
Ja Ygb]_J`X][]HbY[Ugkcf]lj YbY[Uj cn`ý UfGBŁ!`Ja Ygb]_]`bUfYZYfYb b]`hc _]
J6) "&nUdcXdcfc`ý]fc_cdUgcj b]a `U]`_ca V]b]fUb]a `cn_cdUgcj b]a `]b
ý]fc_cdUgcj b]a `Xcglcdcj b]a `ca fYy`Ya `f5 BŁ!" "XY. `N[fUXVUdfYg_i ýYj UbY[U
b]nU]b`bUa Yb]`dfYg_i ýUb`U`fHGG/ HDŁ

V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 3: Test Suite Structure and Test Purposes (TSS&TP)

ITeH STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 301 217-3 V1.1.1:2003](https://standards.iteh.ai/catalog/standards/sist/5999c077-fa4-4813-aa8c-2c24497f25b/sist-en-301-217-3-v1-1-1-2003)

<https://standards.iteh.ai/catalog/standards/sist/5999c077-fa4-4813-aa8c-2c24497f25b/sist-en-301-217-3-v1-1-1-2003>

Ta slovenski standard je istoveten z: EN 301 217-3 Version 1.1.1

ICS:

35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment
--------	---------------------------------	---

SIST EN 301 217-3 V1.1.1:2003 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 301 217-3 V1.1.1:2003

<https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003>

ETSI EN 301 217-3 V1.1.1 (2001-01)

European Standard (Telecommunications series)

**V interfaces at the digital Service Node (SN);
Interfaces at the VB5.2 reference point for the support of
broadband or combined narrowband
and broadband Access Networks (ANs);
Part 3: Test Suite Structure and Test Purposes (TSS&TP)**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 301 217-3 V1.1.1:2003](https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003)

<https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003>



Reference

DEN/SPAN-09047-3

Keywords

AN, SN, TSS&TP, V interface, VB5 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 301 217-3 V1.1.1:2003](https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003)

<https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003>

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
Introduction	5
1 Scope	7
2 References	7
3 Definitions and abbreviations	8
3.1 Definitions	8
3.2 Abbreviations	8
4 Test Suite Structure	10
5 Test Purposes description and naming	13
5.1 Method used for the description of the TPs	13
5.1.1 Text format of TP	13
5.1.2 MSC associated to the text of TP	13
5.1.3 Parameters shown in TP	14
5.1.4 Stimuli for the IUT	14
5.2 Test purpose naming convention	15
5.3 Preambles and postambles	16
5.3.1 Preamble descriptions	16
5.3.1.1 AN is the IUT	16
5.3.1.2 SN is the IUT	24
5.3.2 Postamble descriptions	33
6 Test Purposes definitions	33
6.1 AN is the IUT	33
6.1.1 Basic capability tests (CA)	33
6.1.2 Connection Establishment procedure (CE)	34
6.1.2.1 Point to Point Connection Establishment procedure	34
6.1.2.2 Point to Multipoint Connection Establishment procedure	41
6.1.3 Connection Release procedure (CR)	43
6.1.3.1 Single Connection Release procedure	43
6.1.3.2 Multiple Connections Release procedure	47
6.1.4 Connection modification procedure (CM)	52
6.1.4.1 Modification (first step) procedure	52
6.1.4.2 Modification Complete procedure	53
6.1.4.3 Modification Abort procedure	55
6.1.4.4 Modification exceptional procedure	56
6.1.4.5 Test of timer T_Modification	61
6.1.5 Branch Establishment procedure (BE)	67
6.1.5.1 Add Branch procedure	67
6.1.5.2 Add Branch Complete procedure	69
6.1.5.3 T_BranchEst timer test	71
6.1.5.4 Exceptional procedure	72
6.1.6 Branch Release procedure (BR)	75
6.1.6.1 Single Branch release procedure	75
6.1.6.2 Multiple Branch release procedure	76
6.1.6.3 Exceptional procedure	77
6.1.7 Housekeeping procedure (Reset, Fault)	80
6.1.7.1 Reset procedure	80
6.1.7.2 AN fault procedure	84
6.1.7.3 BBCC restart procedure	86
6.1.8 Common Error Handling (CEH) procedure	91
6.1.8.1 Error Handling on Message Header	91
6.1.8.2 Error Handling on Information Element (IE)	98

6.2	SN is the IUT	101
6.2.1	Basic capability tests (CA)	101
6.2.2	Connection Establishment procedure (CE).....	102
6.2.2.1	Point to Point Connection Establishment procedure.....	102
6.2.2.2	Point to Multipoint Connection Establishment procedure.....	108
6.2.3	Connection Release procedure (CR)	110
6.2.3.1	Single connection Release procedure	110
6.2.3.2	Multiple connections Release procedure.....	113
6.2.4	Connection modification procedure (CM).....	116
6.2.4.1	Modification (first step) procedure	116
6.2.4.2	Modification Complete procedure	119
6.2.4.3	Modification Abort procedure	121
6.2.5	Branch Establishment procedure (BE)	123
6.2.5.1	Add Branch procedure	123
6.2.5.2	Add Branch / Update procedure	126
6.2.6	Branch Release procedure (BR).....	128
6.2.7	Housekeeping procedure (Reset, Fault).....	131
6.2.7.1	Reset procedure	131
6.2.7.2	AN fault procedure	135
6.2.7.3	BBCC restart procedure	136
6.2.8	Common Error Handling (CEH) procedure.....	139
6.2.8.1	Error Handling on Message Header.....	139
6.2.8.2	Error Handling on Information Element (IE)	146
Annex A (informative): PIXIT parameters and the informative values used		149
A.1	Parameter values as used in the MSCs.....	149
A.1.1	Diagram of connections used in the test suites.....	149
A.1.2	Table of PIXIT parameters	150
A.1.3	Transaction identifier values.....	151
A.1.4	Timer values	152
Annex B (informative): ASN.1 data declarations for the BBCC protocol		153
Bibliography.....		162
History		163

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 multi-part deliverable covering the interfaces at the VB5.2 reference point as identified below:

- Part 1: "Interface specification";
- Part 2: "Protocol Implementation Conformance Statement (PICS) specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP)";**
- Part 4: "Abstract Test Suite (ATS) specification and partial Protocol Implementation eXtra Information for Testing (PIXIT)".

SIST EN 301 217-3 V1.1.1:2003

<https://standards.iteh.ai/catalog/standards/sist/5999c077-f1a4-4813-aa8c-2c241974259/sist-en-301-217-3-v1.1.1-2003>

National transposition dates

Date of adoption of this EN:	19 January 2001
Date of latest announcement of this EN (doa):	30 April 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 October 2001
Date of withdrawal of any conflicting National Standard (dow):	31 October 2001

Introduction

General

The work on a new broadband VB reference point concept was initiated by ETSI Technical Committee SPS to consider, in co-operation with other groups involved, possible new structures and reference points for the connection of new broadband and combined narrowband/broadband access arrangements to Service Nodes (SN).

The work was taken over by a special experts group on VB5, working under the auspices of Working Group SPS3, within ETSI.

The VB5 reference point concept was split into two variants. The first based on an ATM cross connect with provisioned connectivity, called the VB5.1 reference point, is contained in EN 301 005-1 [1]. The other, which further enables on-demand connectivity within the AN, is called the VB5.2 reference point and is described in EN 301 217-1 [3].

Relationship between the VB5.1 and VB5.2 reference point concept

The VB5.2 reference point extends the capabilities at the VB5.1 reference point to include on-demand connectivity in the AN under the control of SN.

In addition to the major difference given above, the major correspondence between the VB5.1 and VB5.2 reference point can be described as:

- both VB5 interfaces support B-ISDN as well as narrowband and other non-B-ISDN customer access types;
- both VB5 interfaces support ATM multiplexing / cross-connecting in the AN at the virtual path and/or virtual channel level.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 301 217-3 V1.1.1:2003](https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003)

<https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003>

1 Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for testing the conformity of an implementation to the specification of protocol Broadband Bearer Connection Control (BBCC) of interfaces at the VB5.2 reference point between an Access Network (AN) and a Service Node (SN). The TSS&TP for testing the other protocol named RTMC of interfaces at the VB5.2 reference point is in EN 301 005-3 [2], as it is common with RTMC at VB5.1 reference point.

The test architecture proposed here for the testing of conformity is also used for the design of the Message Sequence Charts (MSCs) produced as test purpose documentation.

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.

- ITEL STANDARD PREVIEW
(standards.iteh.ai)
- [1] ETSI EN 301 005-1 (V1.1.4): "V interfaces at the digital Service Node (SN); Interfaces at the VB5.1 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification".
- [2] ETSI EN 301 005-3 (V1.1.2): "V interfaces at the digital Service Node (SN); Interfaces at the VB5.1 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification".
- [3] ETSI EN 301 217-1 (V1.2.2): "V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification".
- [4] ETSI EN 301 217-2 (V1.1.3): "V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [5] ISO/IEC 9646-1: "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [6] ISO/IEC 9646-2: "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification".
- [7] ITU-T Recommendation M.3010: "Principles for a Telecommunications management network".
- [8] ITU-T Recommendation Q.2931: "Broadband Integrated Services Digital Network (B-ISDN) - Digital Subscriber Signalling System No. 2 (DSS 2) - User-Network Interface (UNI) - Layer 3 specification for basic call/connection control".
- [9] ETSI EN 300 443-1 (V1.3.5): "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for basic call/bearer control; Part 1: Protocol specification [ITU-T Recommendation Q.2931 (1995), modified]".

- [10] ETSI EN 301 067-1 (V1.1.3): "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Connection characteristics; Negotiation during call/connection establishment phase; Part 1: Protocol specification [ITU-T Recommendation Q.2962 (1996), modified]".
- [11] ITU-T Recommendation Q.2961.3: "Digital Subscriber Signalling System No. 2 - Additional traffic parameters: Signalling capabilities to support traffic parameters for the available bit rate (ABR) ATM transfer capability".
- [12] ITU-T Recommendation Q.2961.5: "Digital subscriber signalling system No. 2 - Additional traffic parameters: Additional traffic parameters for cell delay variation tolerance indication".
- [13] ETSI EN 301 005-4 (V1.1.2): "V Interfaces at the Digital Service Node (SN); Interfaces at the VB5.1 Reference Point for the Support of Broadband or Combined Narrowband and Broadband Access Networks (ANs); Part 4: Abstract Test Suite (ATS) and Partial Protocol Implementation eXtra Information for Testing (PIXIT) Proforma Specification".
- [14] ETSI EN 301 068: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. Two (DSS2) Protocol; Connection Characteristics; ATM Transfer Capability and Traffic Parameter Indication".

3 Definitions and abbreviations

3.1 Definitions

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

- terms defined in EN 301 217-1 [3];
- terms defined in ISO/IEC 9646-1 [5] and in ISO/IEC 9646-2 [6];

In particular, the following terms defined in ISO/IEC 9646-1 [5] apply:

Abstract Test Suite (ATS)

Implementation Under Test (IUT)

Point of Control and Observation (PCO)

System Under Test (SUT)

Protocol Implementation Conformance Statement (PICS)

3.2 Abbreviations

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

AAL	ATM Adaptation Layer
AAL-SAP	AAL - Service Access Point
AN	Access Network
ATM	Asynchronous Transfer Mode
BBCC	Broadband Bearer Connection Control
B-ISDN	Broadband ISDN
B-ISUP	Broadband ISDN Signalling User Part
B-UNI	Broadband UNI
BA	Basic (rate) Access
CPE	Customer Premises Equipment
CPN	Customer Premises Network
ET	Equipment Terminal
FSM	Finite State Machine
ID	Identity

IE	Information Element
INI	Inter-Network Interface
ISDN	Integrated Services Digital Network
LAN	Local Area Network
LE	Local Exchange
LME	Layer Management Entity
LMI	Local Management Interface
LSP	Logical Service Port
LUP	Logical User Port
MIB	Management Information Base
MSC	Message Sequence Chart
N-ISDN	Narrowband ISDN
NNI	Network-to-Network Interface
OAM	Operations Administration and Maintenance
PDH	Plesiochronous Digital Hierarchy
PDU	Protocol Data Units
PSP	Physical Service Port
PSTN	Public Switched Telephone Network
PUP	Physical User Port
Q3	"Q" management interface reference point as ITU-T Recommendation M.3010 [7]
RTMC	Real Time Management Co-ordination
SAAL	Signalling ATM Adaptation Layer
SAP	Service Access Point
SAR	Segmentation and Reassembly
SDH	Synchronous Digital Hierarchy
SDL	Specification and Description Language
SDU	Service Data Units
SN	Service Node
SNI	Service Node Interface
SP	Service Port
SPS	Signalling Protocols and Switching
SSCF	Service Specific Co-ordination Function
SSCOP	Service Specific Connection Oriented Protocol
TC	Technical Committees
TE	Terminal Equipment
TMN	Telecommunication Management Network
TP	Transmission Path
UNI	User-Network Interface
VB	Broadband "V" reference point
VC	Virtual Channel (ATM)
VCC	VC Connection
VCCT	VCC Termination
VCE	Virtual Channel Entity
VCI	VC Identifier
VCL	VC Link
VCME	VC Multiplex Entity
VP	Virtual Path
VPC	VP Connection
VPCI	VP Connection Identifier
VPCT	VPC Termination
VPE	VP Entity
VPI	VP Identifier
VPL	VP Link
VPME	VP Multiplex Entity
VUP	Virtual User Port

STANDARD PREVIEW

(standards.iteh.ai)

ETSI EN 301 217-3 V1.1.1:2003

ETSI EN 301 217-3 V1.1.1:2003
 http://standards.iteh.ai/catalog/standards/sist-en-301-217-3-v1-1-1-2003

4 Test Suite Structure

Figure 1 shows the structure of the V5.2 BBCC test suite when the AN is the IUT.

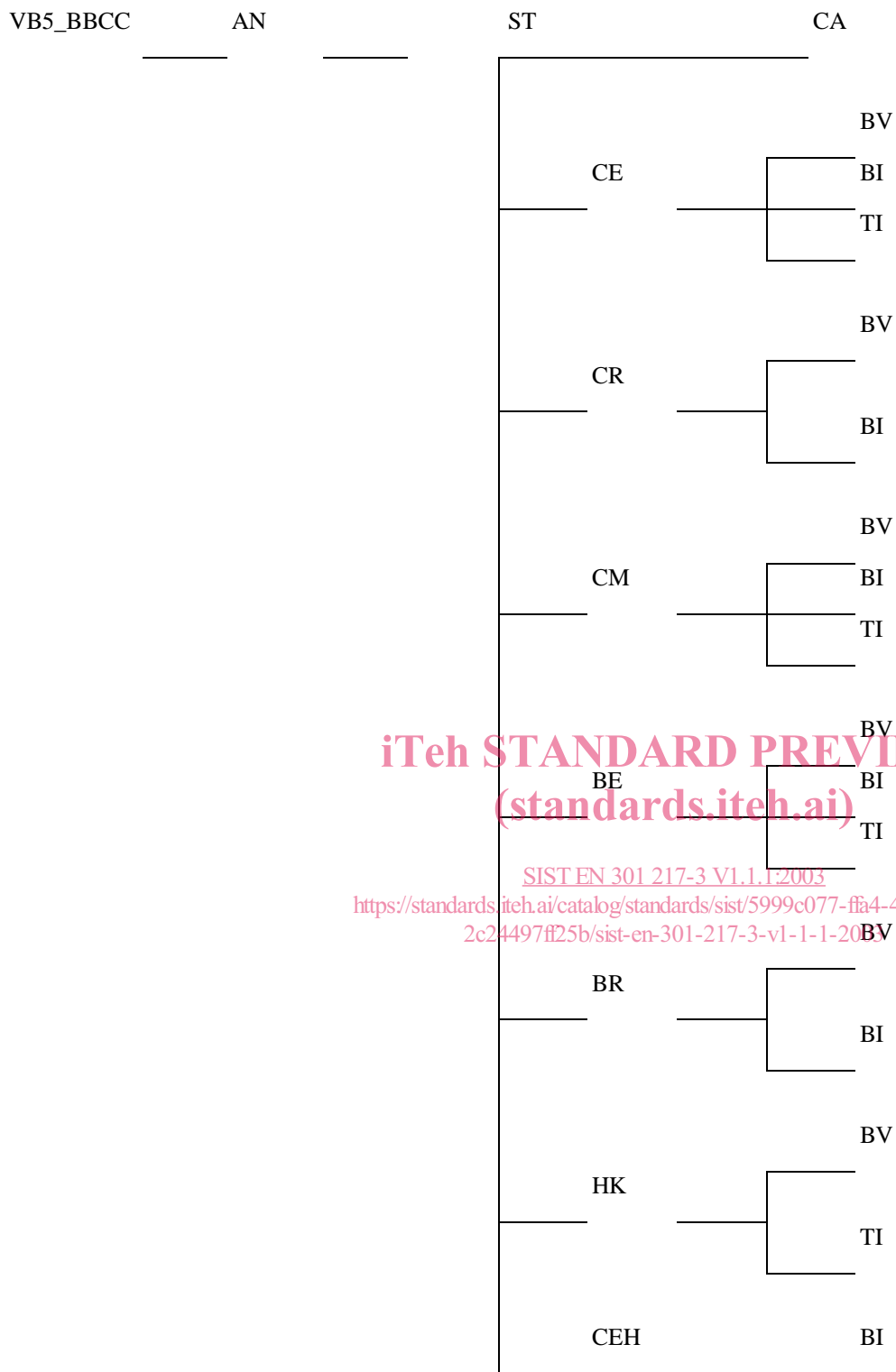
Figure 2 shows the structure of the V5.2 BBCC test suite when the SN is the IUT.

The first level is structured according to the BBCC procedures. The second level is structured according to test category. The meaning of the codes in the tree is given in subclause 5.2.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 301 217-3 V1.1.1:2003](https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003)

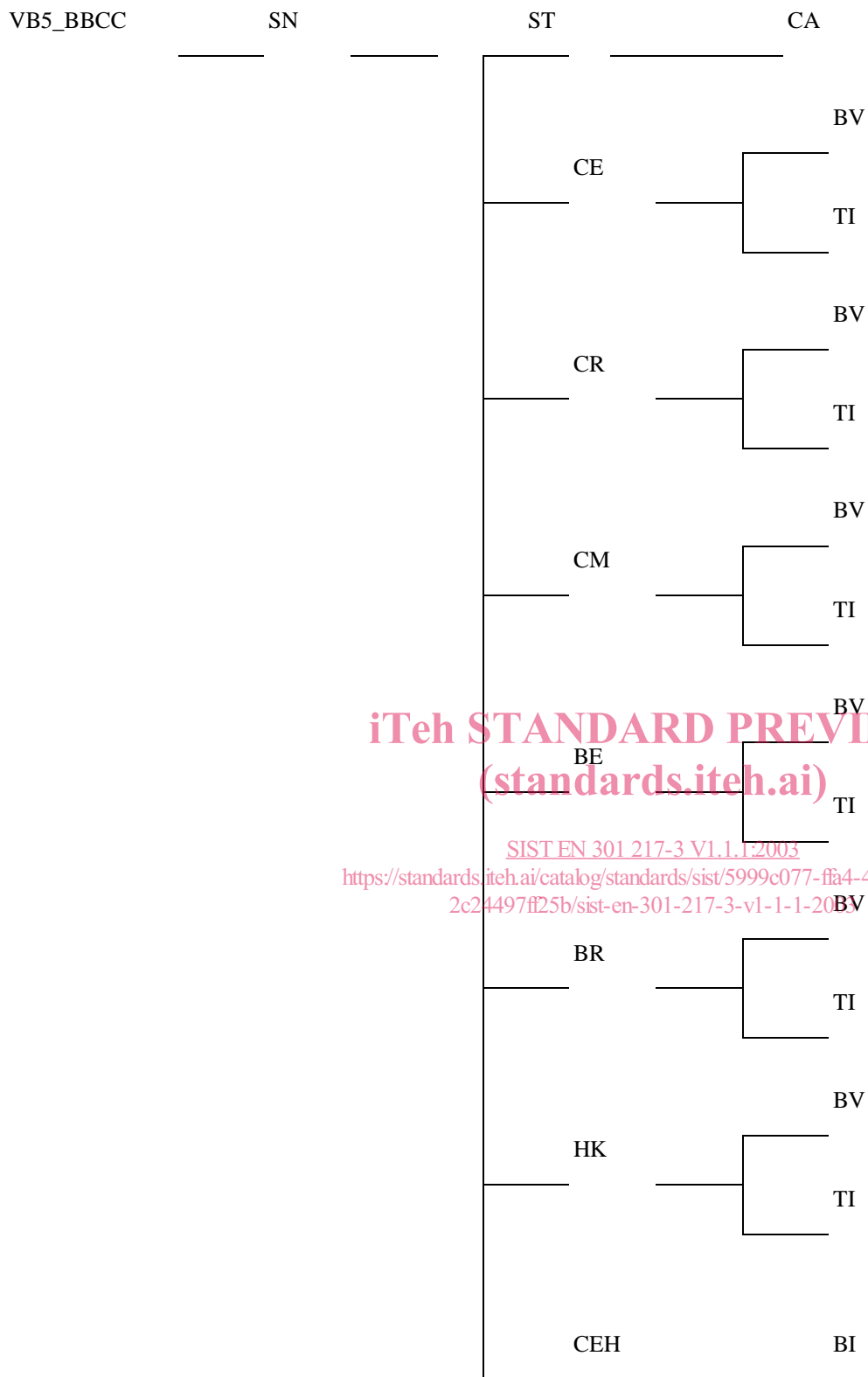
<https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003>



iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003>

Figure 1: VB5 BBCC AN TSS



iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/5999c077-ffa4-4813-aa8c-2c24497ff25b/sist-en-301-217-3-v1-1-1-2003>

Figure 2: VB5 BBCC SN TSS

Invalid behaviour of the tester comprises: reference to unknown resources, unknown message type, and errors in common message fields (protocol discriminator, transaction identifier, message length).

BBCC timer tests and inopportune behaviour tests are related to a number of specific BBCC procedures and the test suite has been structured accordingly.

NOTE: Tolerance interval for timer test.

Tests of timers related to correction of transmission errors in communication with peer network element (see EN 301 217-1 [3] subclause 13.6.1.5.3) have as essential purpose to check that the timer function and the retransmission function are implemented. In the test suite, a calibration of each timer is also performed, i.e. a lower time limit and an upper time limit are set around the nominal timer value for the reception of the retransmitted messages. The PASS verdict is granted if reception is observed between these two limits. These limits are chosen by the implementer. The time interval defined by these limits will be called hereafter the "tolerance interval".

5 Test Purposes description and naming

5.1 Method used for the description of the TPs

Each TP is described using textual information presented in a table. This table is followed by an MSC representing the test scenario.

5.1.1 Text format of TP

The table describing each TP is as follows.

TP-Name is a unique identifier, created according to the TP naming conventions (also the name of the corresponding test case)	Reference to the paragraph number of specification EN 301 217-1 [3] stating the conformance requirement
Purpose	Purpose of the test performed against a requirement of the protocol
Test description	Information on the test body, describing actions and parameters
Pass criteria	Visible action to be observed at PCO to declare that the IUT passes the test and conforms to the specifications
Selection	"None" or expression based on EN 301 217-2 [4] PICS and PIXIT statements, used to select or deselect the corresponding test case according to the options of the implementation (note)
Preamble	"None" or name of the preamble procedure bringing the IUT from idle state to the state required to run the test
Postamble	"None" or name of the postamble to bring the IUT back to idle state
Additional testing	Additional information, present in specification, for possible informal testing beyond BBCC protocol (for instance, if tester is capable of observation/action via additional interface like Q3 or signalling interfaces)
NOTE:	For some tests, an expression based on PIXIT parameters with binary yes/no value may be used. This may happen if the test case shall only be selected when a specific reaction of the AN VB5.2 application function can be expected (e.g. rejection of an ALLOC request with cause "ATM transfer capability not supported"). This may be obtained by suitable settings in the System Under Test combined with suitable assignment of PIXIT parameter values in the messages sent by the tester. The exact setting is system dependent and outside the scope of the present document.

5.1.2 MSC associated to the text of TP

For illustration purposes a MSC in graphical form follows selected TP tabulated descriptions. The MSC is produced by exercising the SDL model, whenever possible. If the procedure is not modelled, then the corresponding MSC is drawn manually.

The columns identified in the MSC represent, from left to right, the tester, the IUT (i.e. the AN or SN System), and the VB5.2 environment functions.

As an MSC is focusing on the body of the test, the preamble is represented by a single box in the MSC.