-1 [6].

Protocol Implementation Conformance Statement (PICS): Refer to ISO/IEC 9646-1 [6].

PICS proforma: Refer to ISO/IEC 9646-1 [6].

Protocol Implementation eXtra Information for Testing (PIXIT): Refer to ISO/IEC 9646-1 [6].

Test Purpose (TP): Refer to ISO/IEC 9646-1 [6].

3.2 Abbreviations (standards.iteh.ai)

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

ASN.1	Abstract Syntax Notation one
ATM	Abstract Test Method
ATS	Abstract Test Suite
BER	Basic Encoding Rules
CFNRc	Call Forwarding on Not Reachable
CTM	Cordless Terminal Mobility
ExTS	Executable Test Suite
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
PCO	Point of Control and Observation
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SUT	System Under Test
TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation

4 Abstract Test Method (ATM)

The remote test method is applied for the CFNRc user ATS. A Point of Control and Observation (PCO) resides at the service access point between layers 2 and 3. 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 SUT. This is regarded as a preferred alternative to the use of the implicit send event.

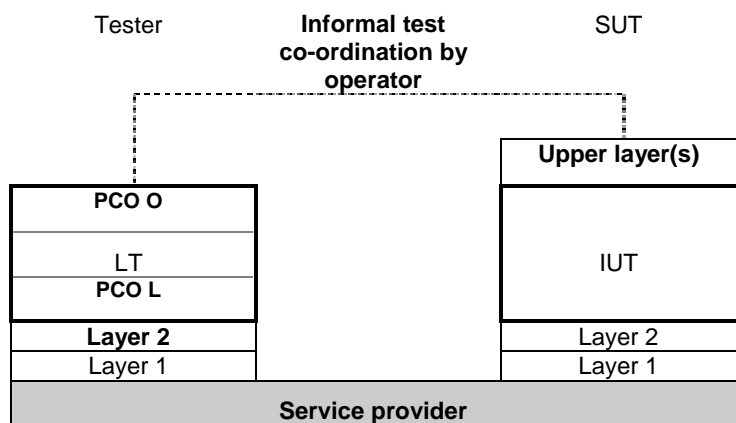


Figure 1: Remote test method with PCO O for test co-ordination
(standards.iteh.ai)

5 Untestable test purposes

<https://standards.iteh.ai/catalog/standards/sist/4316fc70-2f92-4293-b591-55003e023d11/sist-094-4-v1-1-1-2005>

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 ISO/IEC 9646-3 [8].

6.2 Use of ASN.1

6.2.1 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 as specified in the base standards.

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

6.2.2 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] 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] 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 ITU-T Recommendation X.209 [11]. In the second case the encoding is according to ISDN, i.e. the ASN.1 data types are a representation of structures contained within the ISDN specification (basic call, Generic functional protocol or individual supplementary service). 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 (ExTS) as any other ISDN information element specified using tabular TTCN. This ISDN encoding variation is the default encoding rule for this ATS. This means that all ASN.1 constraint tables are encoded using ISDN (non-BER) encoding unless stated otherwise. BER encoding should never be applied to an ASN.1 constraint where BER encoding has not been specified.

For BER encoding, an indication is given in the comments field of the table header. For this ATS such indications appear in the ASN.1 type constraint declaration tables only. In the first line of the table header comment field, the notation "ASN1_Encoding: *BER*" is used.

Note that within BER, there are a number of variations for the encoding of lengths of fields. According to EN 300 196-1 [5], 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 [5] 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.

Table 1: ASN.1 type constraint declaration showing use of encoding variation

ASN.1 Type Constraint Declaration	
Constraint Name	: EncapsulatedStimulus_Invoke_R
ASN.1 Type	: Component
Derivation Path	: SIST EN 302 094-4 V1.1.1:2005
Comments	: ASN1_Encoding:BER Receive component: encapsulatedStimulus invoke component
Description	
encapsulatedStimulus_Components encapsulatedStimulus_InvokeCpt { invokeID ?, operation_value TSC_EncapsulatedStimulus, argument ? }	
Detailed comments:	

7 ATS to TP map

The identifiers used for the TPs are reused as test case names. Thus there is a straightforward one-to-one mapping.