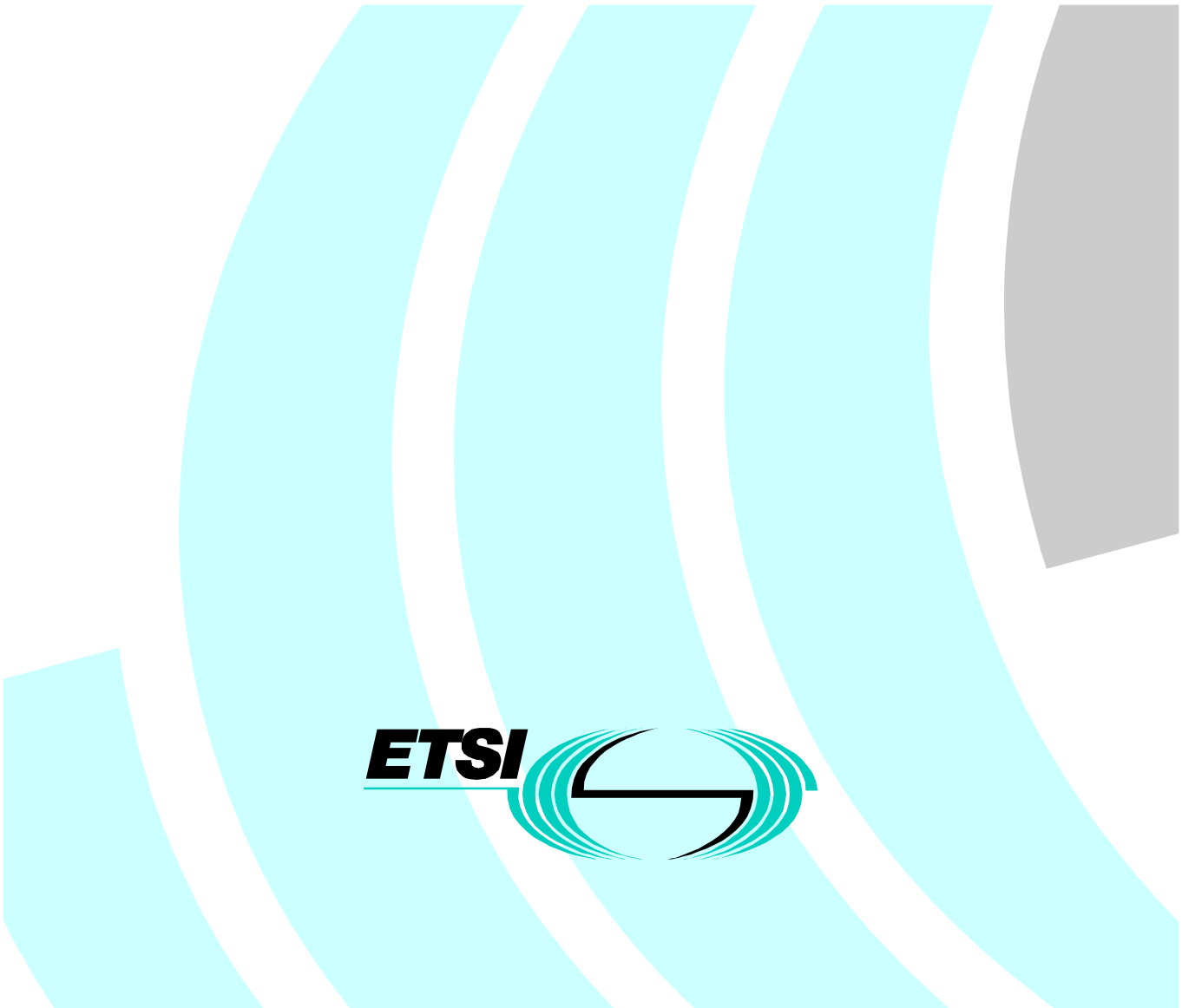
Draft ETSI EN 301 217-3 V1.1.1 (2000-07)

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)



Reference
DEN/SPAN-09047-3

Keywords
AN, SN, TSS&TP, V interface, VB5 interface

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Contents

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN) and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document is part 3 of multi-part EN 301 217 covering the interfaces at the VB5.2 reference point as described 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)".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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.

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.

[1] ETSI EN 301 005-1 (V1.1): "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): "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): "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): "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): "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): "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): "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 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

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.

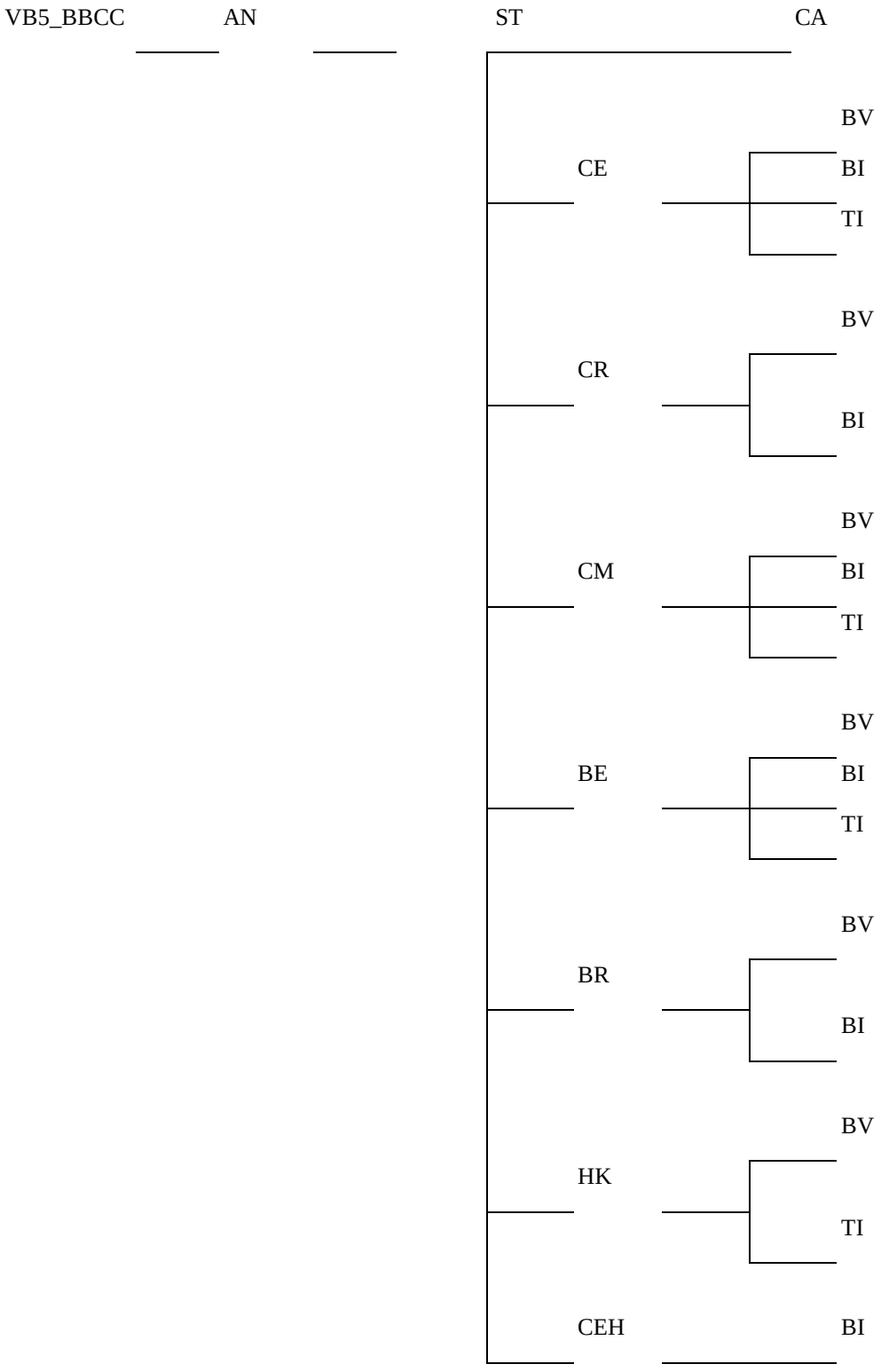

Figure 1: VB5 BBCC AN TSS

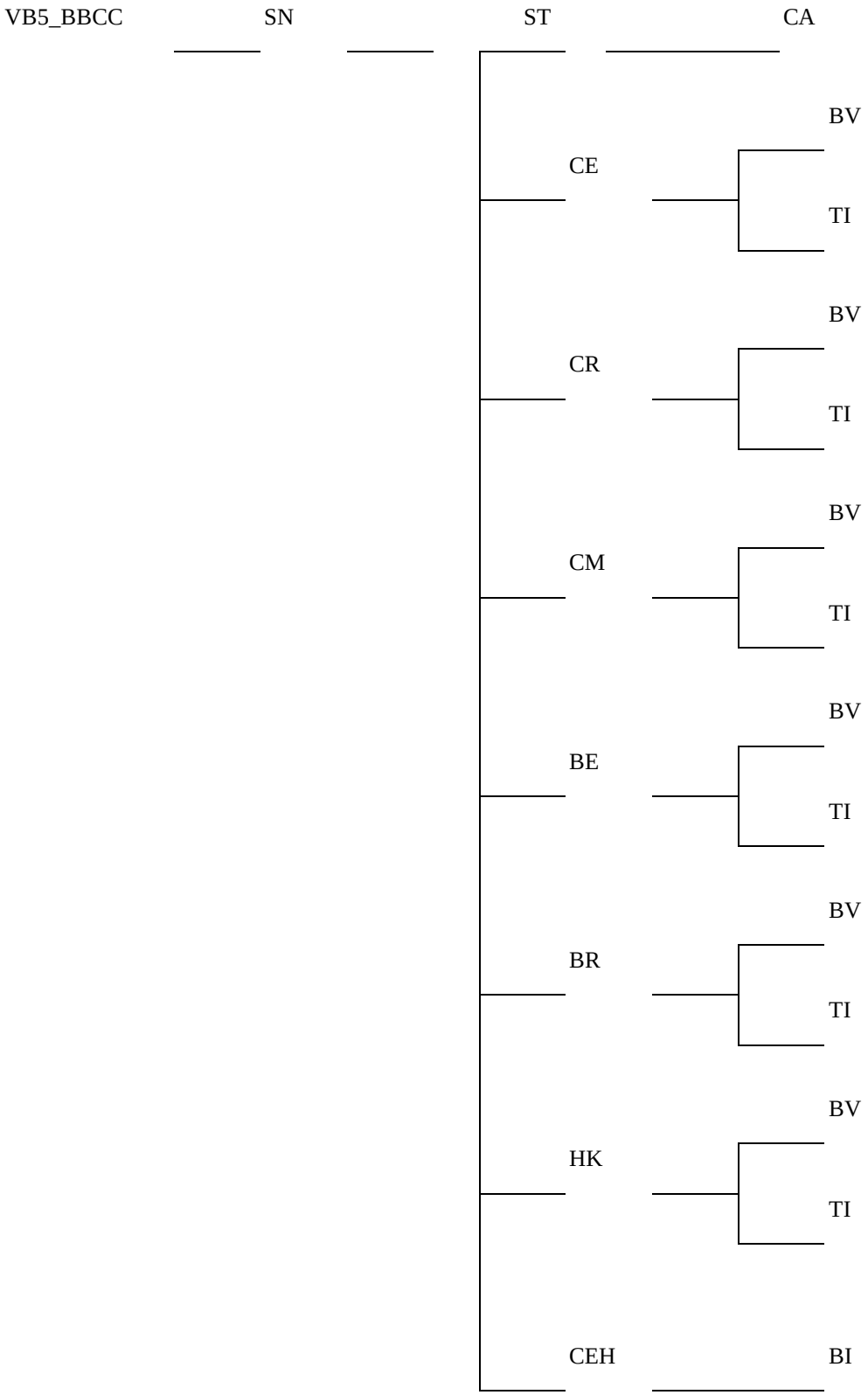

Figure 2: VB5 BBCC SN TSS

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.

The following arrows represent the exchange of PDU of BBCC protocol at the VB5.2 interface, which corresponds to PCO named VB5 in the test suite. When needed, a stimulus to initiate the execution of a BBCC procedure is also depicted.

5.1.3 Parameters shown in TP

For clarity sake, only the parameters most relevant to the test purpose are shown in the diagram. In addition and on certain test cases and PDUs, like RESET_COMPLETE_LSP or BBCC_PRESYNC, the LSP connection identifier is not shown.

The values of these parameters are either imposed by the test because they are specified by the BBCC protocol, or they are informative because they pertain to the VB5.2 application functions. In this case they can be chosen arbitrarily in ranges compatible with the specifications.

The list of parameters, for which a value is to be assigned before the execution of a test suite, is included in the PIXIT proforma of the BBCC protocol.

Annex A of the present document contains a copy of this PIXIT proforma parameter table. For illustration purposes, this proforma table has been completed with the parameter values used in the MSCs examples of the present document.

All represented parameters are defined using the correct format, usually hexadecimal, except for the following which appear in decimal value:

- transIdVal;
- connRefNoVal;
- connRefNos;
- branchIdVal;
- branchIds;
- rejCauseOctet;
- protErrCause.

5.1.4 Stimuli for the IUT

The environment of the AN or the SN is using a stimulus to initiate the execution of a BBCC procedure. These stimuli appear as special signals in the MSCs associated with each Test Purpose.

These signals are described here together with their associated parameters:

- AN_Faulty ( ) generates AN_FAULT;
- SN_ConnEst(connRefNoVal, branchId) generates ALLOC and ALLOC_COMP;
- SN_Dealloc(connRefNoVal) generates DEALLOC;
- SN_Modify(connRefNoVal) generates MODIFY;
- SN_ModifyComp(connRefNoVal) generates MODIFY_COMP;

- SN_ModifyAbort(connRefNoVal) generates MODIFY_COMP;
- SN_AddBranch(connRefNoVal, branchId) generates ADD_BRANCH;
- SN_UpdateBranch(connRefNoVal, branchId) generates UPDATE_BRANCH;
- SN_DropBranch(connRefNoVal, branchId) generates DROP_BRANCH;
- SN_Reset generates BBCC_RESET;
- SN_Presync generates BBCC_PRESYNC.

5.2 Test purpose naming convention

The identifier of the TP is built according to the following scheme.

Table 1: TP identifier naming convention scheme

Identifier: VB5_<i>_<IUT>_<pp>_<cc>_<nn>

VB5 VB5.2 reference point specification

<i> BBCC protocol at interface VB5.2

<IUT> AN: BBCC System in the Access Network is the IUT
SN: BBCC System in the Service Node is the IUT

<pp> = procedure identifier like:
ST StartUp
CE Connection Establishment
CR Connection Release
CM Connection Modify
BE Branch Establishment
BR Branch Release
HK HouseKeeping (Reset, Fault)
CEH Common Error Handling

<cc> = test category:
CA Capability tests
BV Valid Behaviour tests
BI Invalid Behaviour tests
TI Timer tests

<nn> = sequential number: (01-99)

Example of test purpose and test case name: **VB5_BBCC_AN_CM_BV_02.**

5.3 Preambles and postambles

5.3.1 Preamble descriptions

The preambles are used to bring the IUT from power-on state to the correct state where a test can take place. They differ whether the IUT is an AN or a SN.

5.3.1.1 AN is the IUT

P_AN_start: starts the AN configuration.

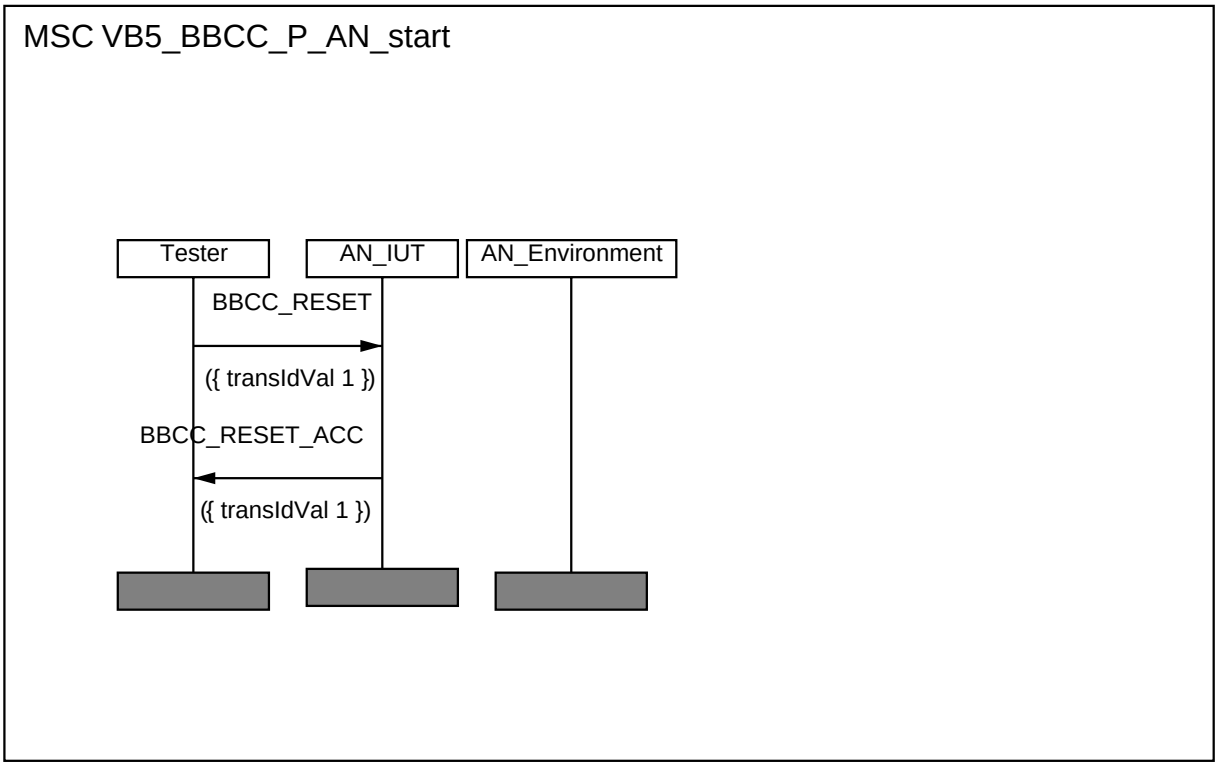

Figure 3

P_AN_1ptp: starts AN and allocates one Point-to-Point connection.

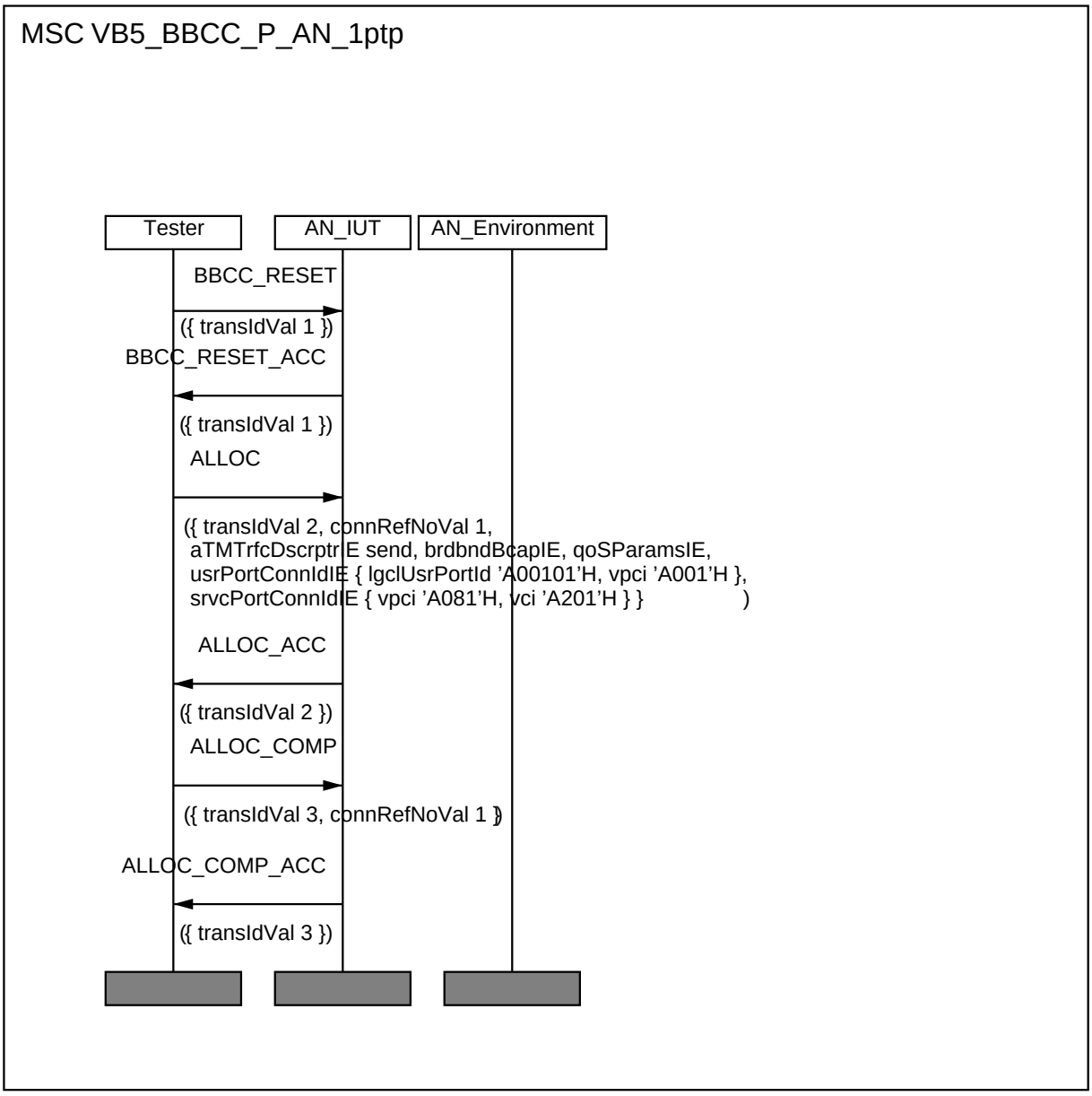

Figure 4

P_AN_1ptm: starts AN and allocates one Point to Multipoint connection, first branch only is established.

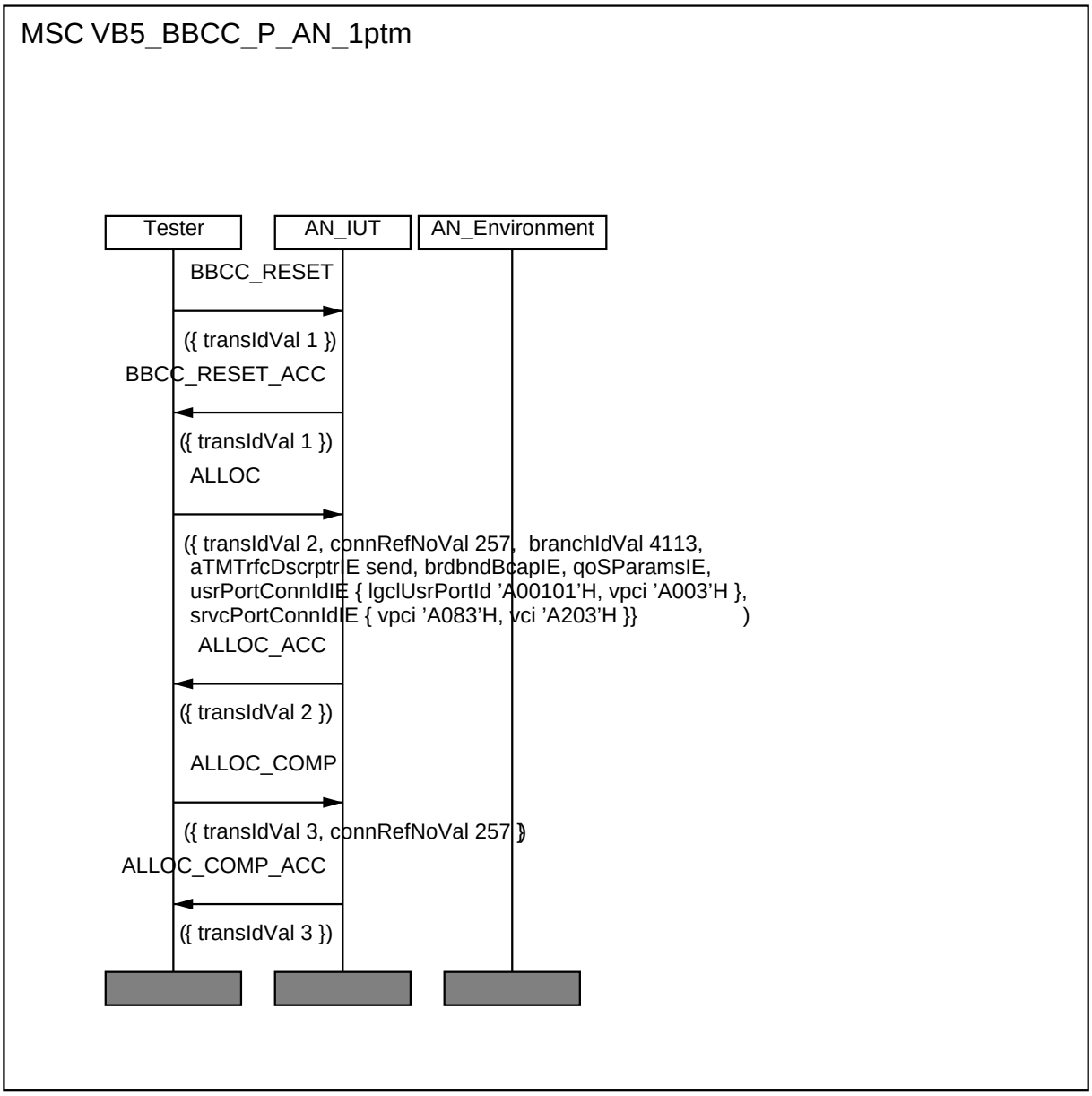

Figure 5

P_AN_1ptmTwoB: starts AN and allocates Point to Multipoint PtM1 connection, PtM1 connection has two branches.

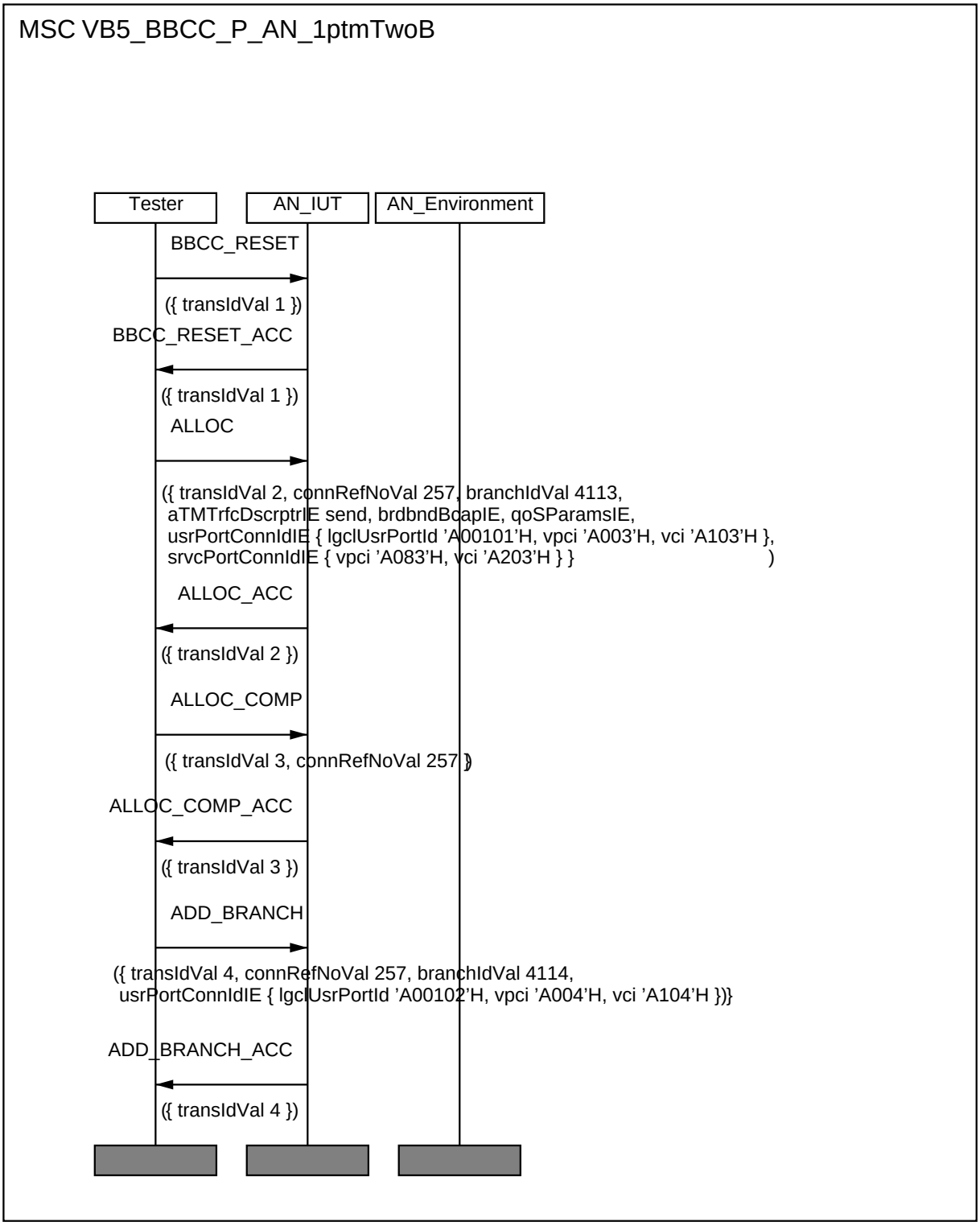

Figure 6

P_AN_1ptmThreeB: starts AN and allocates PtM2 Point to Multipoint connection, PtM2 connection has three branches.

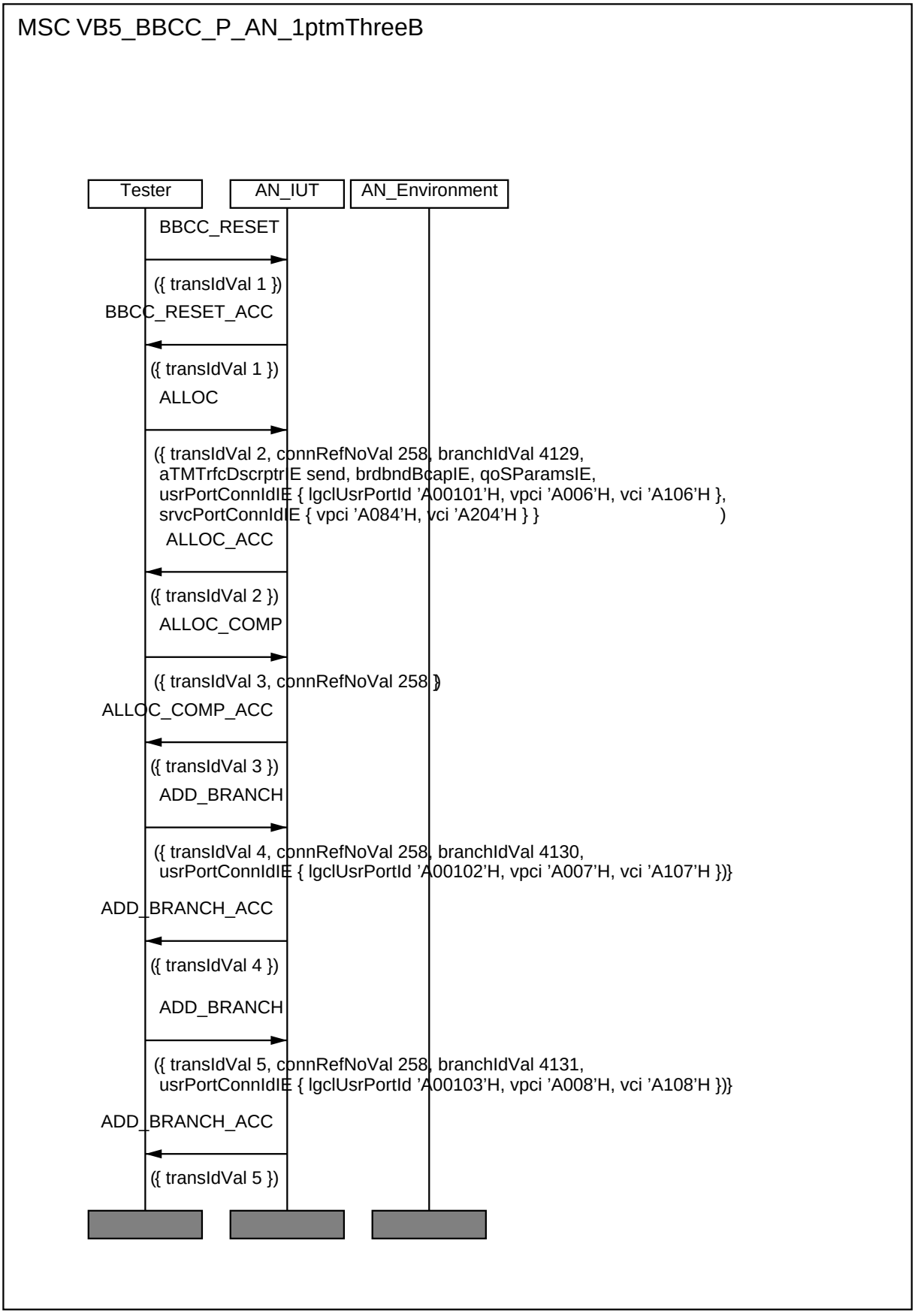

Figure 7

P_AN_2ptp: starts AN and allocates two Point-to-Point connections, PtP1 and PtP2.

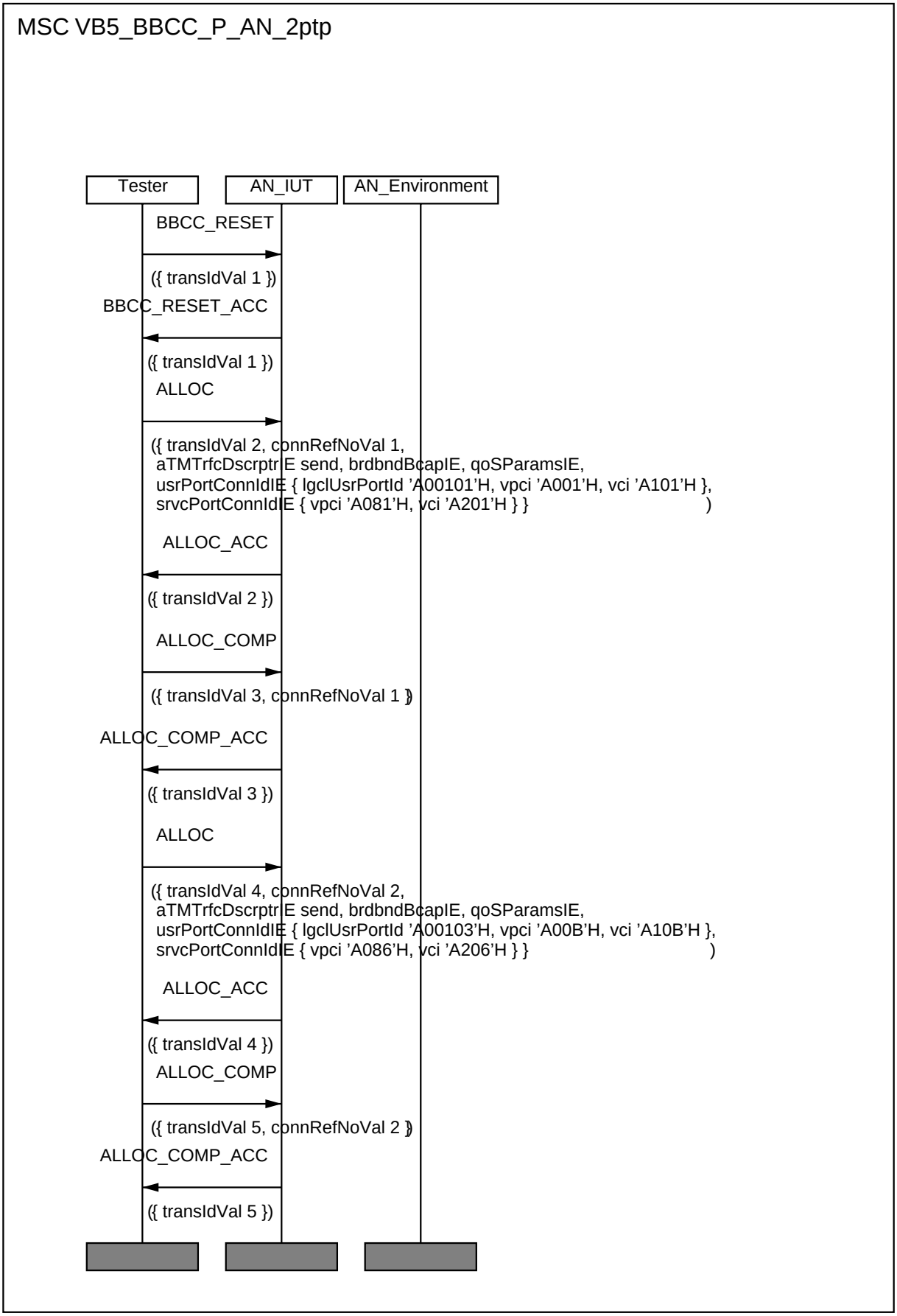

Figure 8

P_AN_2ptm: starts AN and allocates two Point to Multipoint connections, PtM1 connection has two branches, PtM2 has three branches.

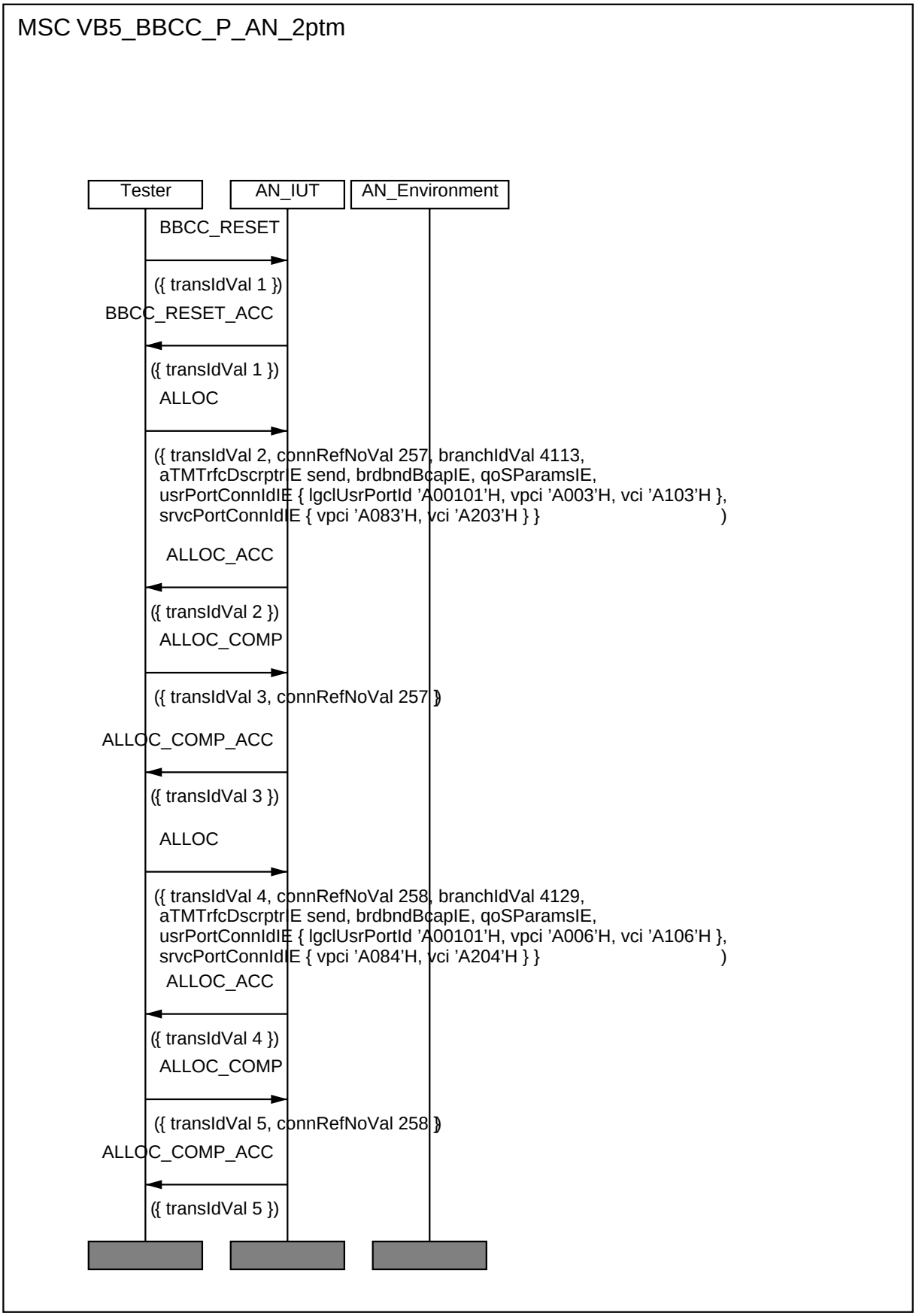

Figure 9

P_AN_1ptp1ptm: starts AN and allocates one Point-to-Point Point to Multipoint connections.

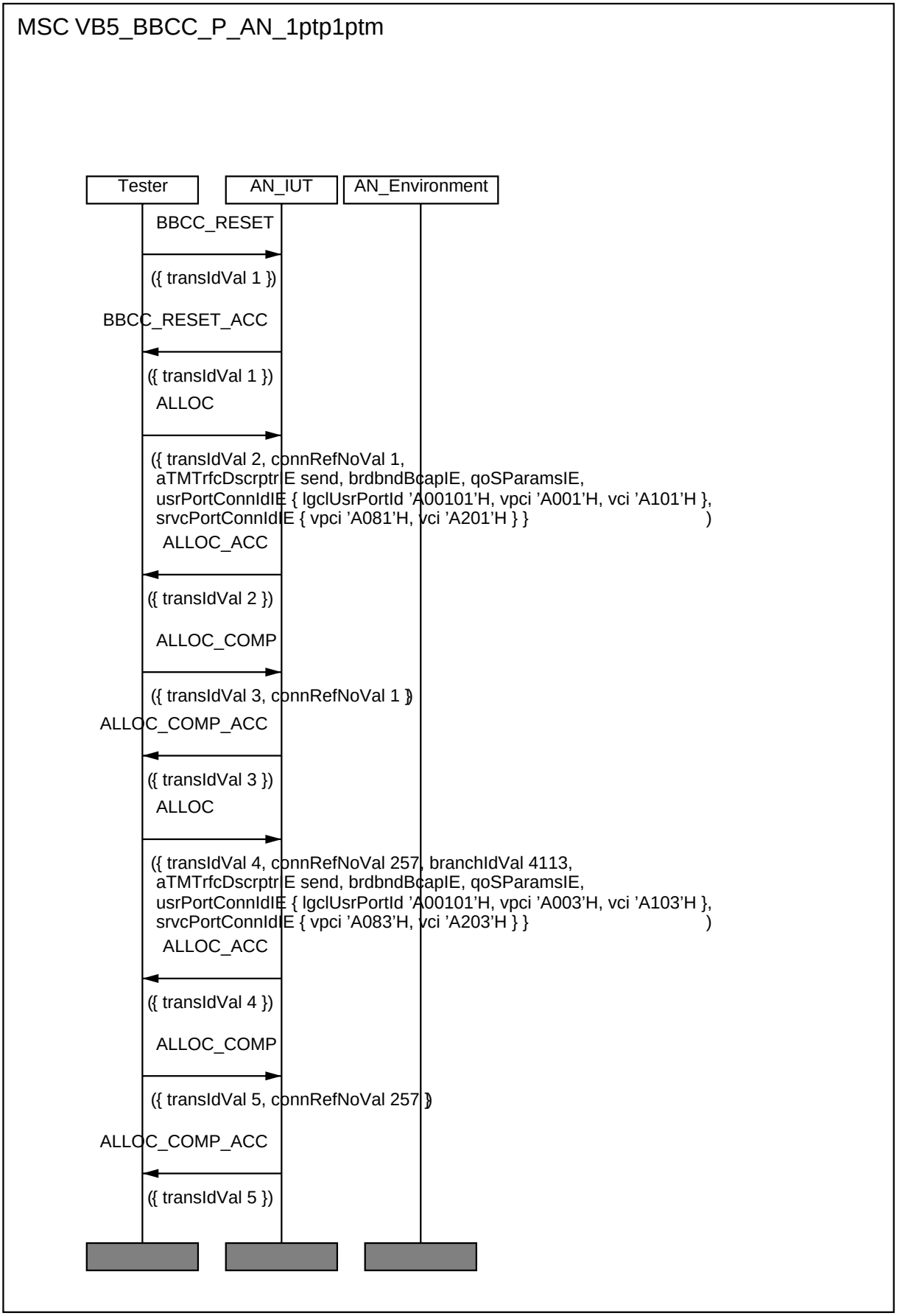

Figure 10

5.3.1.2 SN is the IUT

P_SN_start: starts the SN configuration.

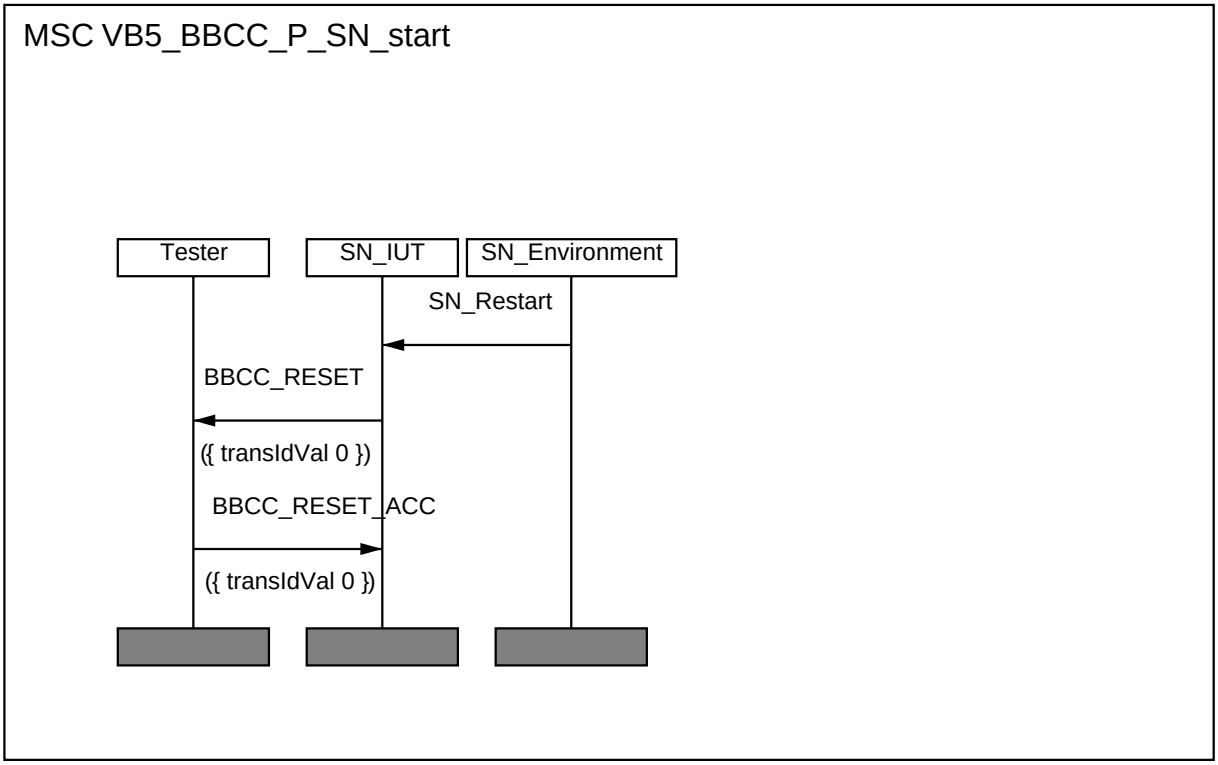

Figure 11

P_SN_1ptp: starts SN and allocates one Point-to-Point connection.

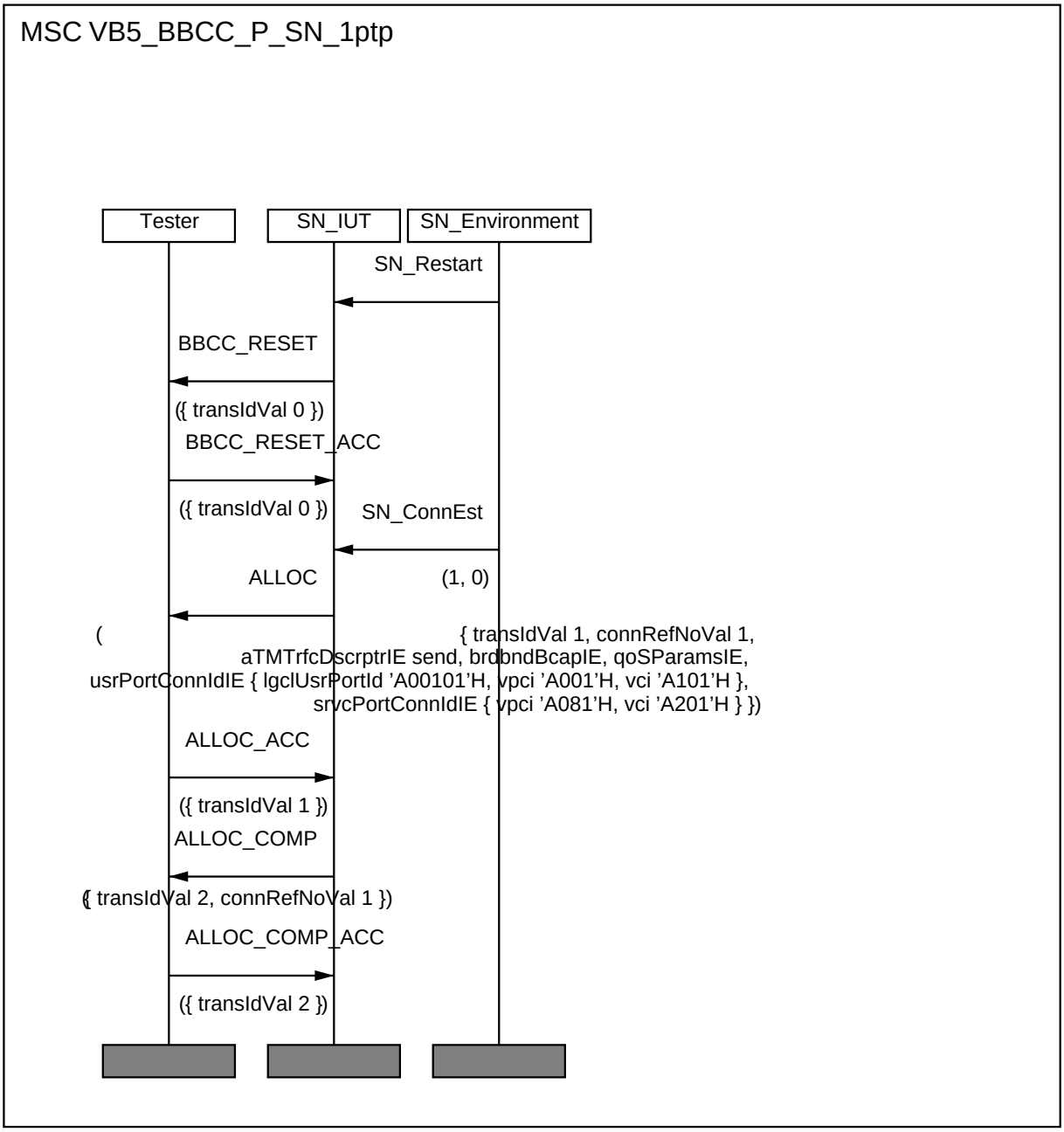

Figure 12

P_SN_1ptm: starts SN and allocates one Point to Multipoint connection, first branch only is established.

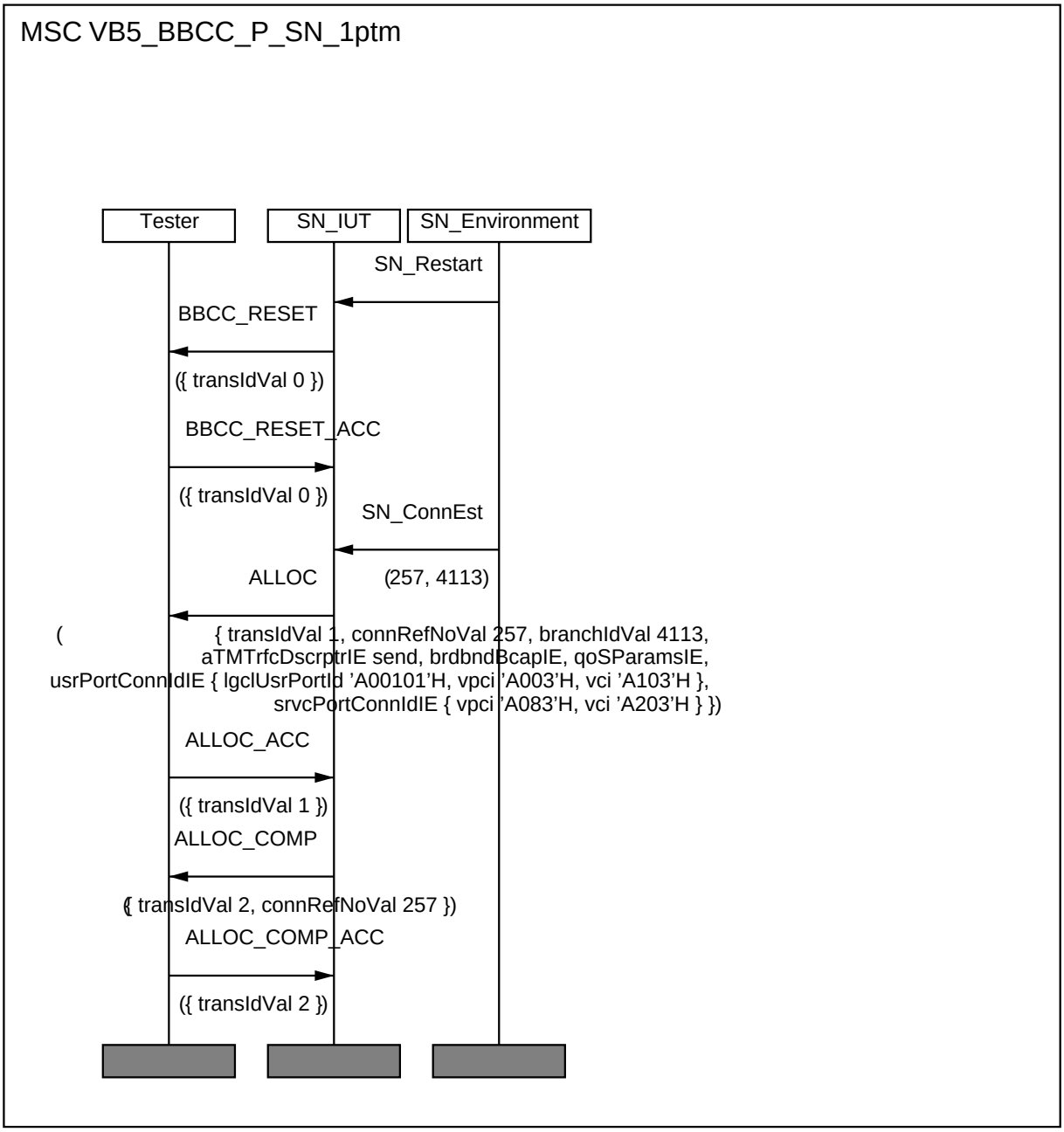

Figure 13

P_SN_1ptmTwoB: starts SN and allocates PtM1 Point to Multipoint connection, PtM1 connection has two branches.

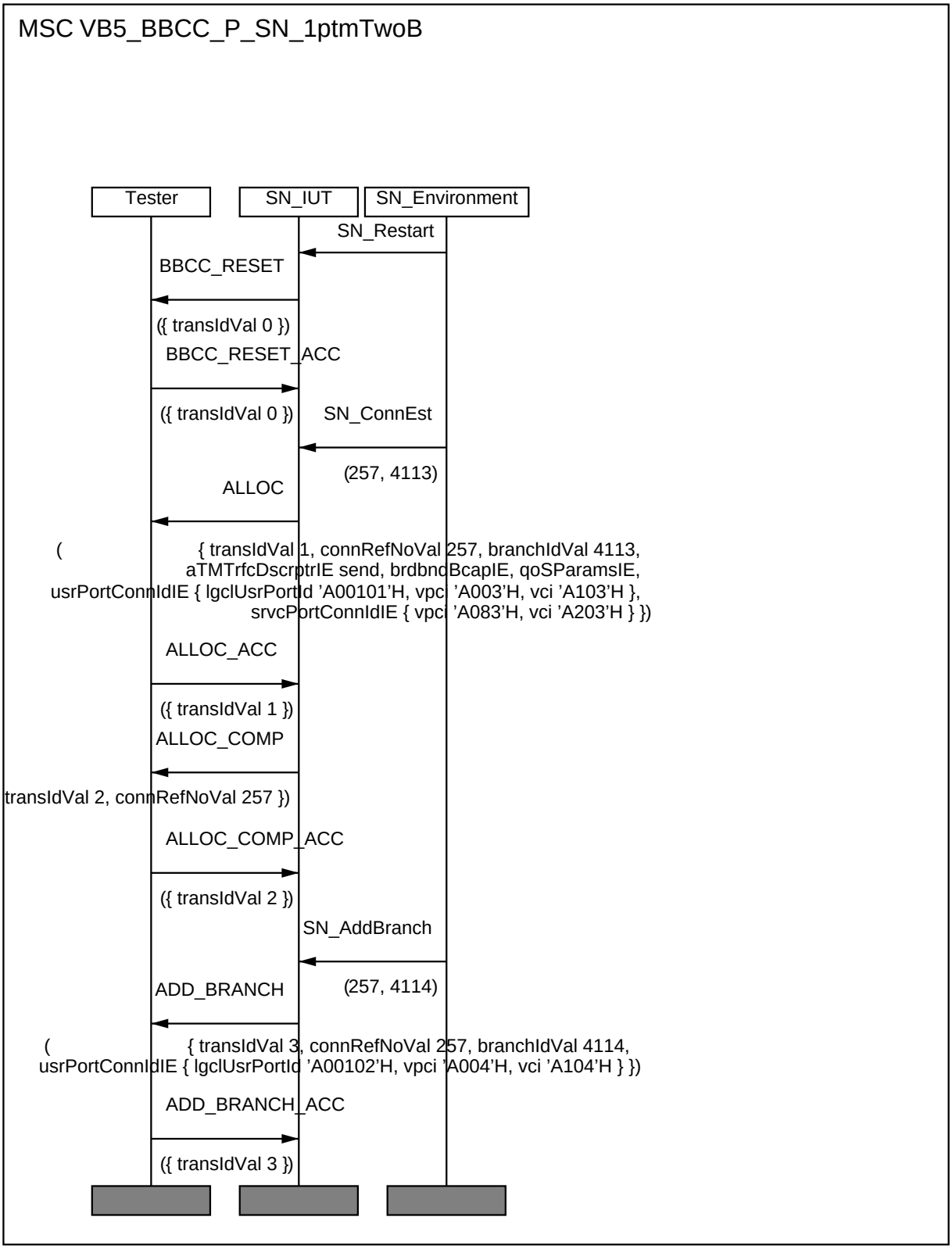

Figure 14

P_SN_1ptmThreeB: starts AN and allocates PtM2 Point to Multipoint connection, PtM2 connection has three branches.

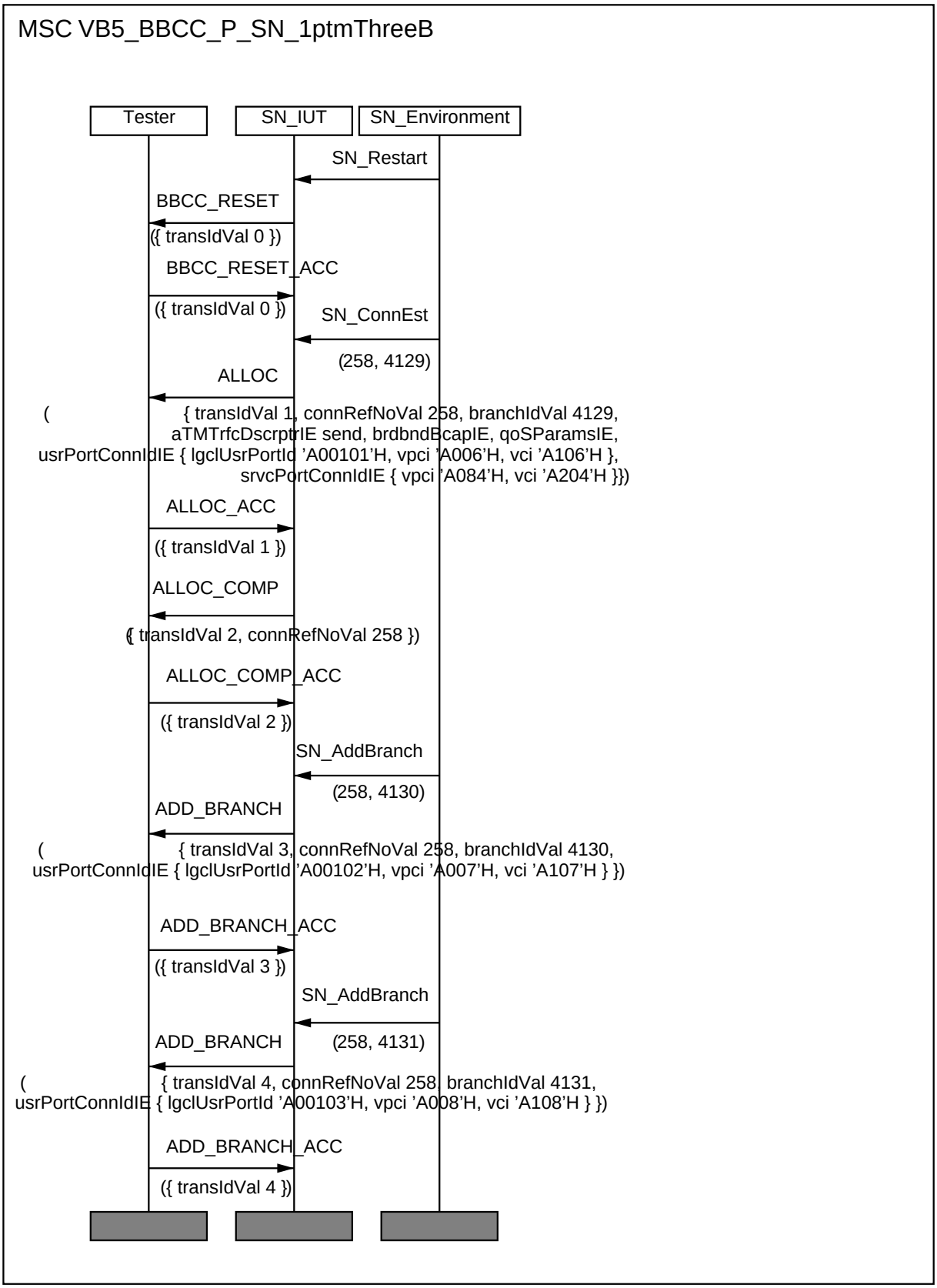

Figure 15

P_SN_2ptp: starts AN and allocates two Point-to-Point connections.

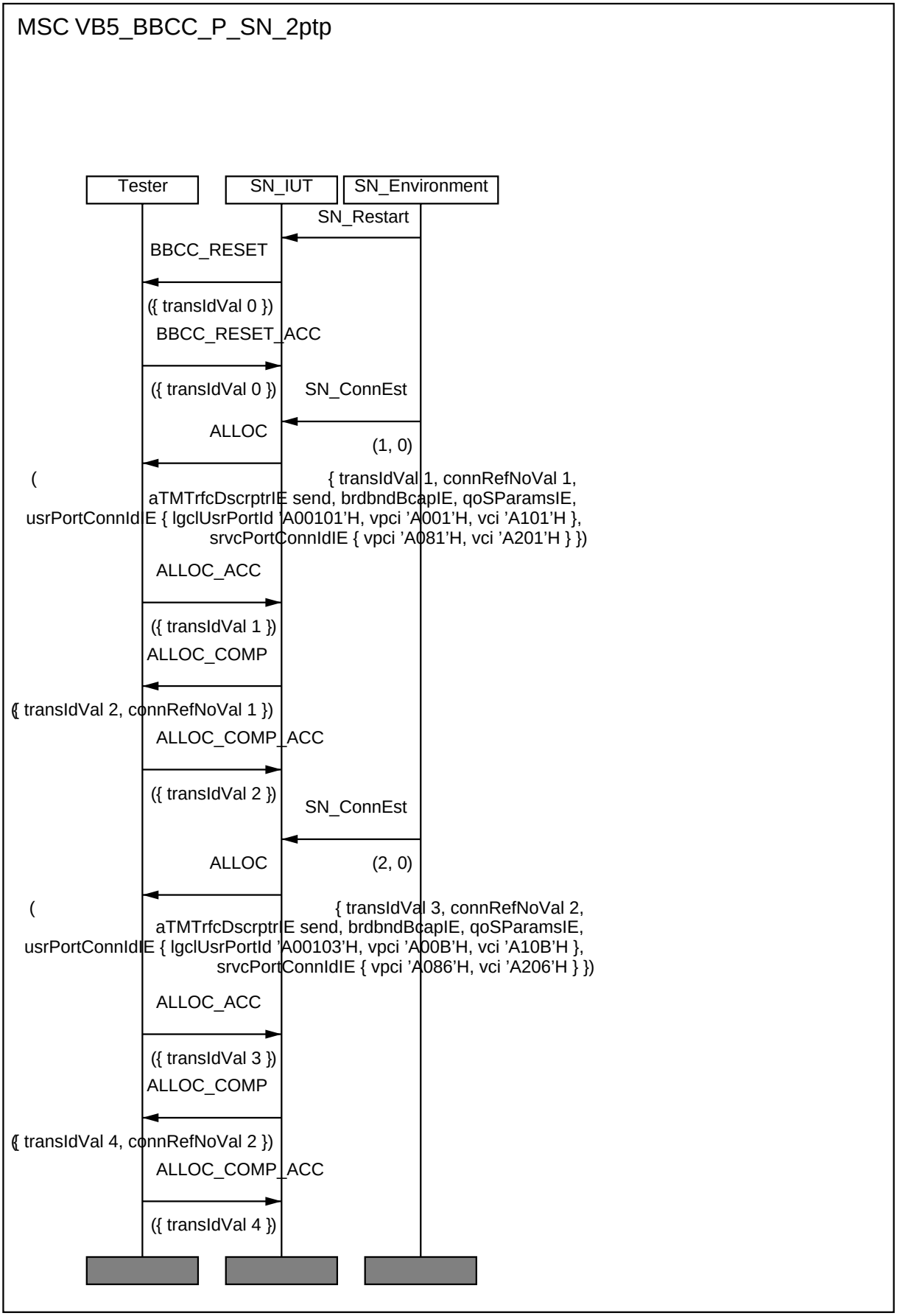

Figure 16

P_SN_2ptm: starts AN and allocates two Point to Multipoint connections, PtM1 connection has two branches, PtM2 has three.

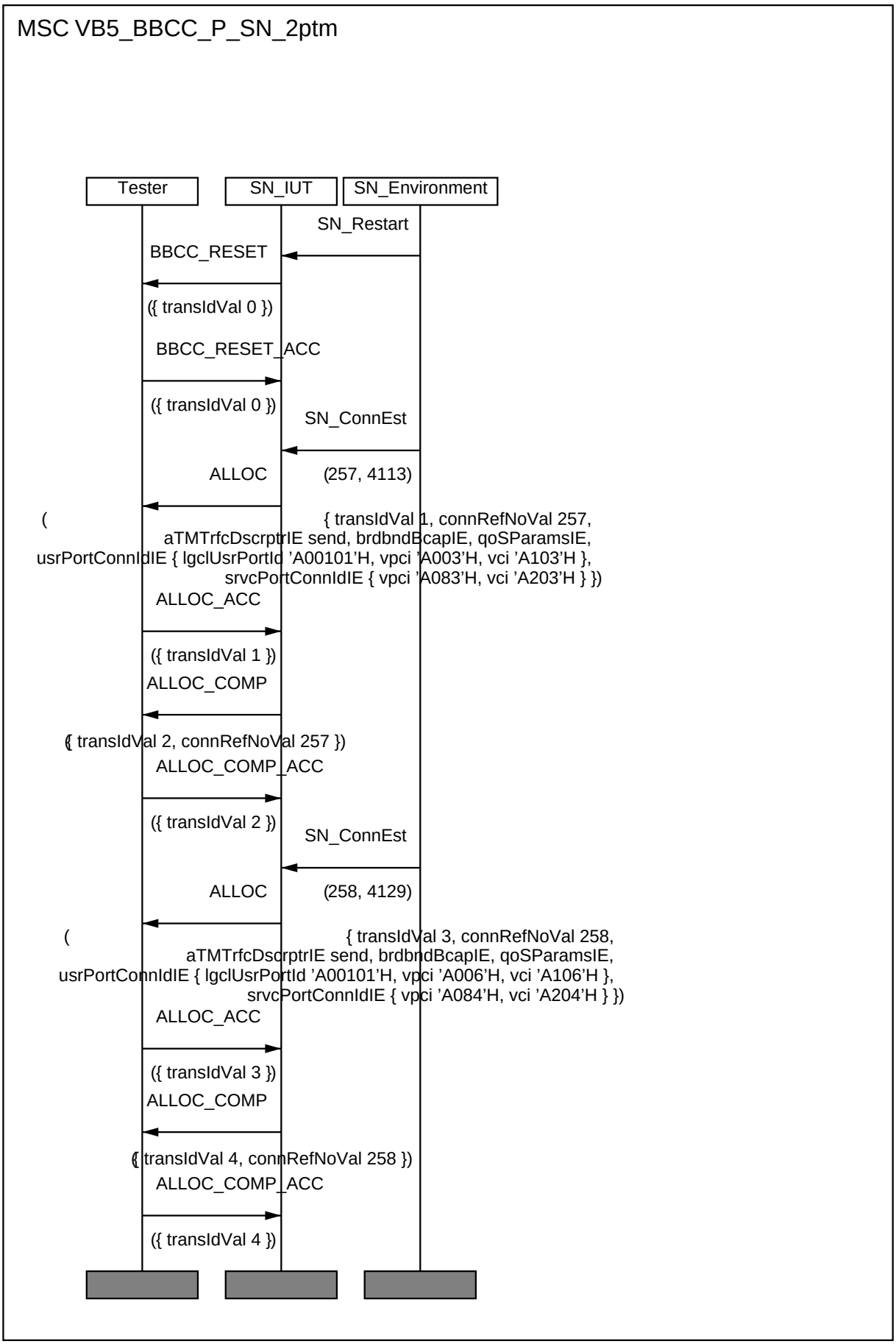
MSC VB5_BBCC_P_SN_2ptm
Tester
SN_IUT
SN_Environment
SN_Restart
BBCC_RESET
({ transIdVal 0 })
BBCC_RESET_ACC
({ transIdVal 0 })
SN_ConnEst
ALLOC
(257, 4113)
({ transIdVal 1, connRefNoVal 257,
aTMTrfcDscrptrIE send, brdbndBcapIE, qoSParamsIE,
usrPortConnIdIE { lgclUsrPortId 'A00101'H, vpci 'A003'H, vci 'A103'H },
srvcPortConnIdIE { vpci 'A083'H, vci 'A203'H } })
ALLOC_ACC
({ transIdVal 1 })
ALLOC_COMP
({ transIdVal 2, connRefNoVal 257 })
ALLOC_COMP_ACC
({ transIdVal 2 })
SN_ConnEst
ALLOC
(258, 4129)
({ transIdVal 3, connRefNoVal 258,
aTMTrfcDscrptrIE send, brdbndBcapIE, qoSParamsIE,
usrPortConnIdIE { lgclUsrPortId 'A00101'H, vpci 'A006'H, vci 'A106'H },
srvcPortConnIdIE { vpci 'A084'H, vci 'A204'H } })
ALLOC_ACC
({ transIdVal 3 })
ALLOC_COMP
({ transIdVal 4, connRefNoVal 258 })
ALLOC_COMP_ACC
({ transIdVal 4 })

Figure 17

P_SN_1ptp1ptm: starts AN and allocates one Point-to-Point Point to Multipoint connections.

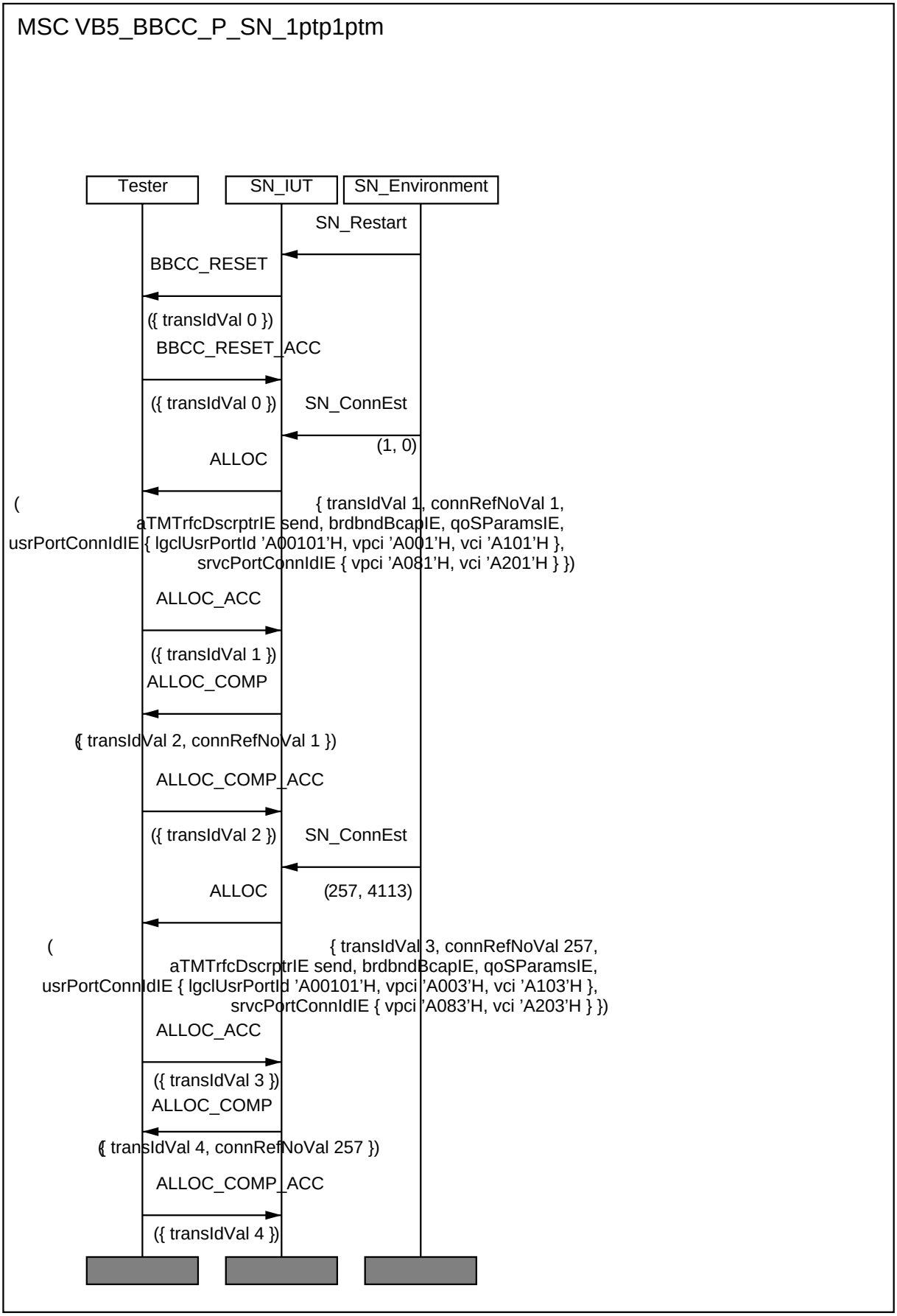

Figure 18

5.3.2 Postamble descriptions

No postamble is used in this test suite.

6 Test Purposes definitions

6.1 AN is the IUT

6.1.1 Basic capability tests (CA)

This test verifies the capability of the AN to exchange valid messages with the tester. It consists in starting up the AN BBCC.

Start Up procedure (ST).

VB5_BBCC_AN_ST_CA_01	**Reference EN 301 217-1 [3]: 13.6.4.5**
Purpose	Check start up of BBCC
Test description	The tester sets up the layer 2 (SAAL establishment) then it sends a **BBCC_RESET** PDU (RESET complete LSP)
Pass criteria	Check that the tester is receiving the BBCC_RESET_ACC
Selection	None
Preamble	None
Postamble	None
Additional testing	The AN environment receives meeBBCCStartTrafficInd at SAAL establishment, then ceeBBCCResetInd

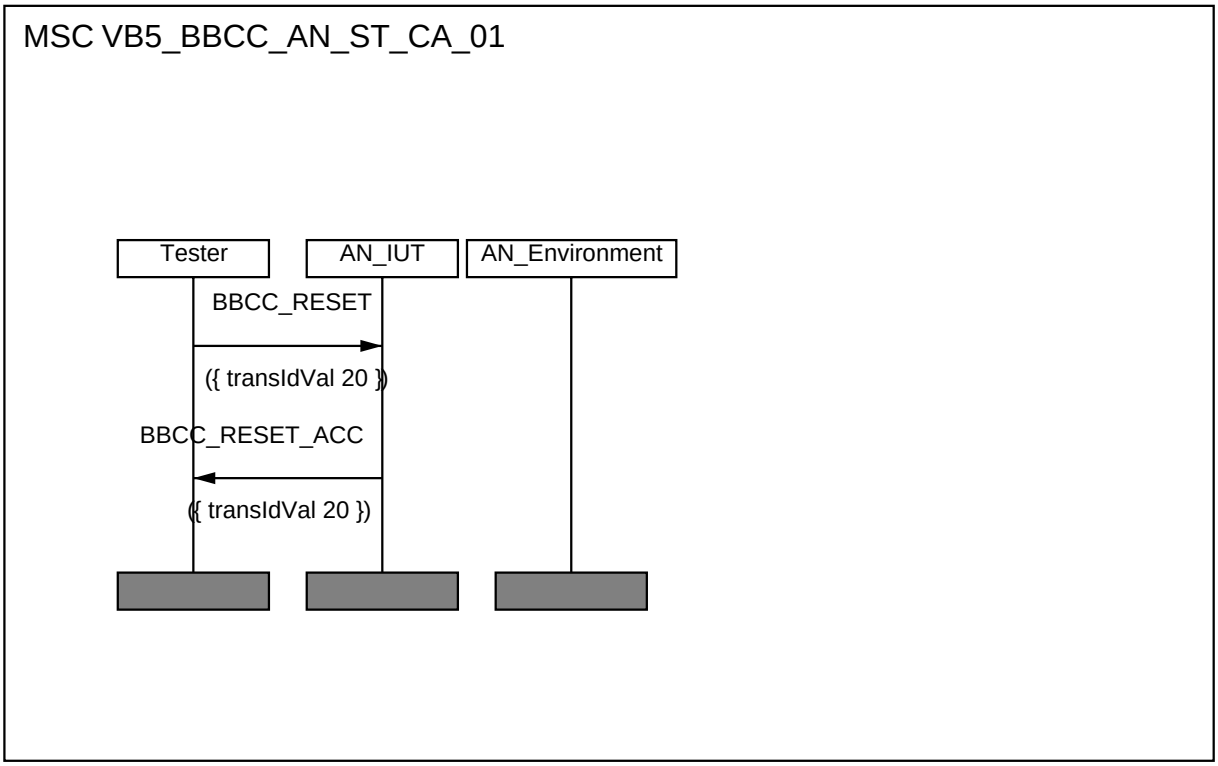

Figure 19

6.1.2 Connection Establishment procedure (CE)

6.1.2.1 Point to Point Connection Establishment procedure

Allocation.

VB5_BBCC_AN_CE_BV_01	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation (simple reservation)
Test description	The tester issues an **ALLOC** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving an **ALLOC_ACC** PDU within T_Alloc time
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeAllocInd is sent to AN environment

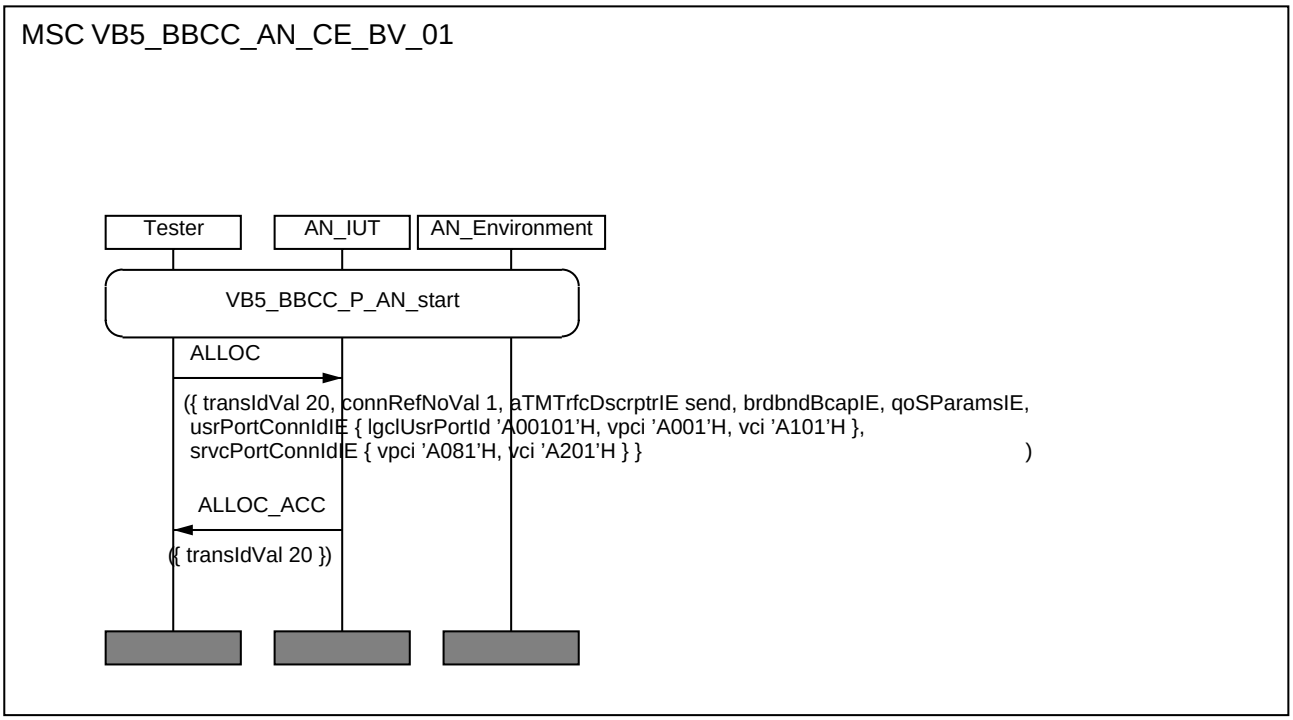

Figure 20

Based on preceding test purpose numbered VB5_BBCC_AN_CE_BV_01, which is using a set of basic mandatory parameters (see MSC for details), the following additional test purposes, based on variation of ALLOC PDU parameters, are defined:

B5_BBCC_AN_CE_BV_01a	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using User port connection identifier defined with VPCI only, no VCI
Selection	None

VB5_BBCC_AN_CE_BV_01b	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Alternate User port VPCI 2
Selection	None

VB5_BBCC_AN_CE_BV_01c	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Alternate Service port VPCI 1
Selection	None

VB5_BBCC_AN_CE_BV_01d	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using ABR setup parameter
Selection	A.63/1: ABR support

VB5_BBCC_AN_CE_BV_01e	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using CDVT descriptor
Selection	A.65/1: CDVT support

VB5_BBCC_AN_CE_BV_01f	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using End to end transit delay
Selection	None

VB5_BBCC_AN_CE_BV_01g	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Alternative ATM traffic descriptor
Selection	A.54/11: Connection characteristic negotiation procedure during connection establishment AND A.66/1: Alternative ATM traffic descriptor

VB5_BBCC_AN_CE_BV_01h	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Minimum acceptable ATM traffic descriptor
Selection	A.54/11: Connection characteristic negotiation procedure during connection establishment AND A.67/1: Minimum acceptable ATM traffic descriptor

VB5_BBCC_AN_CE_BV_01i	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using OAM traffic descriptor
Selection	None

Allocation complete.

VB5_BBCC_AN_CE_BV_02	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check Allocation complete
Test description	The tester issues an **ALLOC** PDU with mandatory parameters then receives an **ALLOC_ACC** PDU within T_Alloc time. The tester issues an **ALLOC_COMP** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving an **ALLOC_COMP_ACC** PDU within T_AllocComp time
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeAllocCompInd is sent to AN environment

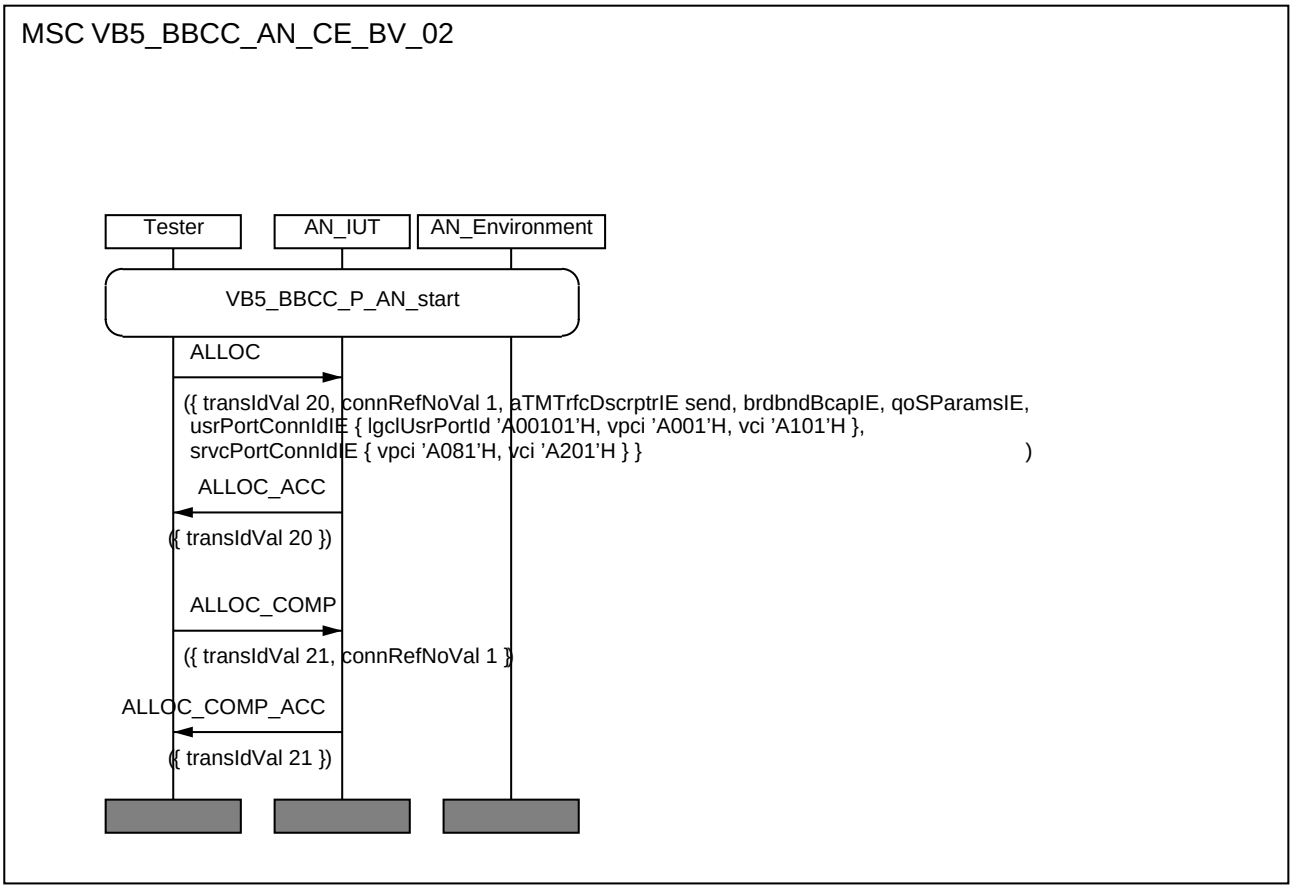

Figure 21

Exceptional procedure.

VB5_BBCC_AN_CE_BI_01	Reference EN 301 217-1 [3]: 13.6.2.1.3
Purpose	Check Allocation reject
Test description	The tester does an initial allocation. (It successively issues an **ALLOC** PDU with mandatory parameters then receives an **ALLOC_ACC** PDU within T_Alloc time. The tester issues an **ALLOC_COMP** PDU with mandatory parameters then receives an **ALLOC_COMP_ACC** PDU within T_AllocComp time). Then the tester issues a 2nd **ALLOC** PDU with same connection reference number
Pass criteria	Check that the tester is receiving an **ALLOC_REJ** PDU within T_Alloc time, including RejCause = message not compatible with connection state
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	

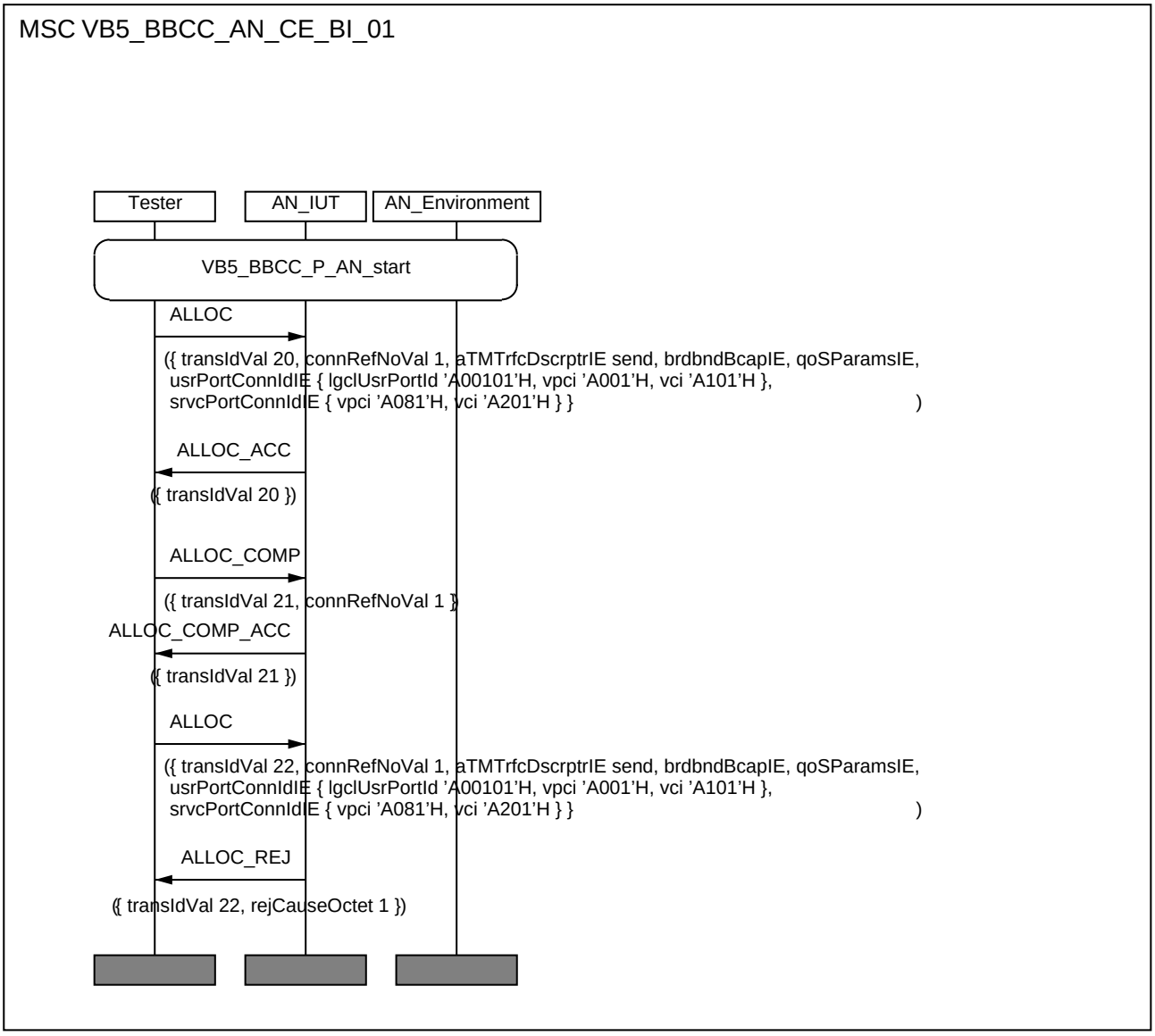

Figure 22

VB5_BBCC_AN_CE_BI_02	Reference EN 301 217-1 [3]: 13.6.2.1.2, 13.6.1.5.5
Purpose	Check Allocation Comp reject upon Connection Control Function decision
Test description	The tester does an initial allocation. To do so, it successively issues an **ALLOC** PDU with mandatory parameters then receives an **ALLOC_ACC** PDU within T_Alloc time. The tester issues an **ALLOC_COMP** PDU with mandatory parameters. The Connection Control Function rejects the request
Pass criteria	Check that the tester is receiving an **ALLOC_COMP_REJ** PDU within T_AllocComp time
Selection	PIX_ALLOC_COMP_REJ true
Preamble	P_AN_start
Postamble	None
Additional testing	

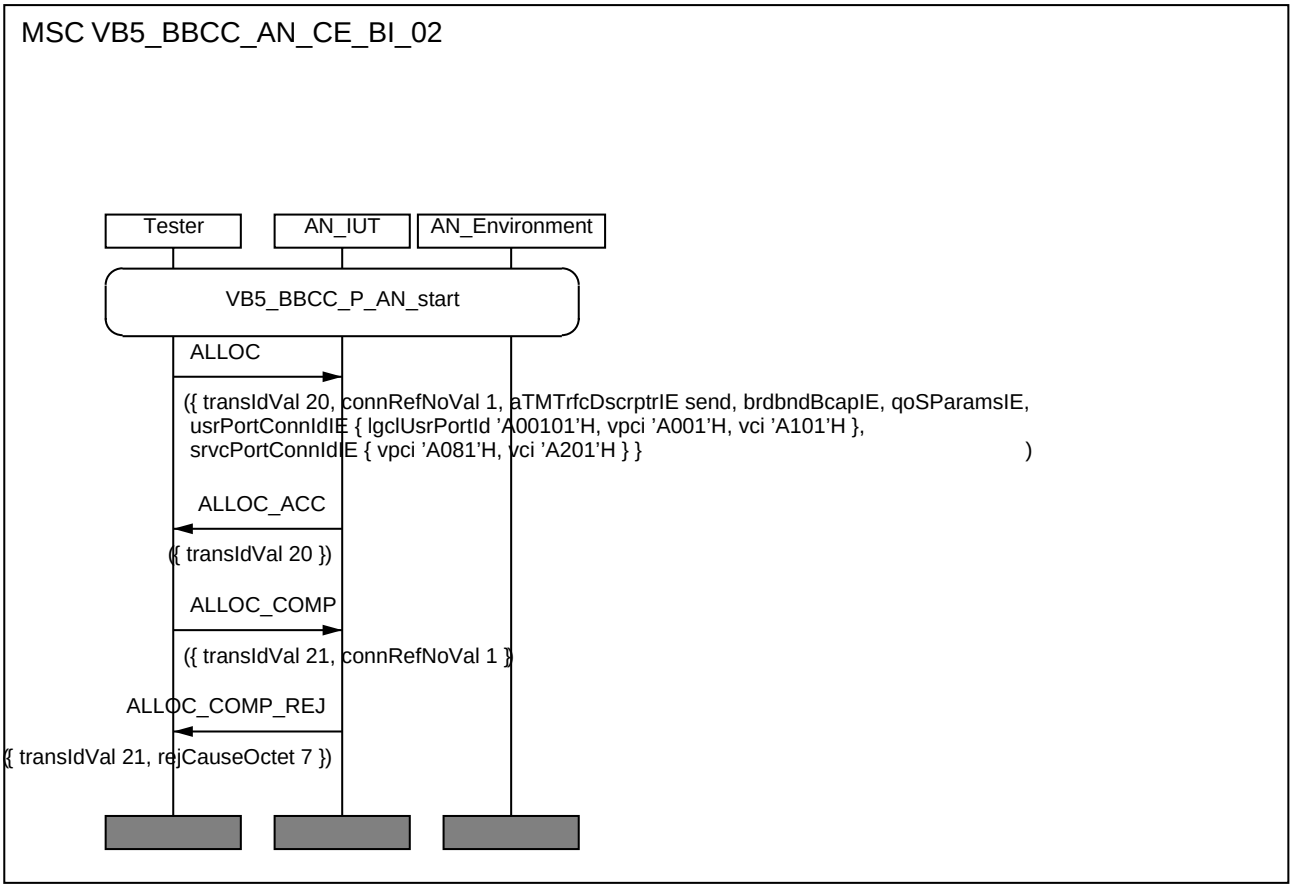

Figure 23

VB5_BBCC_AN_CE_BI_03	Reference EN 301 217-1 [3]: 13.6.1.5.4
Purpose	Check Allocation Comp reject when no previous ALLOC
Test description	The tester issues an **ALLOC_COMP** PDU with mandatory parameters, without previous allocation
Pass criteria	Check that the tester is receiving an **ALLOC_COMP_REJ** PDU within T_AllocComp time, including RejCause= message not compatible with connection state
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	

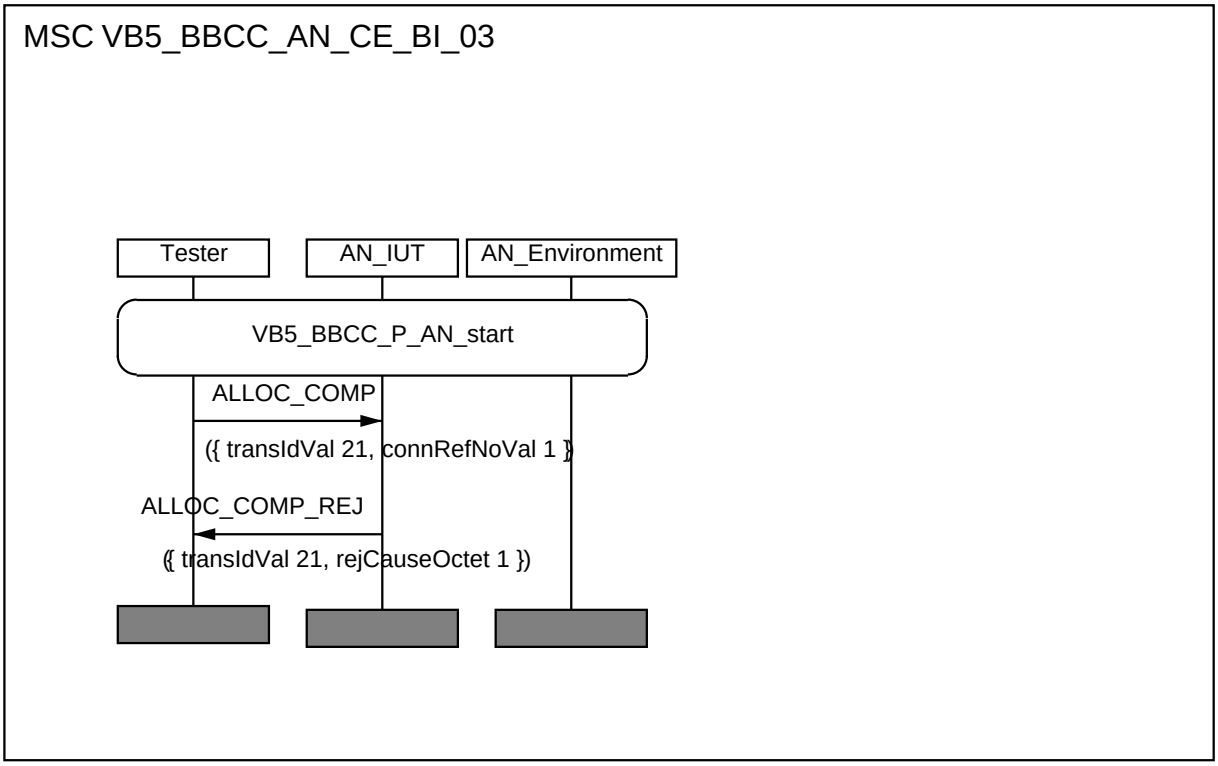

Figure 24

Test of timer T_ConnEst.

VB5_BBCC_AN_CE_TI_01	Reference EN 301 217-1 [3]: 13.6.2.1.3
Purpose	Check T_ConnEst
Test description	The tester issues an **ALLOC** PDU with mandatory parameters then receives an **ALLOC_ACC** PDU within T_Alloc time. The tester does not issue an **ALLOC_COMP** PDU within T_ConnEst time. Then the tester issues a 2nd **ALLOC** PDU with same connection reference number
Pass criteria	Check that the tester is receiving an **ALLOC_ACC** PDU within T_Alloc time, meaning the first ALLOC was discarded after time out on T_ConnEst
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeDeallocInd for the first ALLOC is sent to AN environment

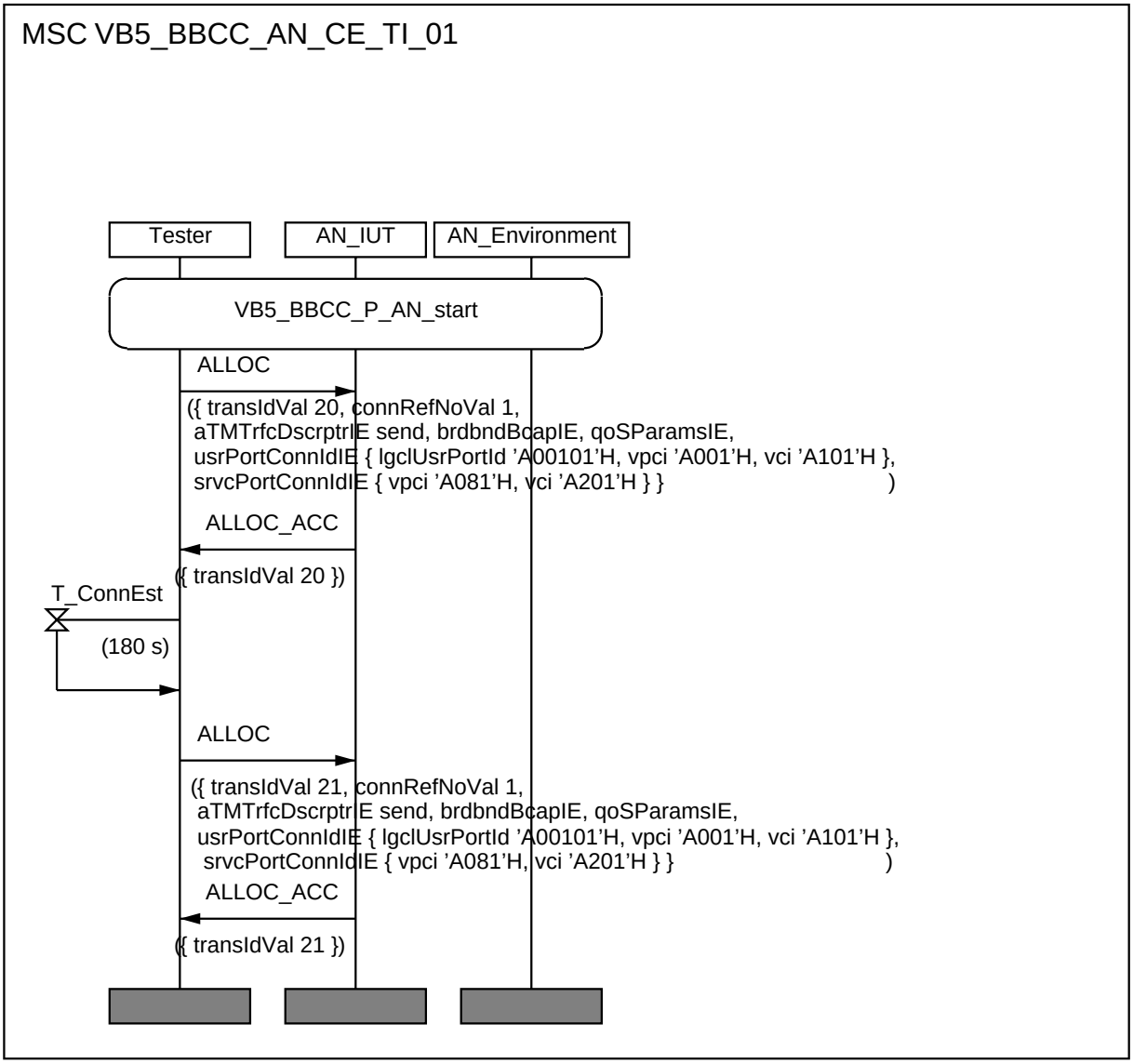

Figure 25

6.1.2.2 Point to Multipoint Connection Establishment procedure

Allocation.

VB5_BBCC_AN_CE_BV_11	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation (simple reservation)
Test description	The tester issues an **ALLOC** PDU with mandatory parameters for PtM connection (addition of branch Id)
Pass criteria	Check that the tester is receiving an **ALLOC_ACC** PDU within T_Alloc time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_start
Postamble	None
Additional testing	ceeAllocInd is sent to AN environment

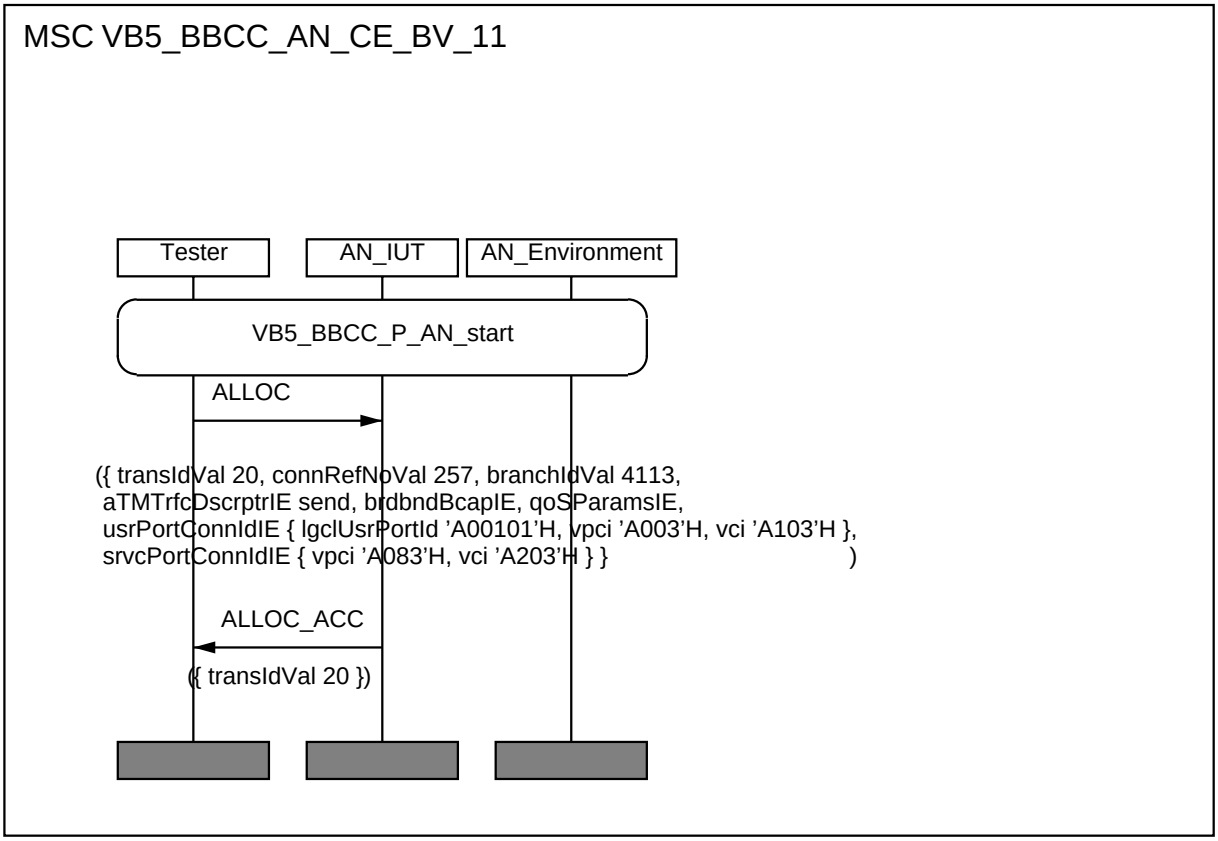

Figure 26

Allocation complete.

VB5_BBCC_AN_CE_BV_12	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check Allocation complete
Test description	The tester issues an **ALLOC** PDU with mandatory parameters for PtM connection then receives an **ALLOC_ACC** PDU within T_Alloc time. The tester issues an **ALLOC_COMP** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving an **ALLOC_COMP_ACC** PDU within T_AllocComp time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_start
Postamble	None
Additional testing	ceeAllocCompInd is sent to AN environment

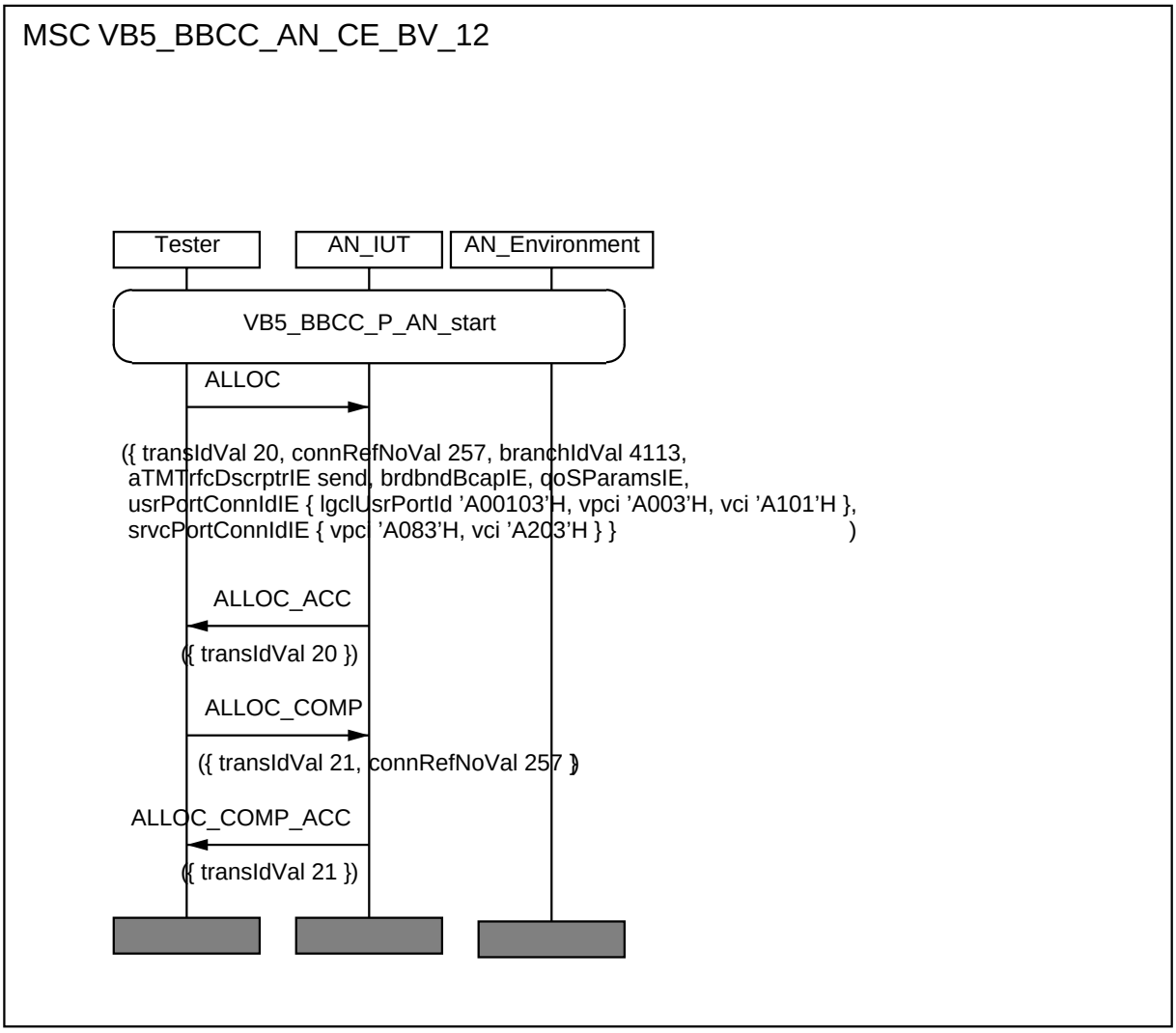

Figure 27

6.1.3 Connection Release procedure (CR)

6.1.3.1 Single Connection Release procedure

VB5_BBCC_AN_CR_BV_01	Reference EN 301 217-1 [3]: 13.6.2.2.2
Purpose	Check Release of a single PtP Connection
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters for an allocated PtP connection (Connection Ref Numb List, one ref)
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeDeallocInd with connection reference number is sent to AN environment

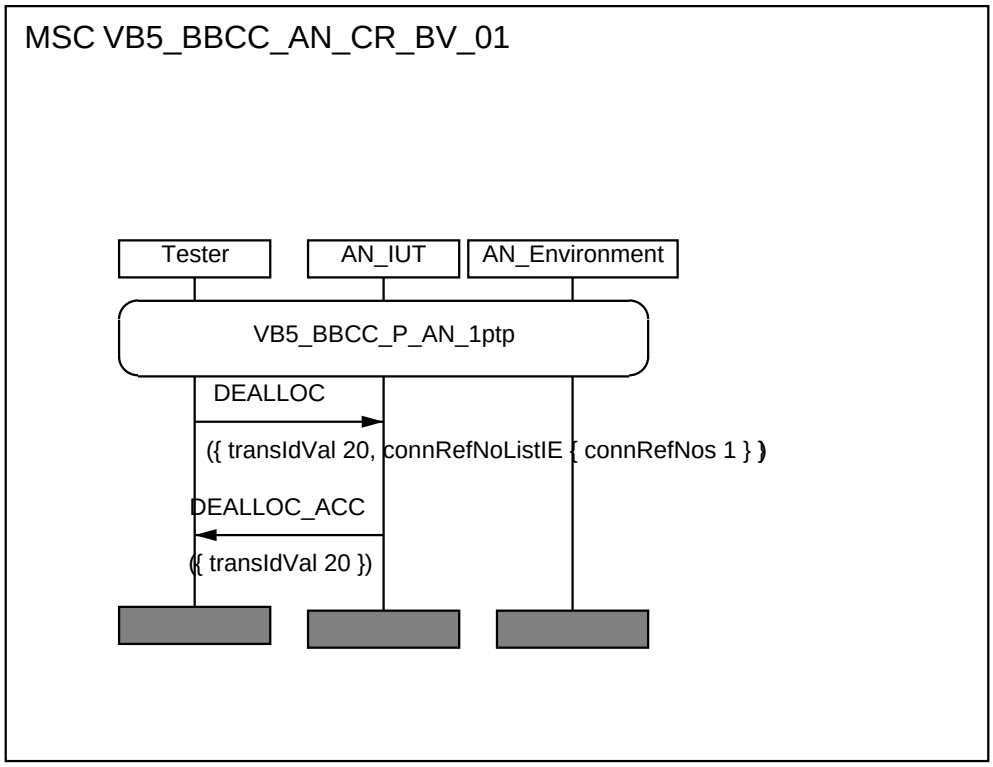

Figure 28

VB5_BBCC_AN_CR_BV_02	Reference EN 301 217-1 [3]: 13.6.2.2.2
Purpose	Check Release of a single PtM Connection
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters for an allocated PtM connection (Connection Ref Numb List, one ref)
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptm
Postamble	None
Additional testing	ceeDeallocInd with connection reference number is sent to AN environment

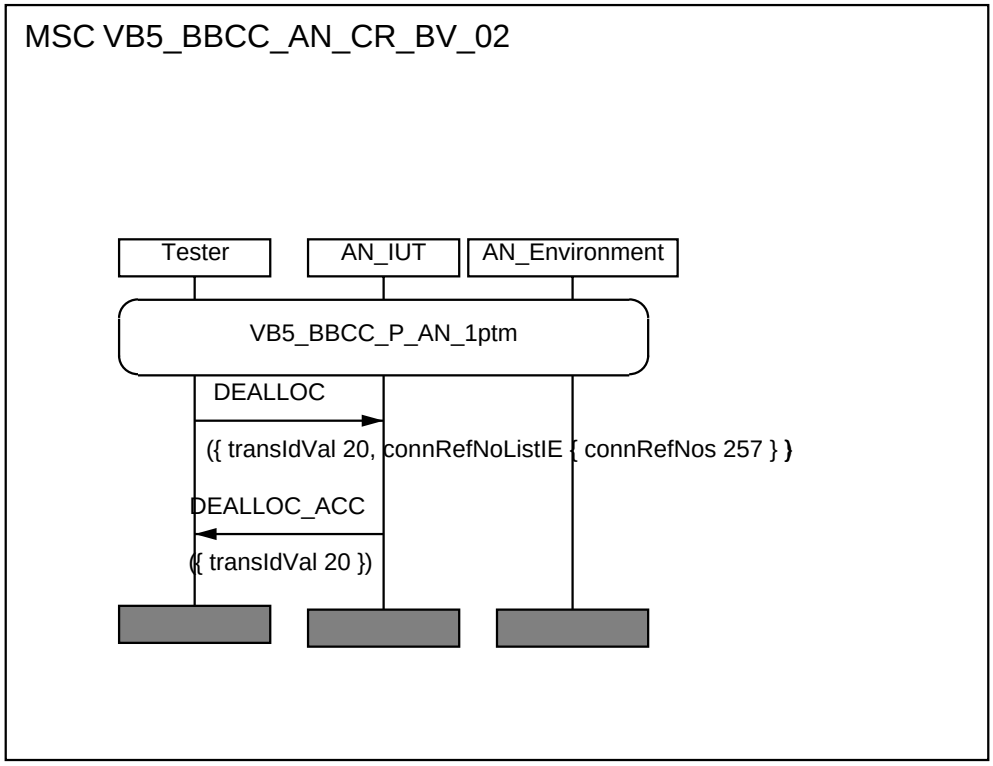

Figure 29

VB5_BBCC_AN_CR_BV_03	Reference EN 301 217-1 [3]: 13.5.12
Purpose	Check Congestion control during Release of a single PtP Connection
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters for an allocated PtP connection
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time, including congestion parameter
Selection	A.54/9: Automatic Congestion Control AND PIX_simulate_congestion
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeDeallocInd with connection reference number is sent to AN environment

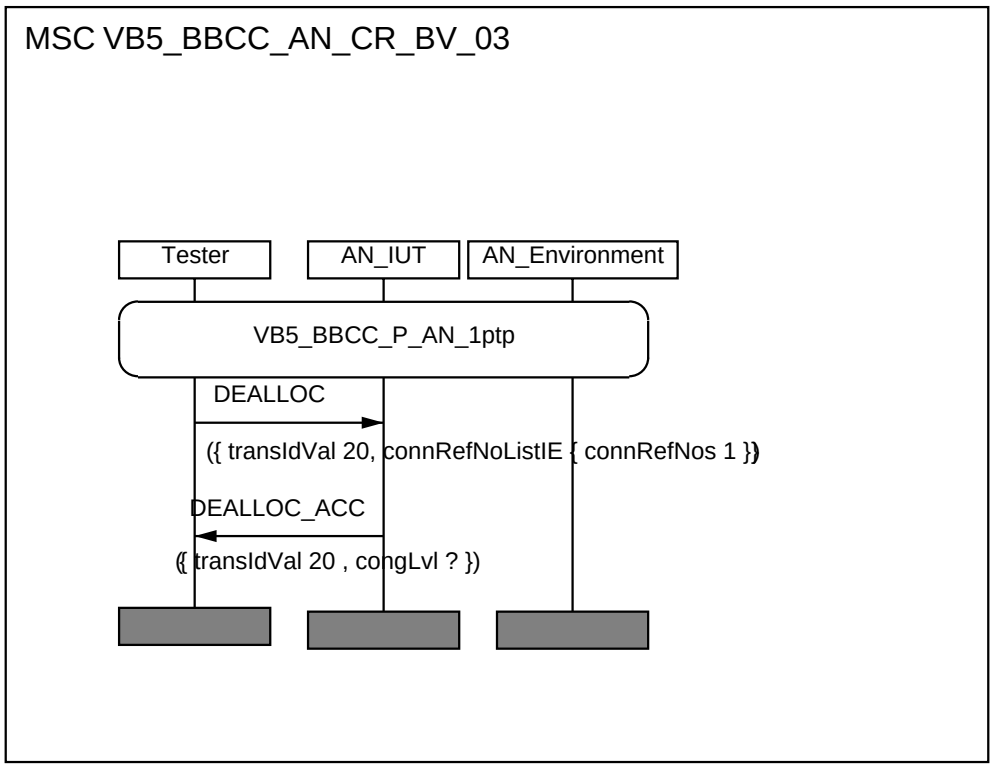

Figure 30

Exceptional procedure.

VB5_BBCC_AN_CR_BI_01	Reference EN 301 217-1 [3]: 13.6.2.2.3
Purpose	Check Release of a non allocated PtP connection
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters (Connection Ref Numb List, one ref) for a NON allocated PtP connection
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeDeallocInd without connection reference number is sent to AN environment

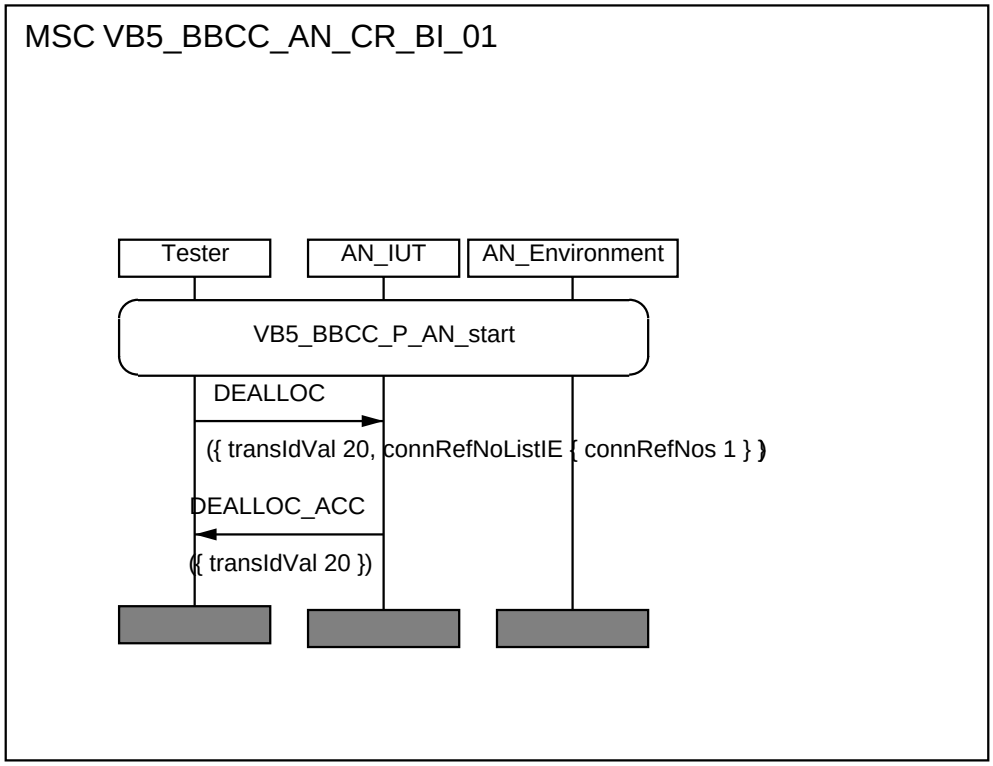

Figure 31

6.1.3.2 Multiple Connections Release procedure

VB5_BBCC_AN_CR_BV_11	Reference EN 301 217-1 [3]: 13.6.2.2.2
Purpose	Check Release of a set of 2 PtP Connections
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters for a set of allocated PtP connections (Connection Ref Numb List, several ref)
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	None
Preamble	P_AN_2ptp
Postamble	None
Additional testing	ceeDeallocInd containing all connection reference numbers is sent to AN environment

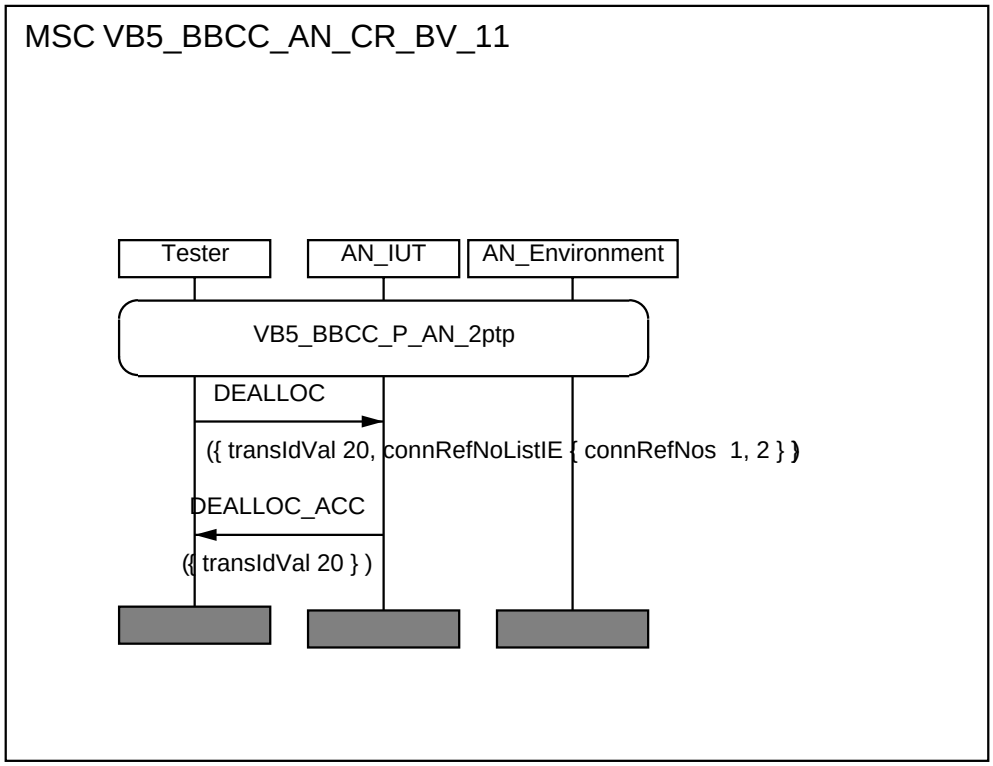

Figure 32

VB5_BBCC_AN_CR_BV_12	Reference EN 301 217-1 [3]: 13.6.2.2.2
Purpose	Check Release of a set of PtP and PtM Connections
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters for a set of allocated PtP and PtM connections (Connection Ref Numb List, several ref)
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptp1ptm
Postamble	None
Additional testing	ceeDeallocInd containing all connection reference numbers is sent to AN environment

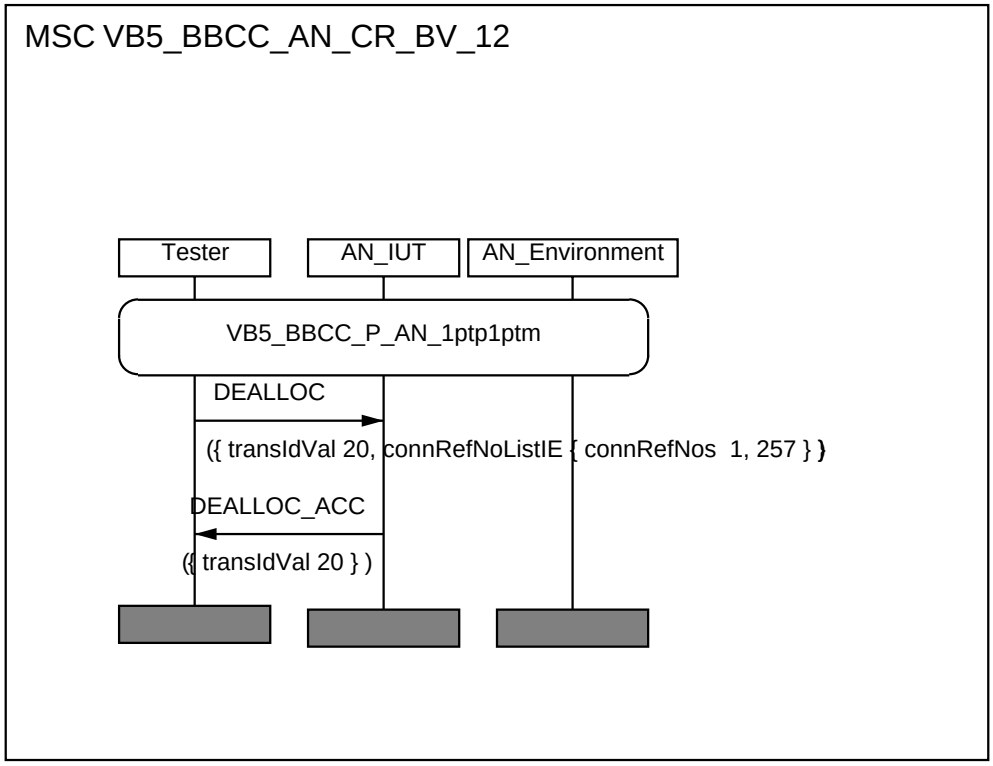

Figure 33

VB5_BBCC_AN_CR_BV_13	Reference EN 301 217-1 [3]: 13.6.2.2.2
Purpose	Check Release of a set of PtM Connections
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters for a set of allocated PtM connections (Connection Ref Numb List, several ref)
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_2ptm
Postamble	None
Additional testing	ceeDeallocInd containing all connection reference numbers is sent to AN environment

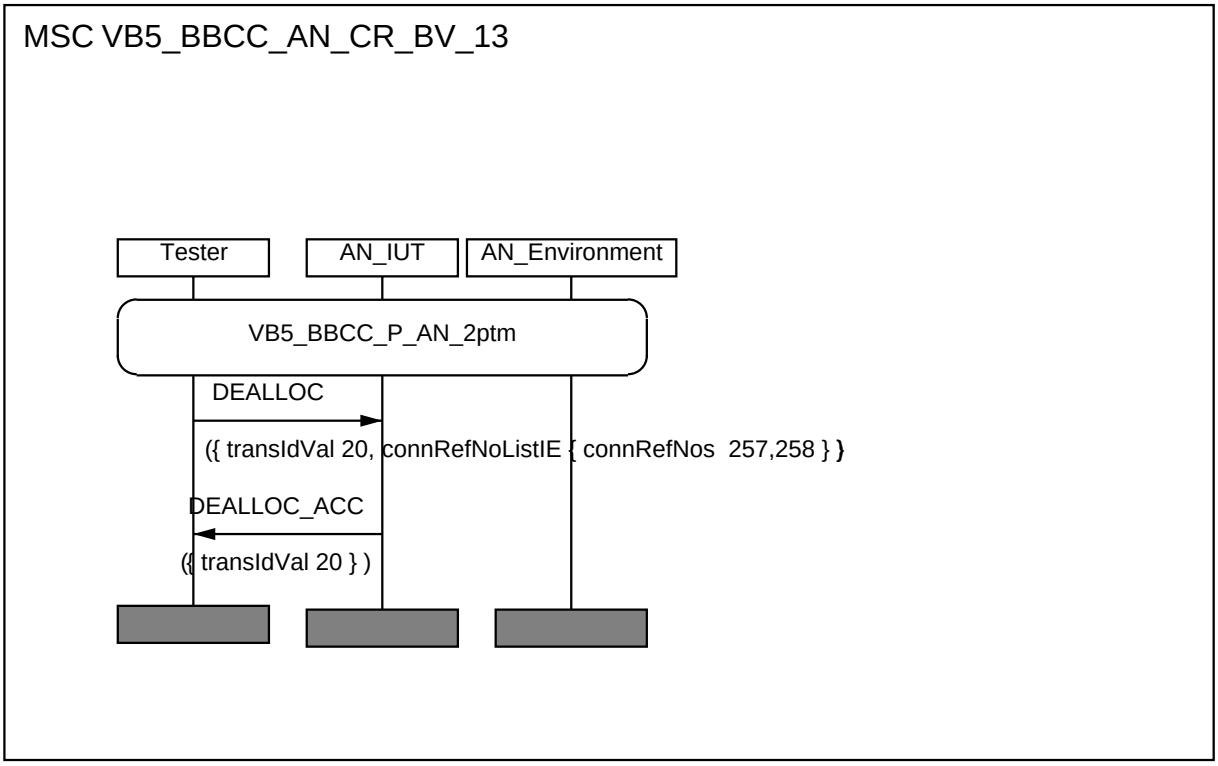

Figure 34

Exceptional procedure.

VB5_BBCC_AN_CR_BI_11	Reference EN 301 217-1 [3]: 13.6.2.2.3
Purpose	Check Release of a set of PtP connections which includes a non allocated connection
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters (Connection Ref Numb List, several ref) for a set of PtP connections which includes a non allocated connection
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeDeallocInd without connection reference number for the non-allocated one is sent to AN environment

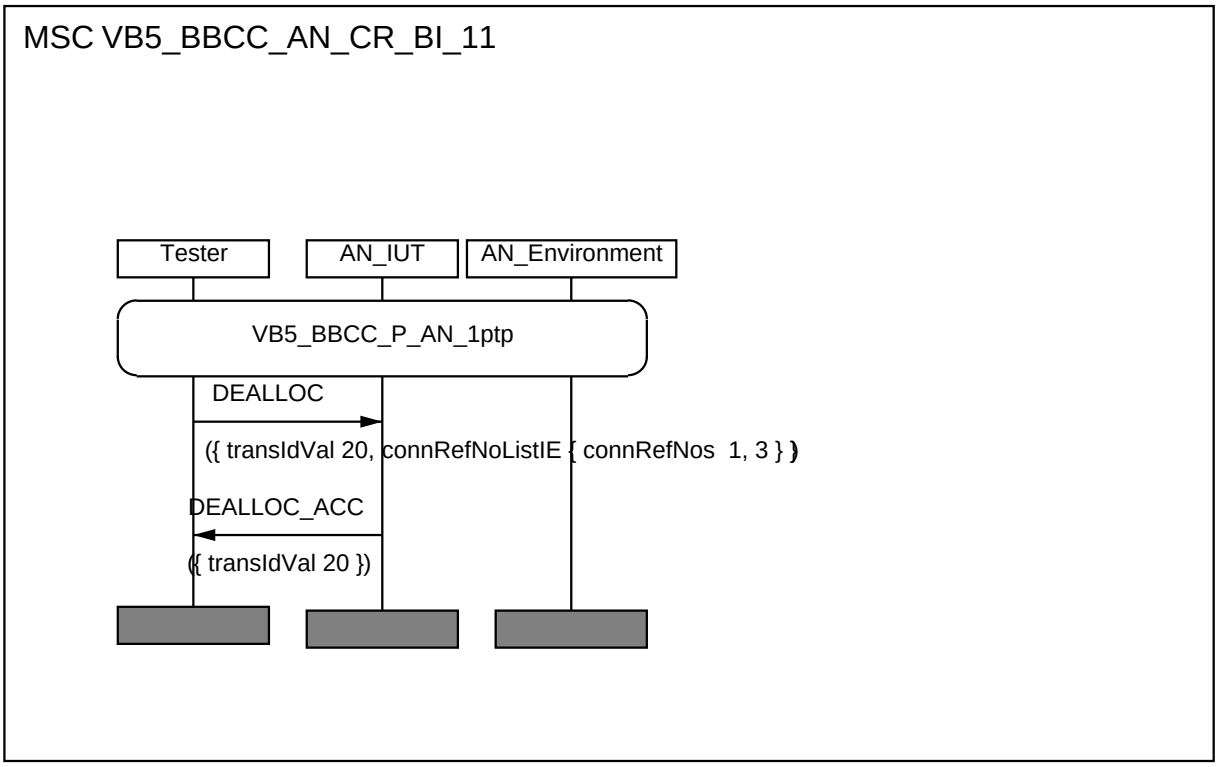

Figure 35

VB5_BBCC_AN_CR_BI_12	Reference EN 301 217-1 [3]: 13.6.2.2.3
Purpose	Check Release of a set of PtM connections which includes a non allocated connection
Test description	The tester issues a **DEALLOC** PDU with mandatory parameters (Connection Ref Numb List, several ref) for a set of PtM connections which includes a non allocated connection
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU within T_Dealloc time
Selection	None
Preamble	P_AN_1ptm
Postamble	None
Additional testing	ceeDeallocInd without connection reference number for the non-allocated one is sent to AN environment

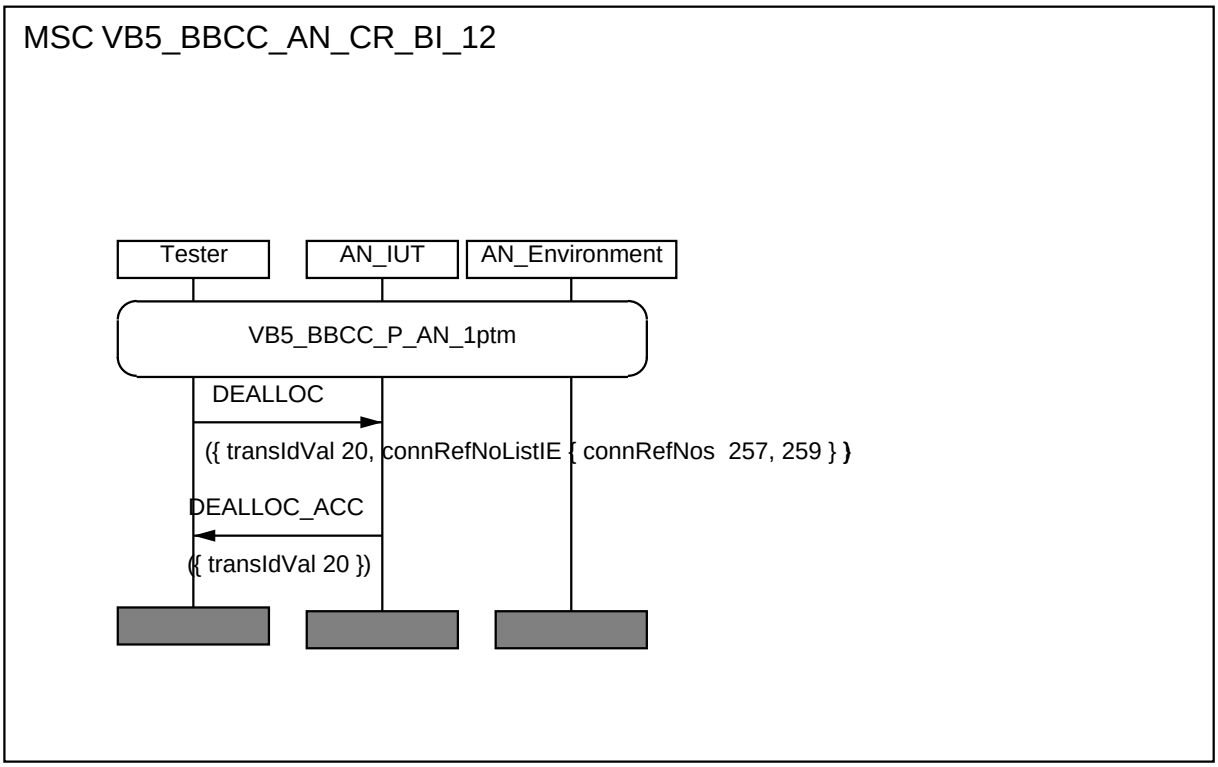

Figure 36

6.1.4 Connection modification procedure (CM)

Point to point configuration only.

6.1.4.1 Modification (first step) procedure

VB5_BBCC_AN_CM_BV_01	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification: first step
Test description	The tester issues a **MODIFY** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **MODIFY_ACC** PDU within T_Modify time
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeModifyInd is sent to AN environment

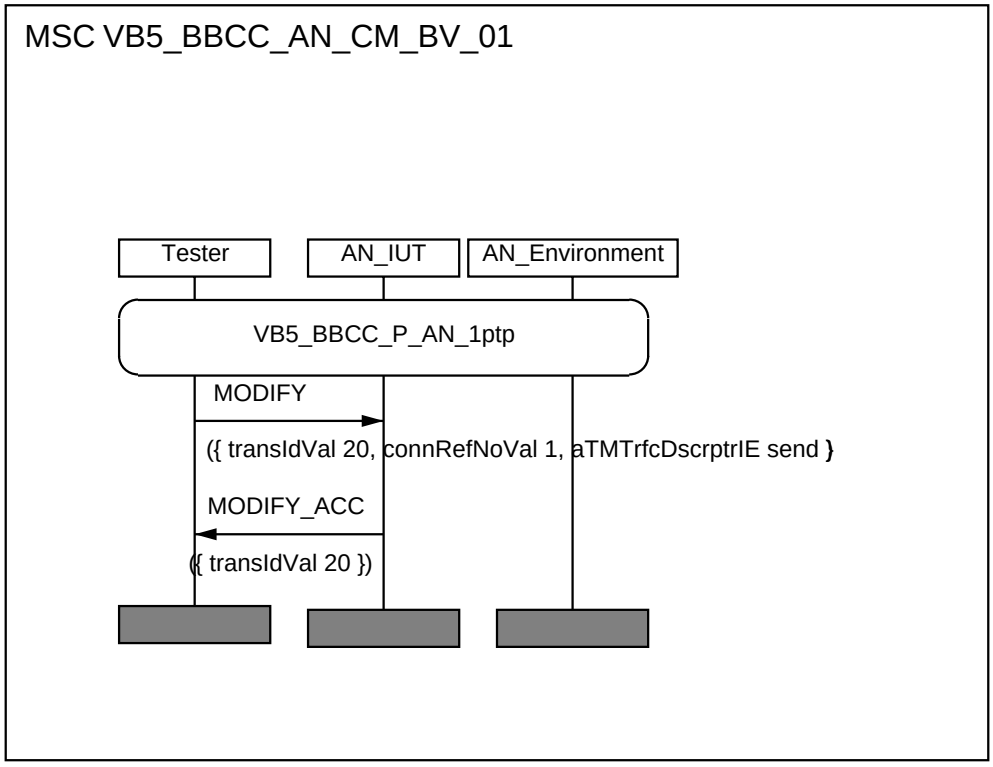

Figure 37

6.1.4.2 Modification Complete procedure

VB5_BBCC_AN_CM_BV_02	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification complete
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester issues a **MODIFY_COMP** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **MODIFY_COMP_ACC** PDU within T_ModifyComp time
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeModifyCompInd is sent to AN environment

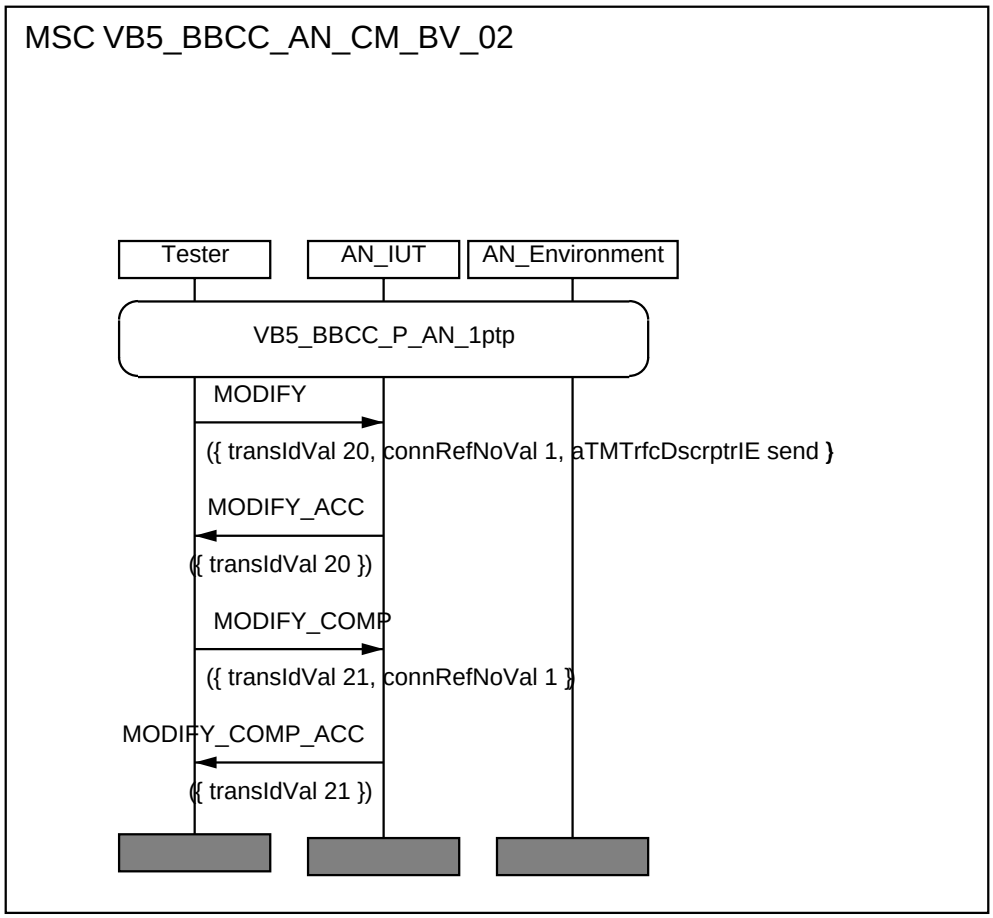

Figure 38

VB5_BBCC_AN_CM_BV_03	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification complete using optional IE
Test description	The tester issues a **MODIFY** PDU with mandatory and optional parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester issues a **MODIFY_COMP** PDU with mandatory and optional parameters
Pass criteria	Check that the tester is receiving a **MODIFY_COMP_ACC** PDU within T_ModifyComp time
Selection	A.54/4: Bearer connection modification procedure AND A.54/12: ATM traffic descriptor modification with negotiation procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeModifyCompInd is sent to AN environment

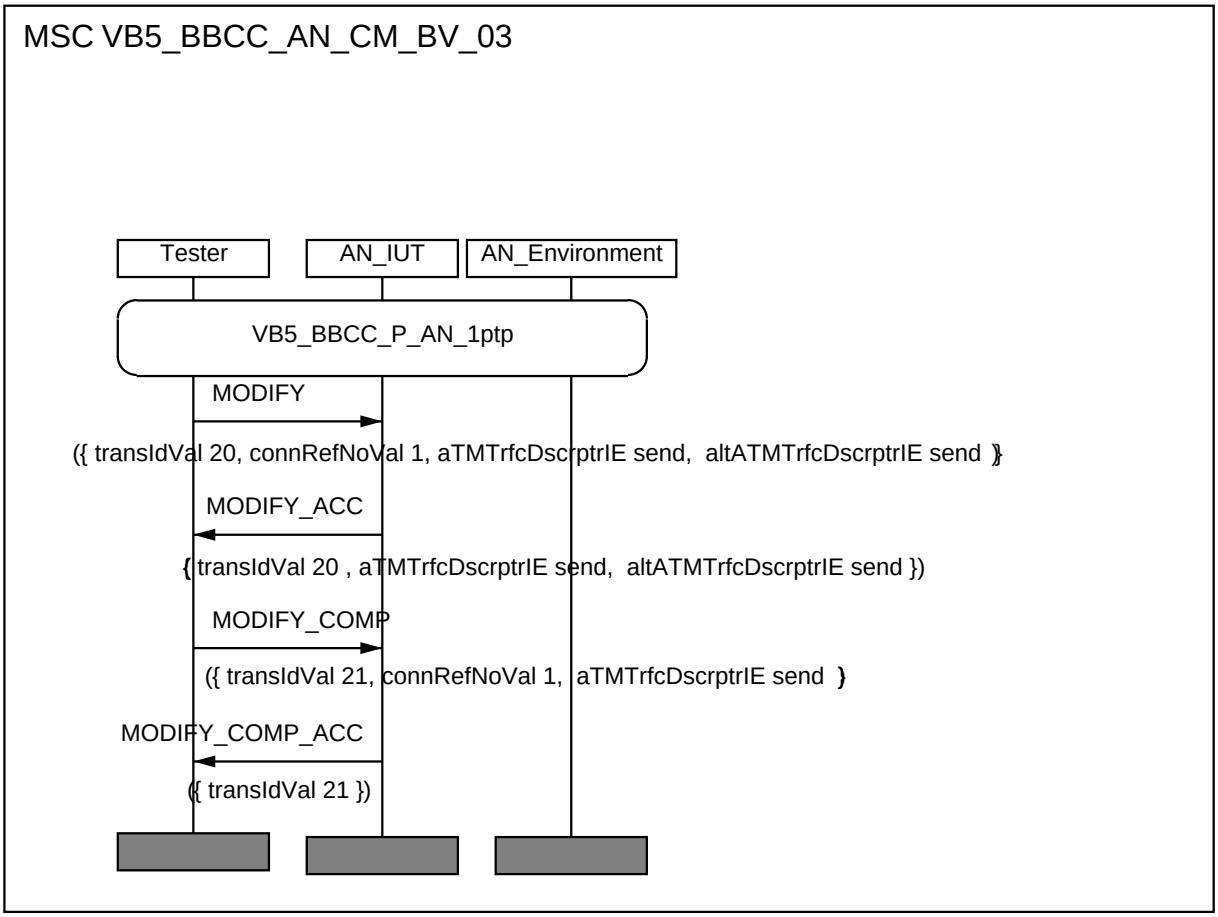

Figure 39

6.1.4.3 Modification Abort procedure

VB5_BBCC_AN_CM_BV_04	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification abort
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester issues a **MODIFY_ABORT** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **MODIFY_ABORT_ACC** PDU within T_ModifyAbort time
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeModifyAbortInd is sent to AN environment

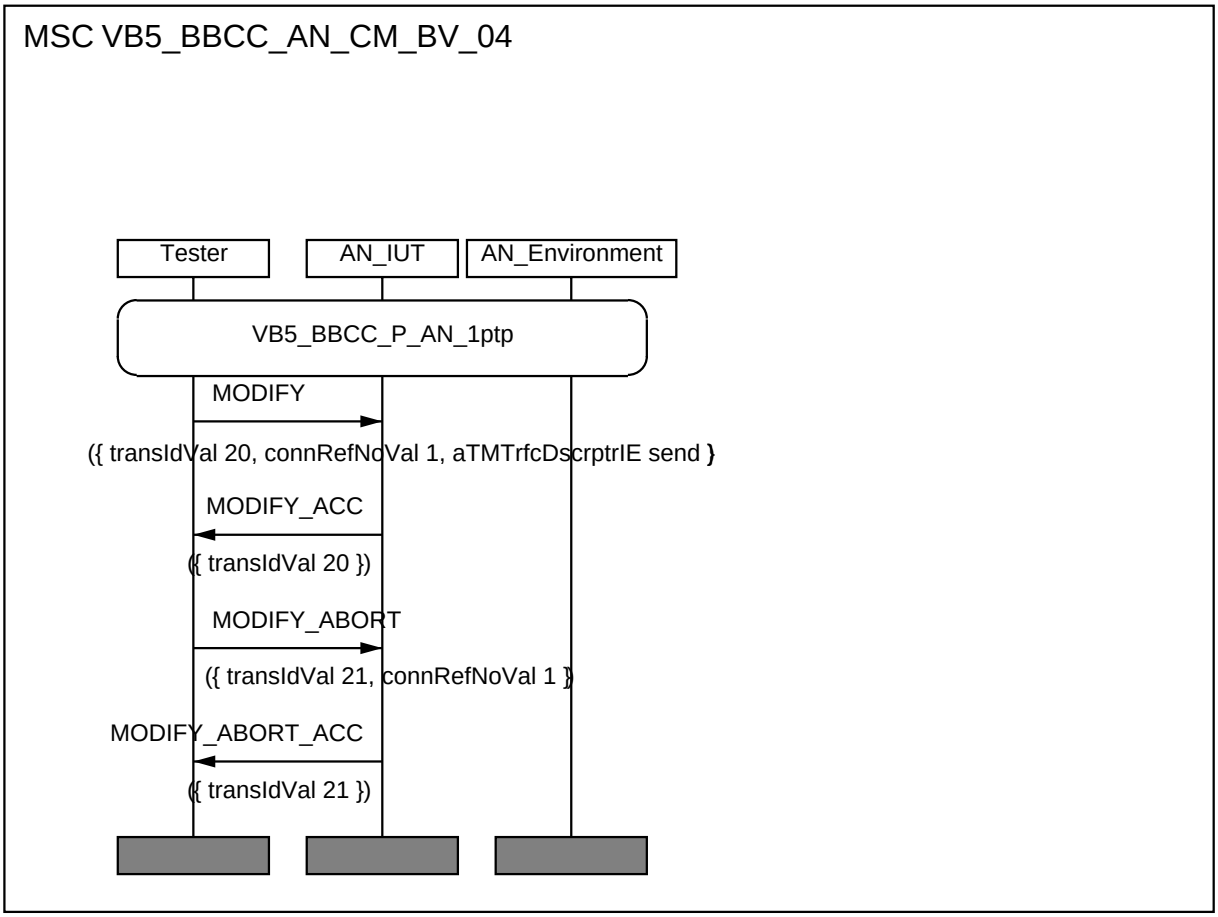

Figure 40

6.1.4.4 Modification exceptional procedure

VB5_BBCC_AN_CM_BI_01	Reference EN 301 217-1 [3]: 13.6.2.3.3, 13.6.1.5.4
Purpose	Check modification reject when no connection established
Test description	The tester issues a **MODIFY** PDU with mandatory parameters, while no connection is setup
Pass criteria	Check that the tester is receiving a **MODIFY_REJ** PDU within T_Modify time, including error cause "message not compatible with connection state"
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_start
Postamble	None
Additional testing	Reset or Dealloc will restore connection reference

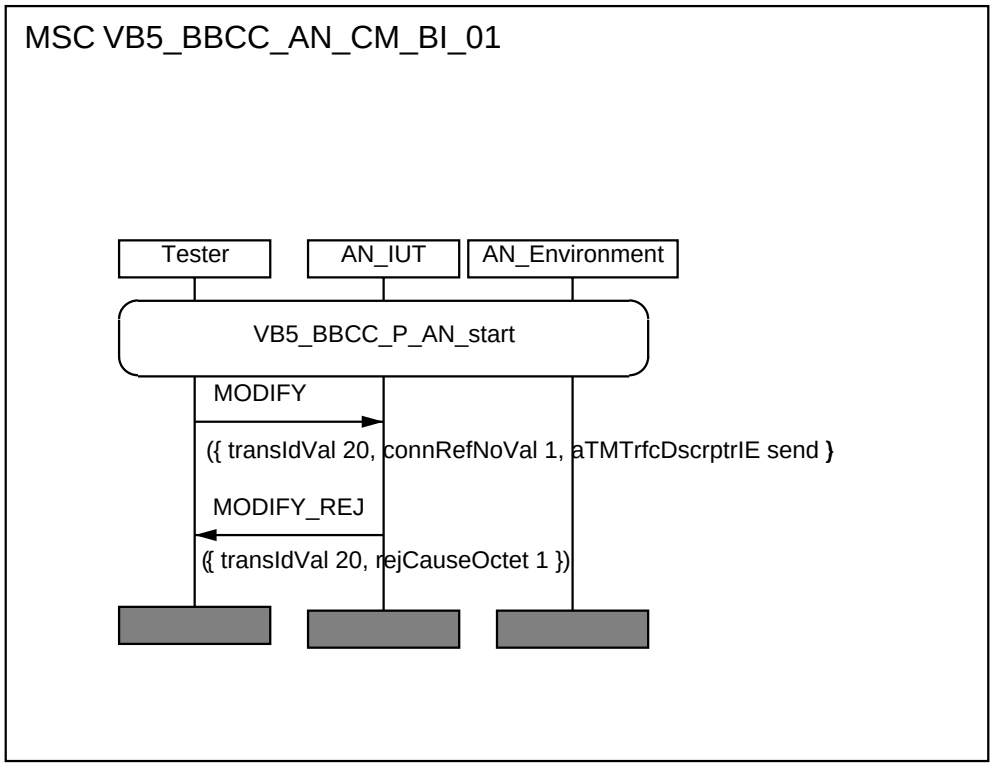

Figure 41

VB5_BBCC_AN_CM_BI_02	Reference EN 301 217-1 [3]: 13.6.2.3.3, 13.6.1.5.4
Purpose	Check modification comp reject when no initial modify sent
Test description	The tester issues a **MODIFY_COMP** PDU with mandatory parameters, while connection is setup, but no initial MODIFY sent
Pass criteria	Check that the tester is receiving a **MODIFY_COMP_REJ** PDU within T_ModifyComp time, including error cause "message not compatible with connection state"
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	Reset or Dealloc will restore connection reference

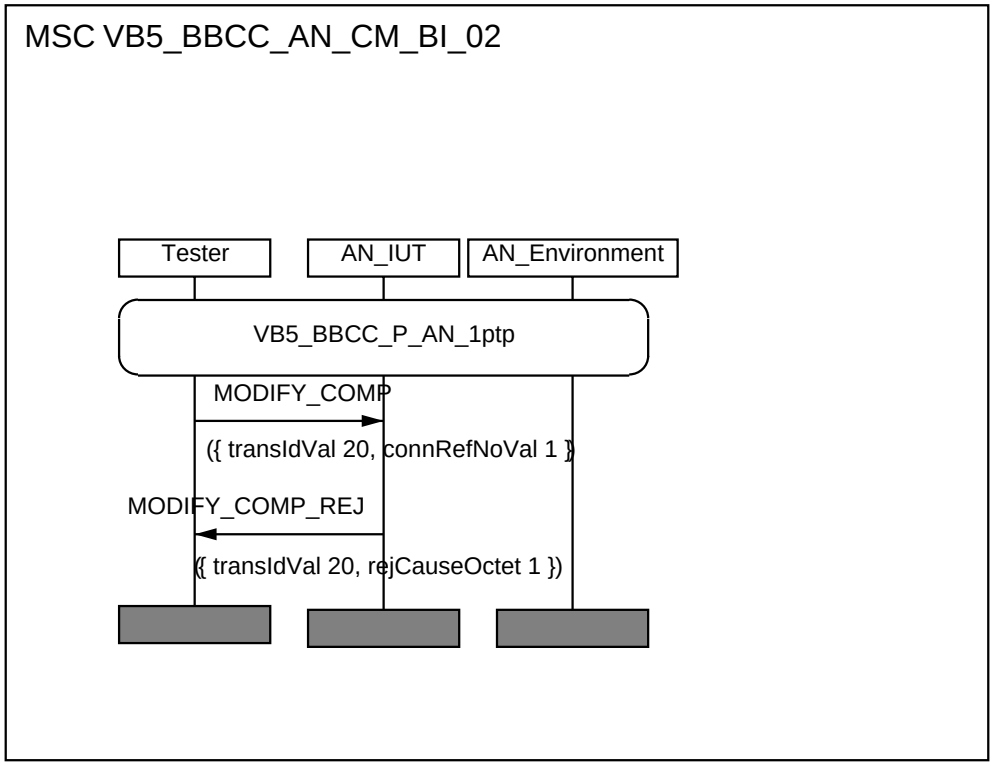

Figure 42

VB5_BBCC_AN_CM_BI_03	Reference EN 301 217-1 [3]: 13.6.2.3.3
Purpose	Check modification reject when modification addresses a PtM connection
Test description	The tester issues a **MODIFY** PDU with mandatory parameters addressing a PtM connection
Pass criteria	Check that the tester is receiving a **MODIFY_REJ** PDU within T_Modify time, including error cause "message not compatible with connection state"
Selection	A.54/4: Bearer connection modification procedure AND (A.54/5 AND A.54/6: multipoint connection)
Preamble	P_AN_1ptm
Postamble	None
Additional testing	Reset or Dealloc will restore connection reference

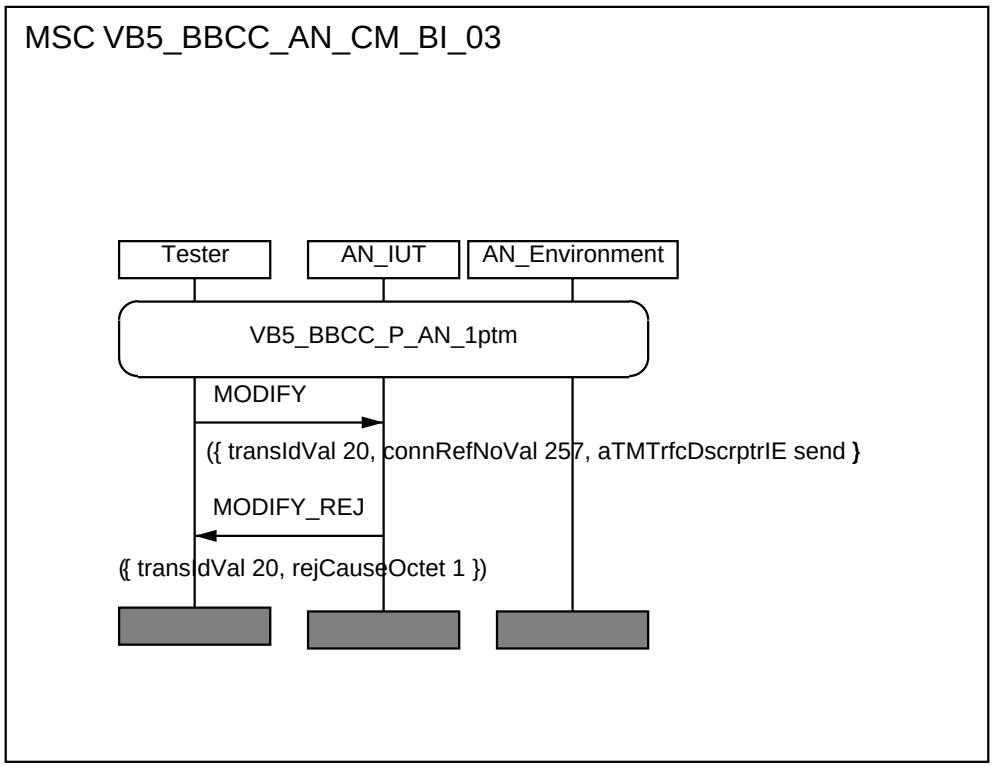

Figure 43

VB5_BBCC_AN_CM_BI_04	Reference EN 301 217-1 [3]: 13.6.2.3.2, 13.6.1.5.5
Purpose	Check modification comp reject upon Connection Control Function decision
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester issues a **MODIFY_COMP** PDU with mandatory parameters. The Connection Control Function rejects the request
Pass criteria	Check that the tester is receiving a **MODIFY_COMP_REJ** PDU within T_ModifyComp time
Selection	A.54/4: Bearer connection modification procedure AND PIX_MODIFY_COMP_REJ true
Preamble	P_AN_1ptp
Postamble	None
Additional testing	Reset or Dealloc will restore connection reference

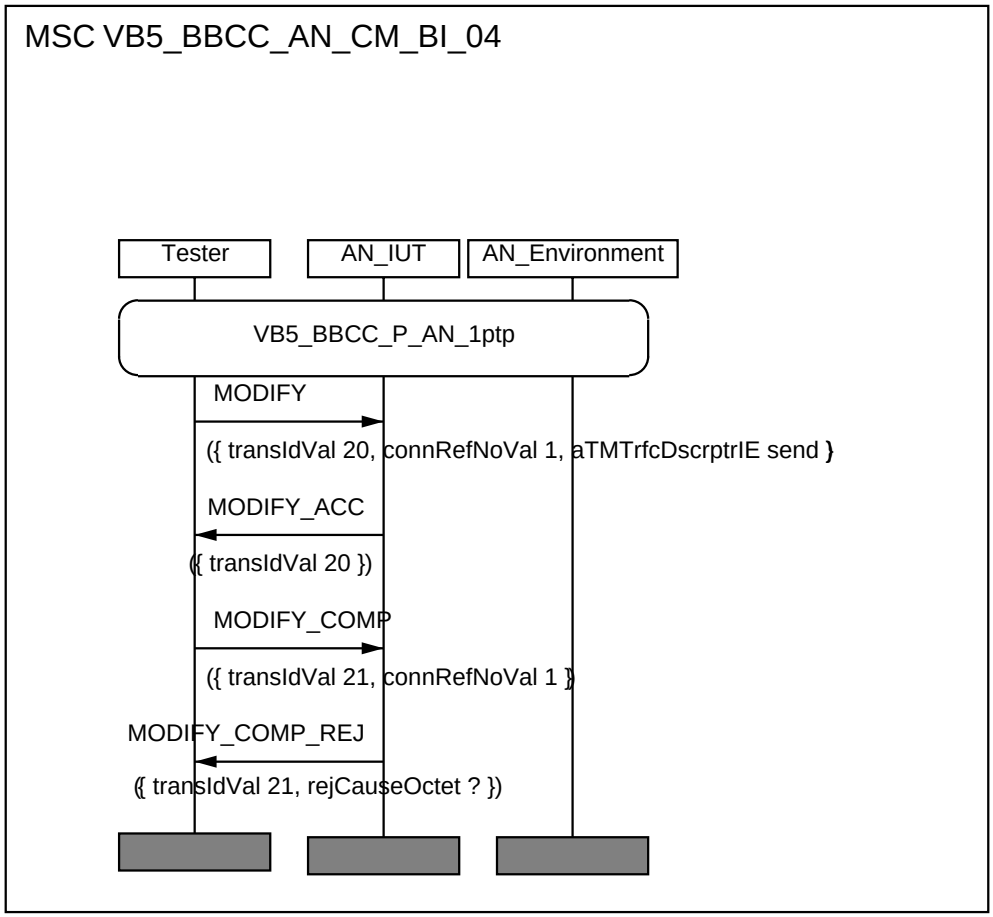

Figure 44

VB5_BBCC_AN_CM_BI_05	Reference EN 301 217-1 [3]: 13.6.2.3.2, 13.6.1.5.5
Purpose	Check modification abort reject upon Connection Control Function decision
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester issues a **MODIFY_ABORT** PDU with mandatory parameters. The Connection Control Function rejects the request
Pass criteria	Check that the tester is receiving a **MODIFY_ABORT_REJ** PDU within T_ModifyAbort time
Selection	A.54/4: Bearer connection modification procedure AND PIX_MODIFY_ABORT_REJ true
Preamble	P_AN_1ptp
Postamble	None
Additional testing	Reset or Dealloc will restore connection reference

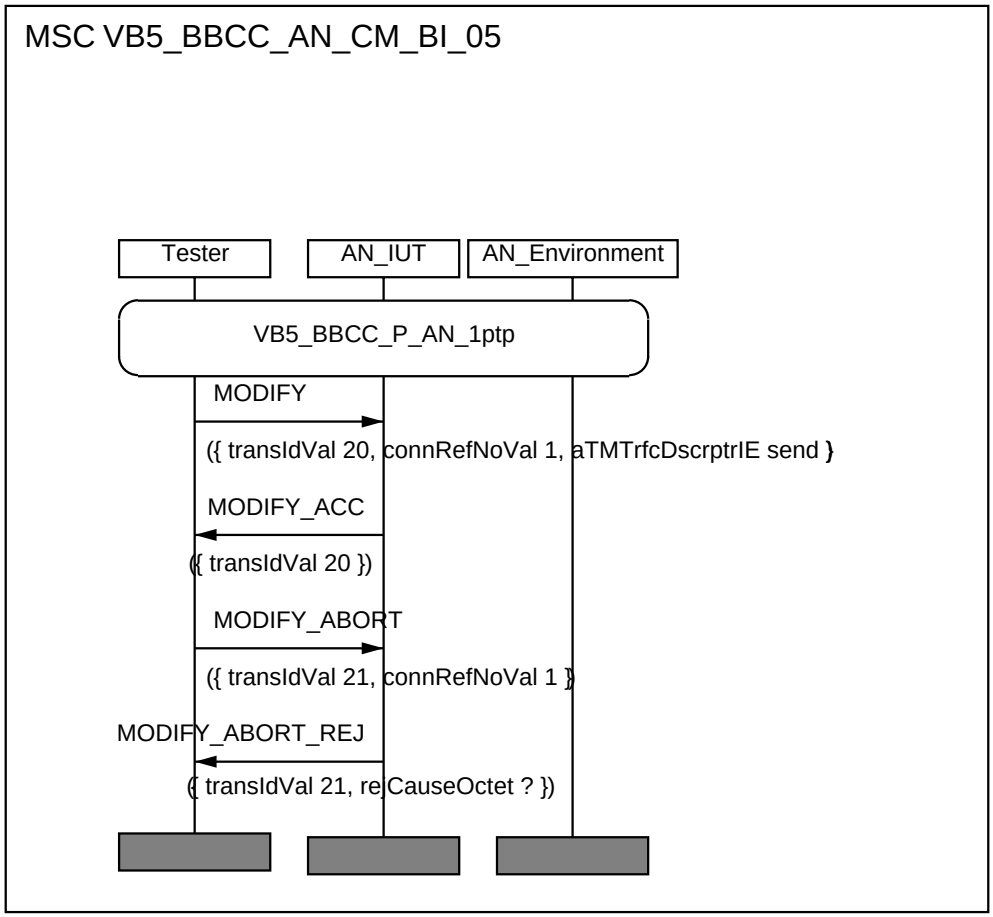

Figure 45

6.1.4.5 Test of timer T_Modification

VB5_BBCC_AN_CM_TI_01	Reference EN 301 217-1 [3]: 13.6.2.3.3 c
Purpose	Check T_Modification timer
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester waits for more than T_Modification time then it issues a **MODIFY_COMP** PDU
Pass criteria	Check that the tester is NOT receiving a **MODIFY_COMP_ACC** PDU within T_ModifyComp time
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	

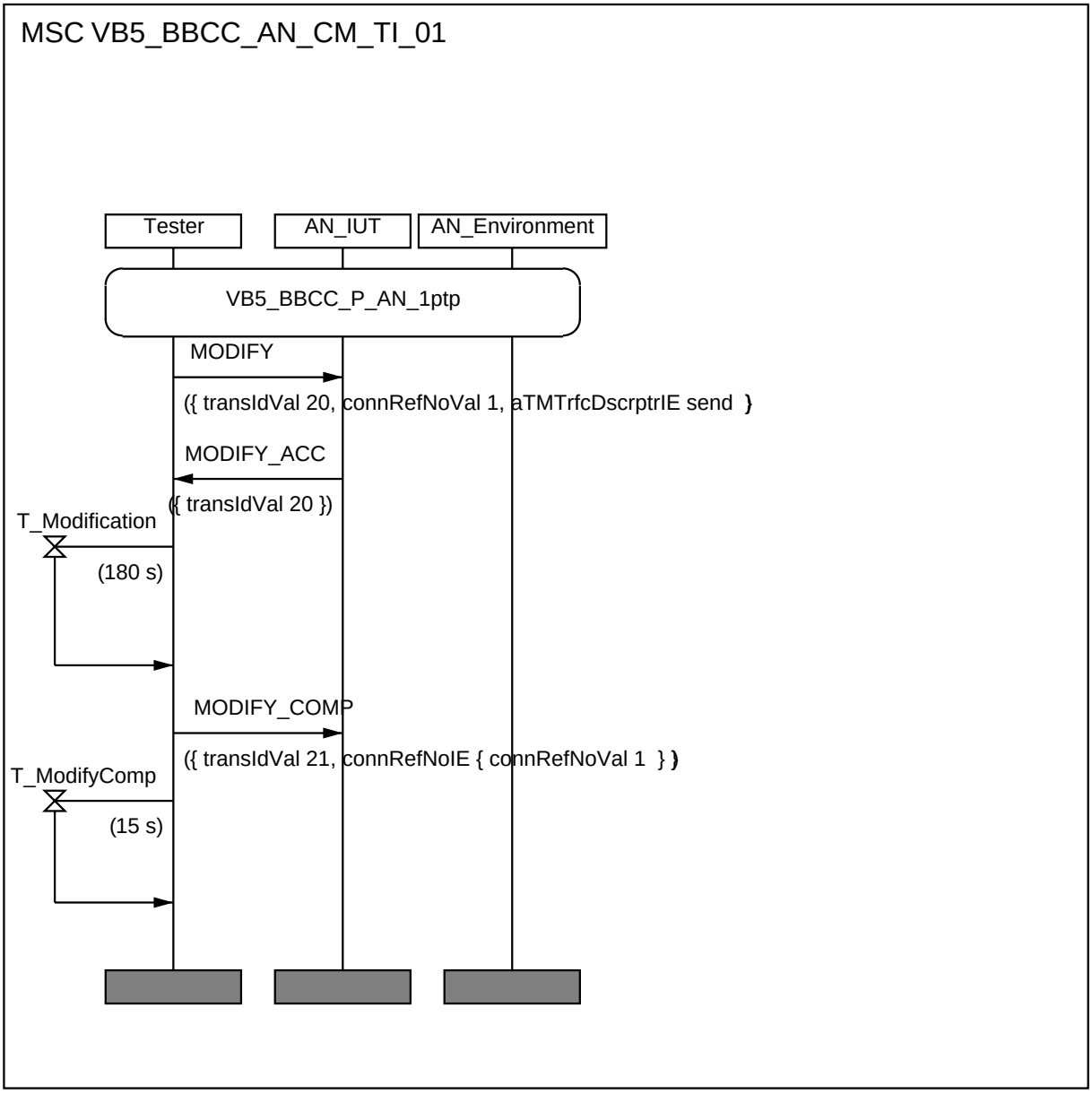

Figure 46

VB5_BBCC_AN_CM_TI_02	Reference EN 301 217-1 [3]: 13.6.2.3.3 c
Purpose	Check T_Modification timer
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester waits for more than T_Modification time then it issues a **MODIFY_ABORT** PDU
Pass criteria	Check that the tester is NOT receiving a **MODIFY_ABORT_ACC** PDU within T_ModifyAbort time
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	

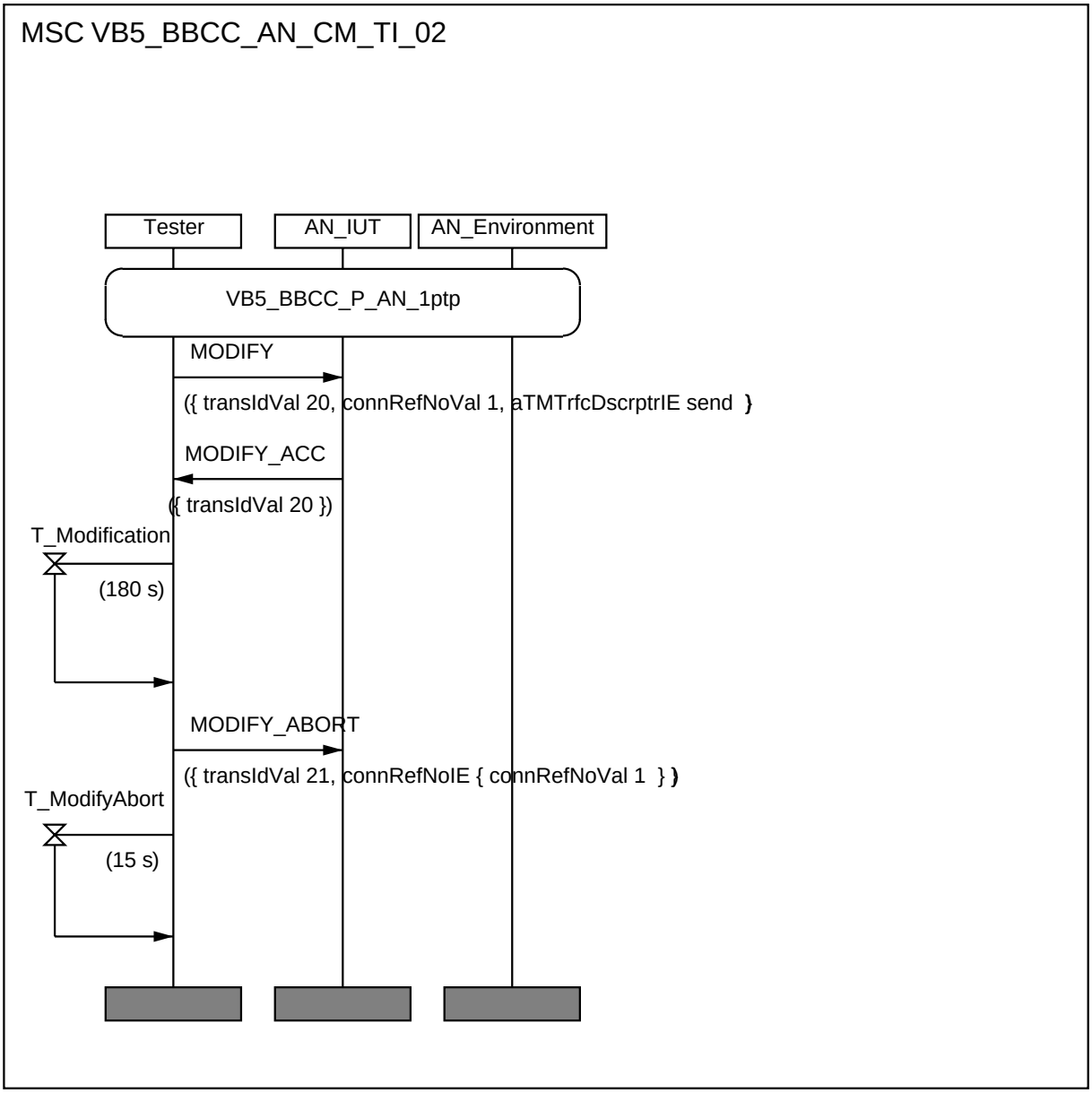

Figure 47

VB5_BBCC_AN_CM_TI_03	Reference EN 301 217-1 [3]: 13.6.2.3.3 c
Purpose	Check T_Modification timer
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester waits for more than T_Modification time then it issues a **DEALLOC** PDU
Pass criteria	Check that the tester is receiving a **DEALLOC_ACC** PDU
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	

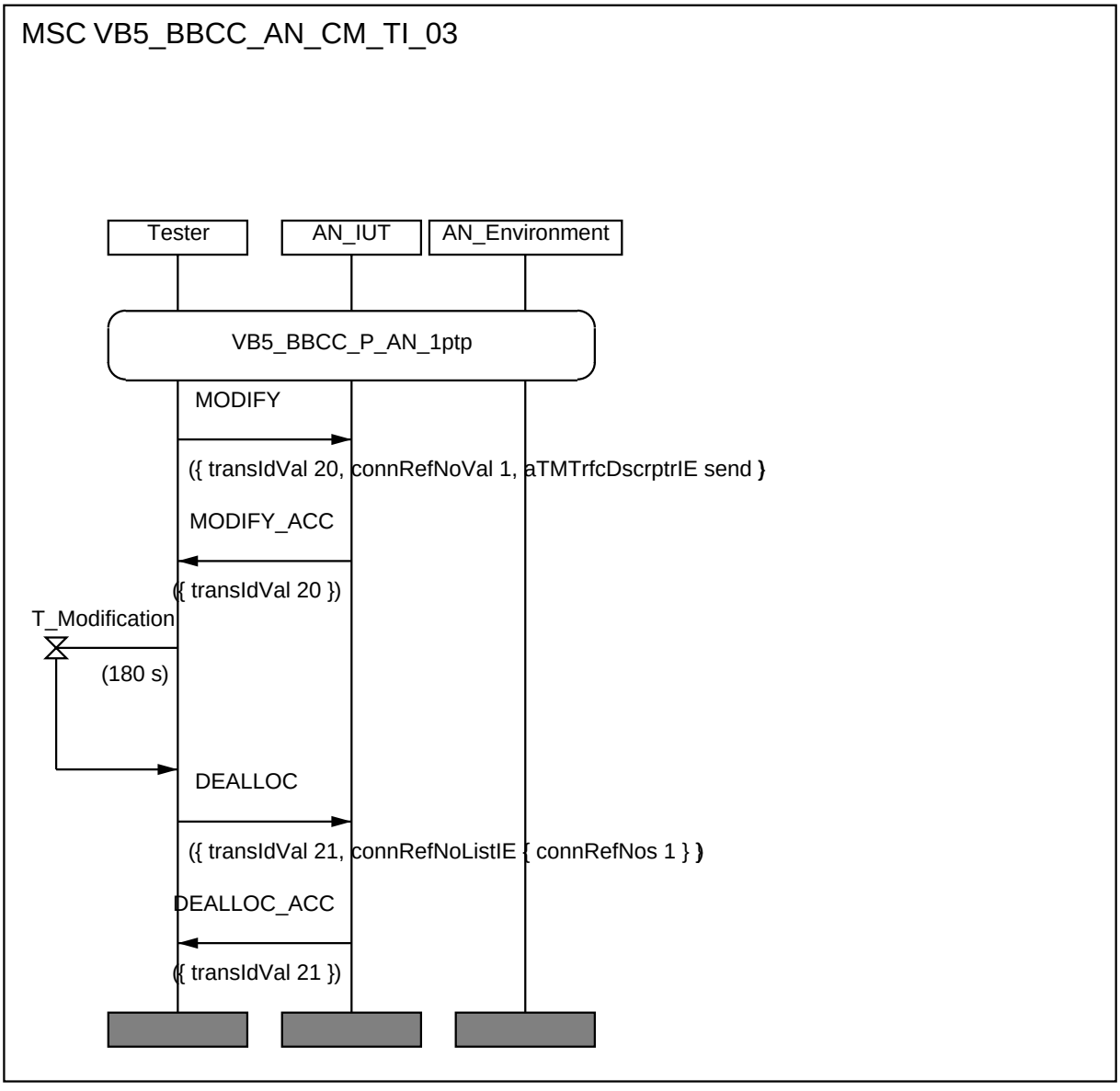

Figure 48

VB5_BBCC_AN_CM_TI_04	Reference EN 301 217-1 [3]: 13.6.2.3.3 c
Purpose	Check T_Modification timer
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester waits for more than T_Modification time then it issues a **DEALLOC** PDU and receives a **DEALLOC_ACC** PDU. Finally the tester issues an **ALLOC** PDU with mandatory parameters for the same connection reference number
Pass criteria	Check that the tester is receiving an **ALLOC_ACC** PDU
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	

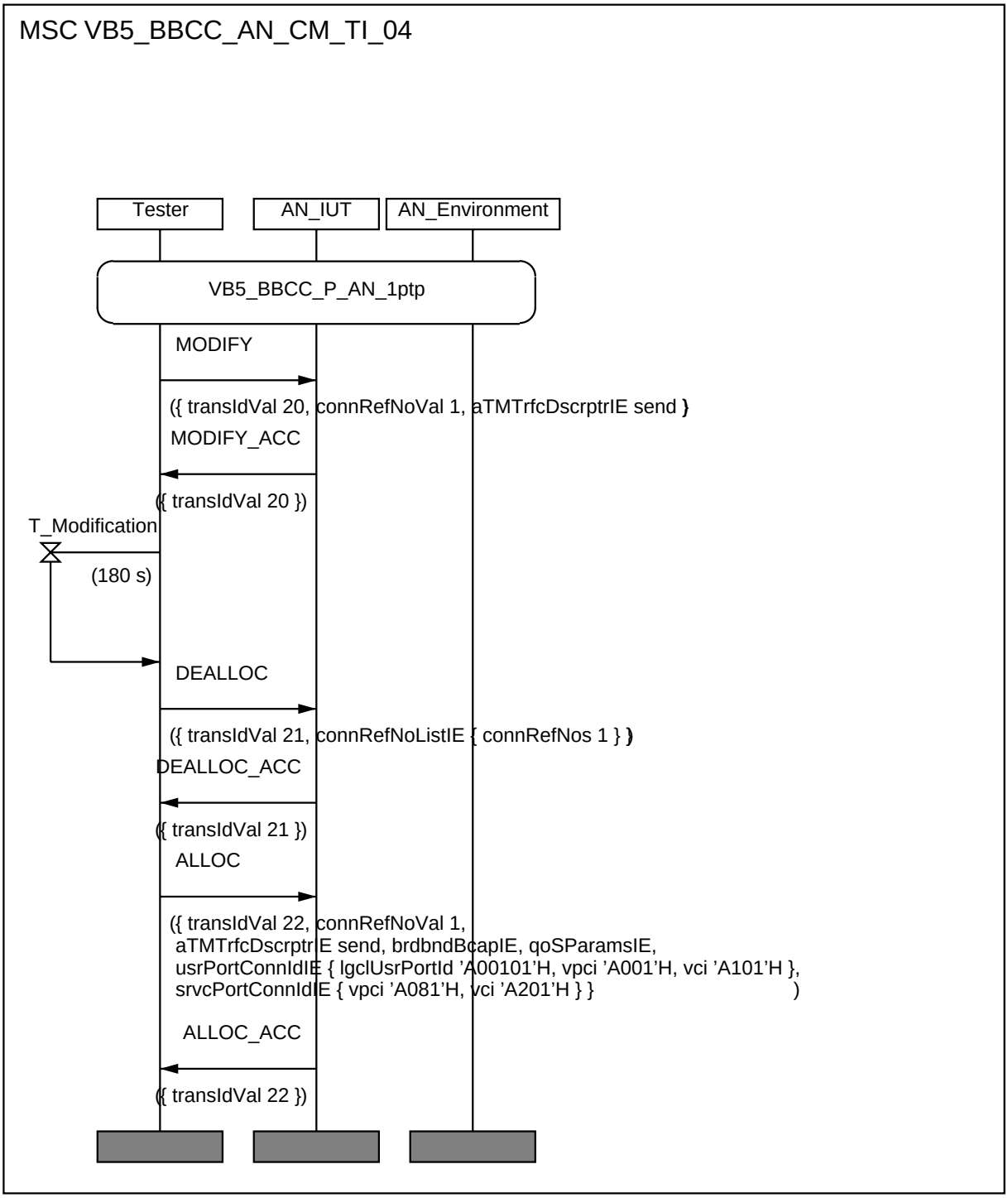

Figure 49

VB5_BBCC_AN_CM_TI_05	Reference EN 301 217-1 [3]: 13.6.2.3.3 c
Purpose	Check T_Modification timer
Test description	The tester issues a **MODIFY** PDU with mandatory parameters then receives a **MODIFY_ACC** PDU within T_Modify time. The tester waits for more than T_Modification time then it issues a **RESET** PDU (note) and receives a **RESET_ACC** PDU. Finally the tester issues an **ALLOC** PDU with mandatory parameters for the same connection reference number
Pass criteria	Check that the tester is receiving an **ALLOC_ACC** PDU
Selection	A.54/4: Bearer connection modification procedure
Preamble	P_AN_1ptp
Postamble	None
Additional testing	
NOTE: The RESET PDU shall carry the service port connection identifier corresponding to the connection reference number for which the modification was requested.	

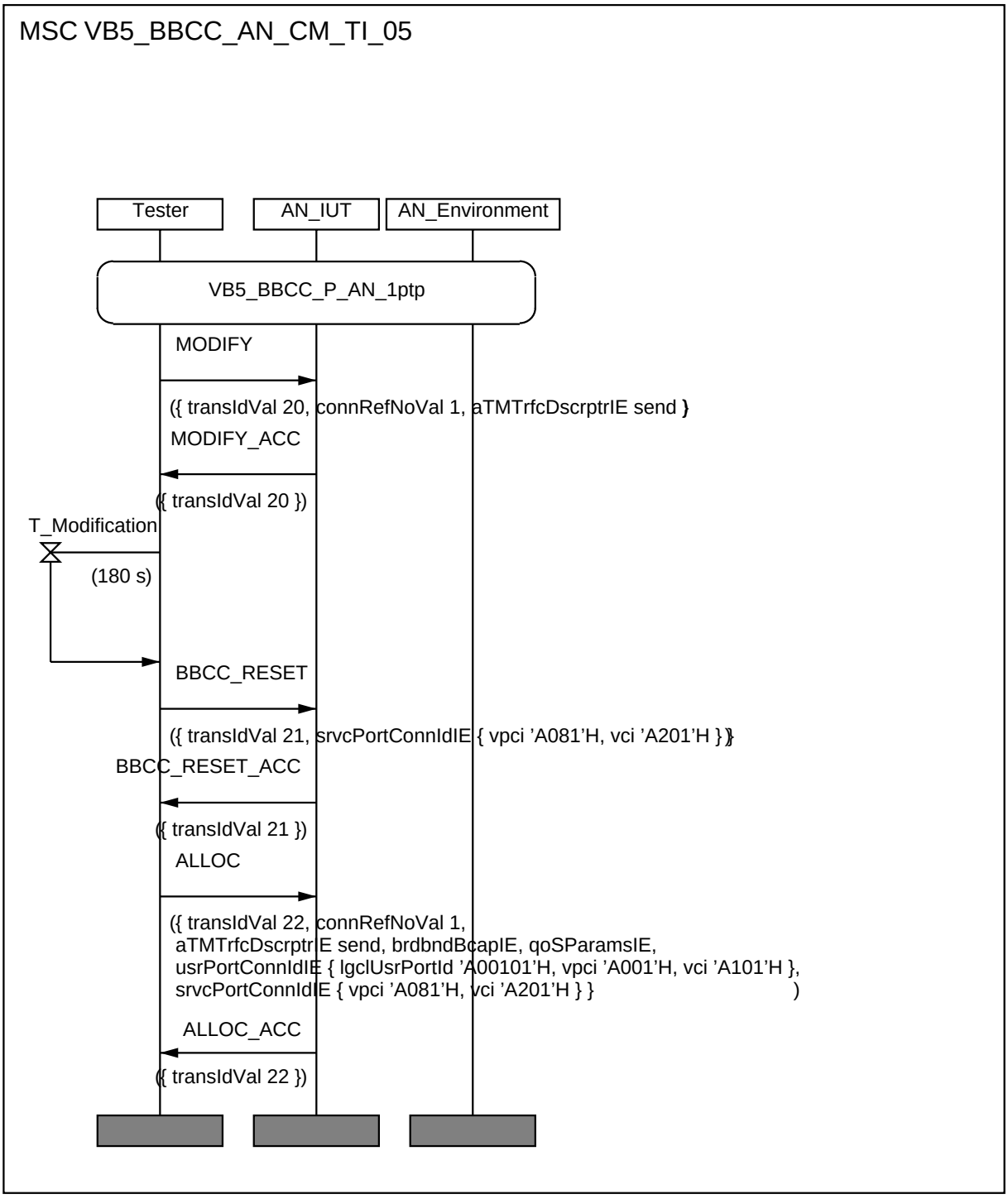
MSC VB5_BBCC_AN_CM_TI_05
Tester
AN_IUT
AN_Environment
VB5_BBCC_P_AN_1ptp
MODIFY
({ transIdVal 20, connRefNoVal 1, aTMTrfcDscrptrIE send }
MODIFY_ACC
({ transIdVal 20 })
T_Modification
(180 s)
BBCC_RESET
({ transIdVal 21, srvcPortConnIdIE { vpci 'A081'H, vci 'A201'H } }
BBCC_RESET_ACC
({ transIdVal 21 })
ALLOC
({ transIdVal 22, connRefNoVal 1,
aTMTrfcDscrptrIE send, brdbndBcapIE, qoSParamsIE,
usrPortConnIdIE { lgclUsrPortId 'A00101'H, vpci 'A001'H, vci 'A101'H },
srvcPortConnIdIE { vpci 'A081'H, vci 'A201'H } })
ALLOC_ACC
({ transIdVal 22 })

Figure 50

6.1.5 Branch Establishment procedure (BE)

PtM connection only.

6.1.5.1 Add Branch procedure

VB5_BBCC_AN_BE_BV_01	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check Branch establishment (Add)
Test description	The tester issues a **ADD_BRANCH** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **ADD_BRANCH_ACC** PDU within T_AddBranch time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptm
Postamble	None
Additional testing	ceeAddBranchInd is sent to AN environment

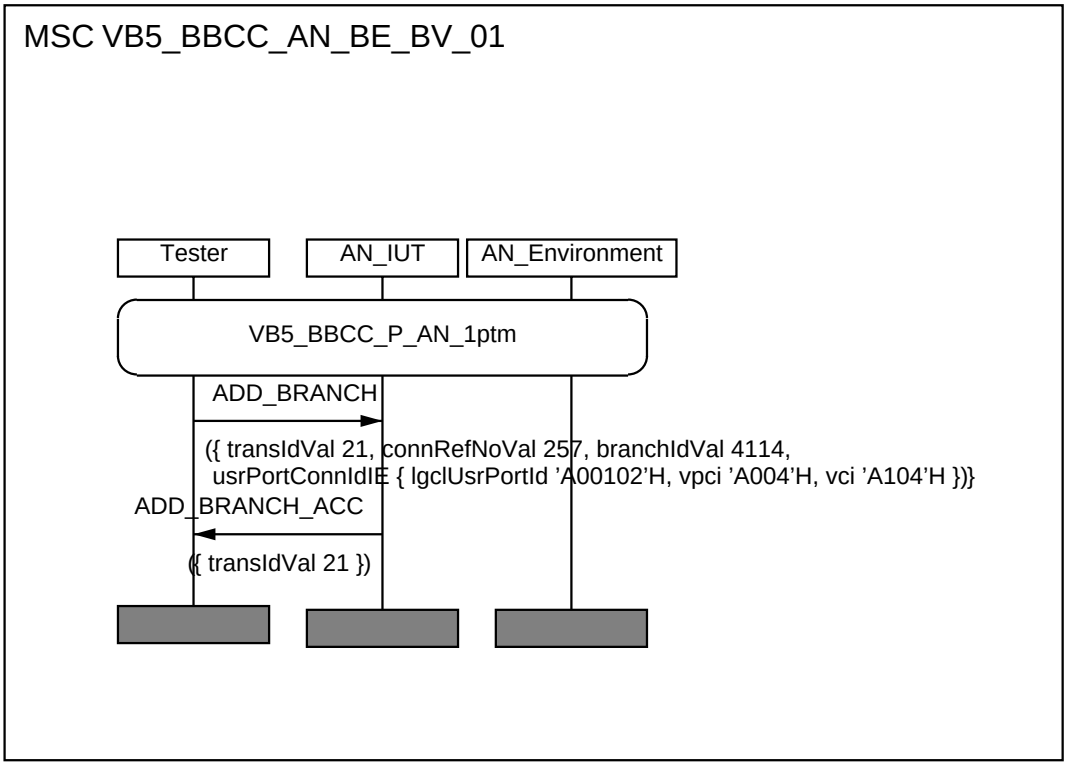

Figure 51

VB5_BBCC_AN_BE_BV_02	Reference EN 301 217-1 [3]: 13.6.3.1.3 a
Purpose	Check Add Branch reject when PtM connection not yet allocated
Test description	The tester issues an **ALLOC** PDU with mandatory parameters for PtM connection then receives an **ALLOC_ACC** PDU within T_Alloc time. Instead of completing the ALLOC, the tester issues a **ADD_BRANCH** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **ADD_BRANCH_ACC** PDU within T_AddBranch time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_start
Postamble	None
Additional testing	

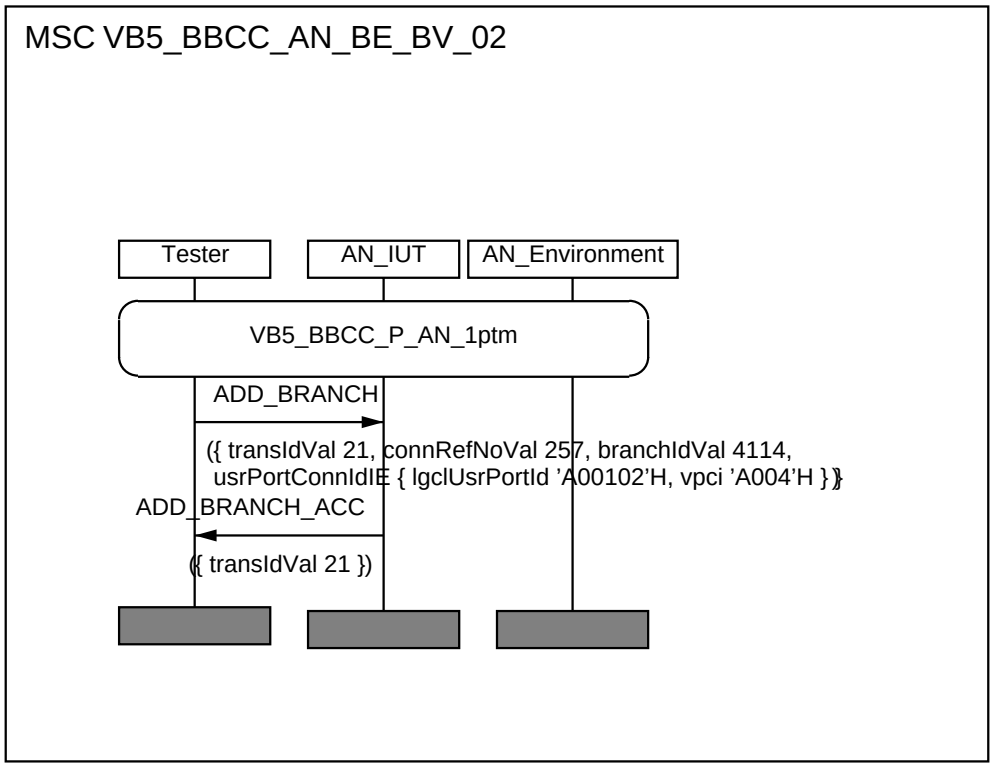

Figure 52

6.1.5.2 Add Branch Complete procedure

VB5_BBCC_AN_BE_BV_03	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check Branch establishment (Add then Update)
Test description	The tester issues an **ADD_BRANCH** PDU with mandatory parameters (no VCI included) then receives an **ADD_BRANCH_ACC** PDU within T_AddBranch time. The tester issues an **UPDATE_BRANCH** PDU with mandatory parameters (VCI included)
Pass criteria	Check that the tester is receiving an **UPDATE_BRANCH_ACC** PDU within T_UpdateBranch time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptm
Postamble	None
Additional testing	ceeUpdateBranchInd is sent to AN environment

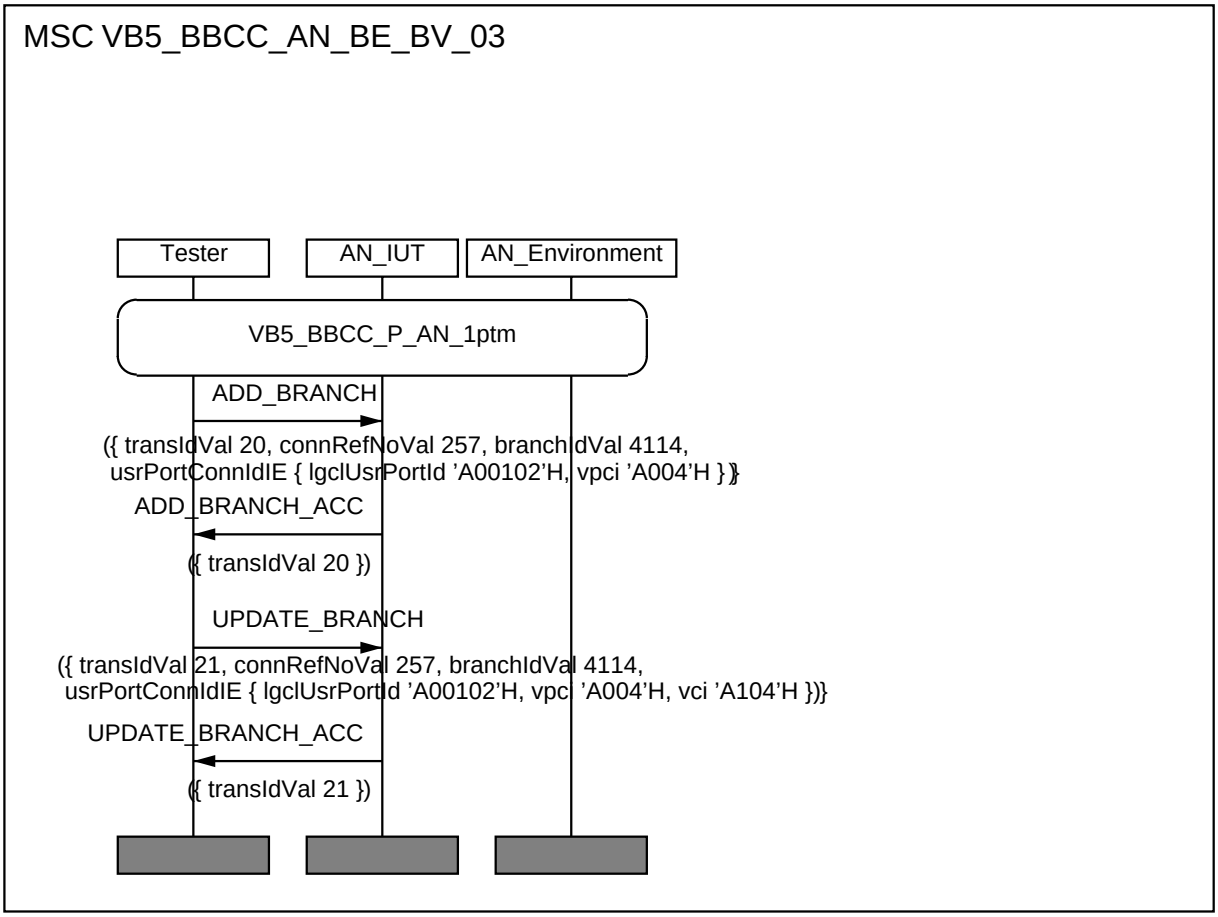

Figure 53

VB5_BBCC_AN_BE_BV_04	Reference EN 301 217-1 [3]: 13.6.3.1.3 a
Purpose	Check Add Branch when PtM connection not yet allocated
Test description	The tester issues an **ALLOC** PDU with mandatory parameters for PtM connection then receives an **ALLOC_ACC** PDU within T_Alloc time. Instead of completing the ALLOC, the tester issues a **ADD_BRANCH** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **ADD_BRANCH_ACC** PDU within T_AddBranch time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_startAN
Postamble	None
Additional testing	

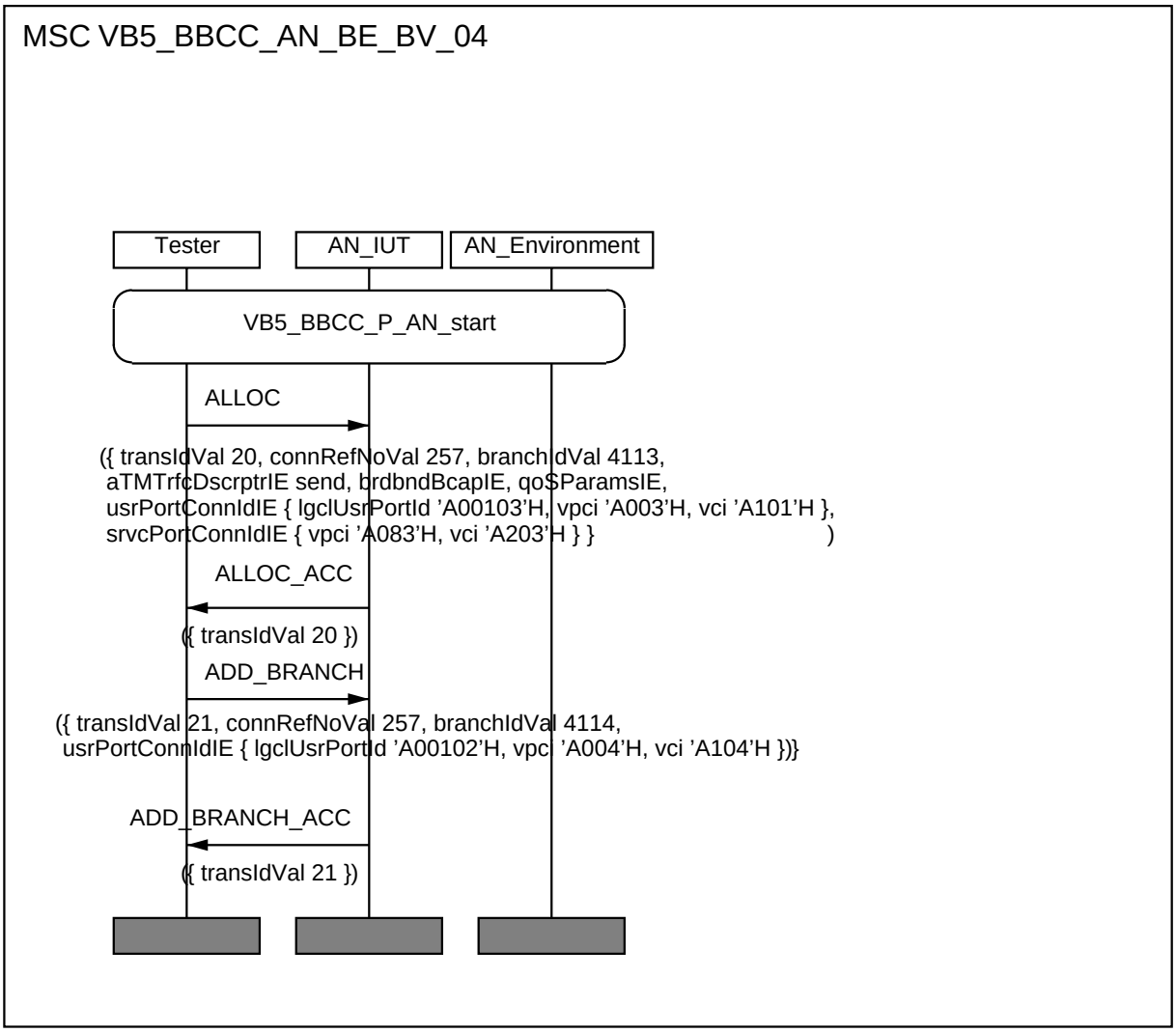

Figure 54

6.1.5.3 T_BranchEst timer test

VB5_BBCC_AN_BE_TI_01	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check Branch establishment timer
Test description	The tester issues an **ADD_BRANCH** PDU with mandatory parameters parameters (no VCI included) then receives an **ADD_BRANCH_ACC** PDU within T_AddBranch time. The tester does not issue an **UPDATE_BRANCH** PDU within T_BranchEst time. Then the tester issues a 2nd **ADD_BRANCH** PDU with same parameters
Pass criteria	Check that the tester is receiving an **ADD_BRANCH_ACC** PDU, meaning that the first branch establishment was discarded properly
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptm
Postamble	None
Additional testing	ceeUpdateBranchInd is sent to AN environment

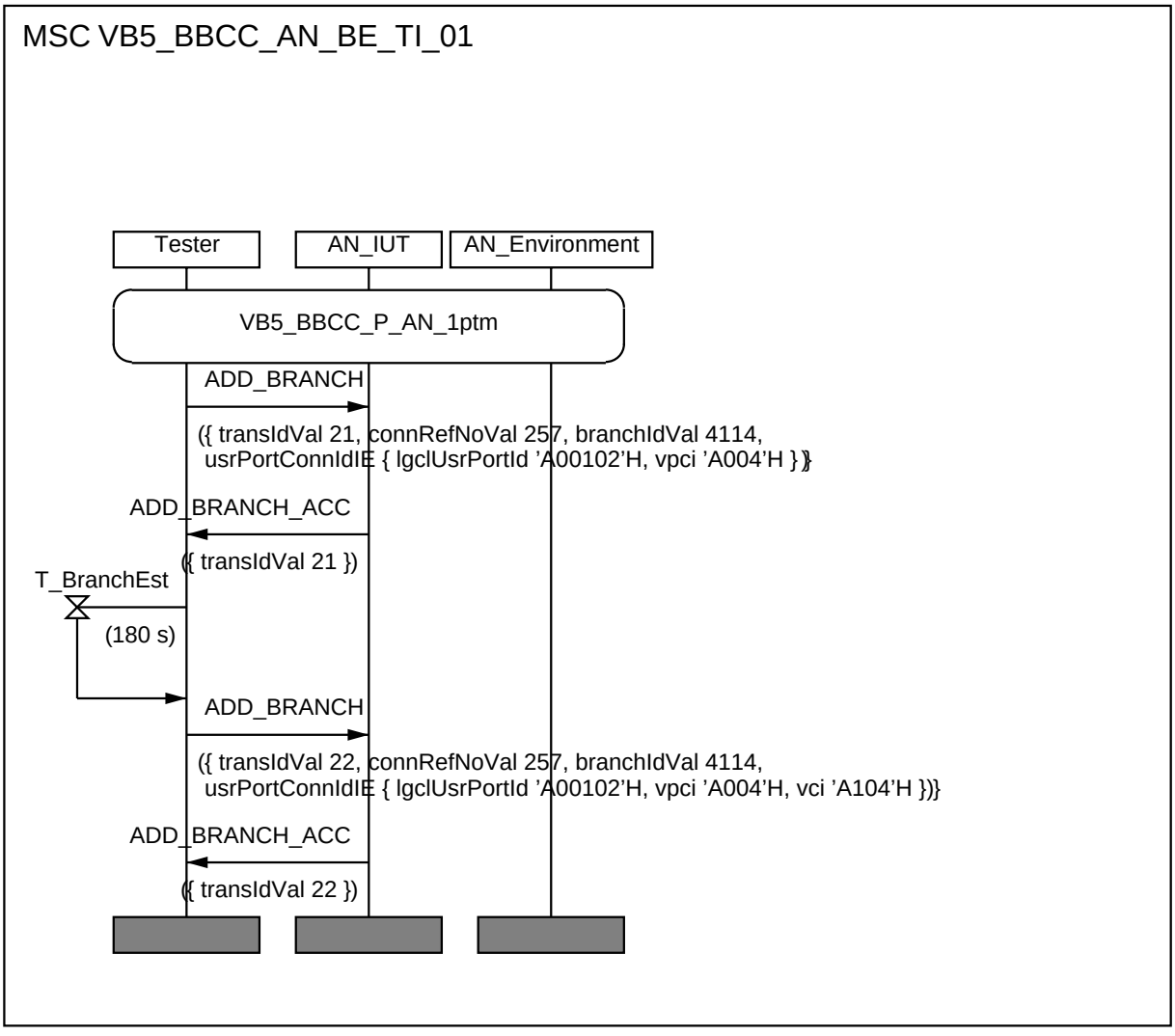

Figure 55

6.1.5.4 Exceptional procedure

VB5_BBCC_AN_BE_BI_01	Reference EN 301 217-1 [3]: 13.6.3.1.3
Purpose	Check Add Branch reject on a PtP connection
Test description	The tester issues a **ADD_BRANCH** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **ADD_BRANCH_REJ** PDU within T_AddBranch time, with reject cause: "message not compatible with connection state"
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptp
Postamble	None
Additional testing	

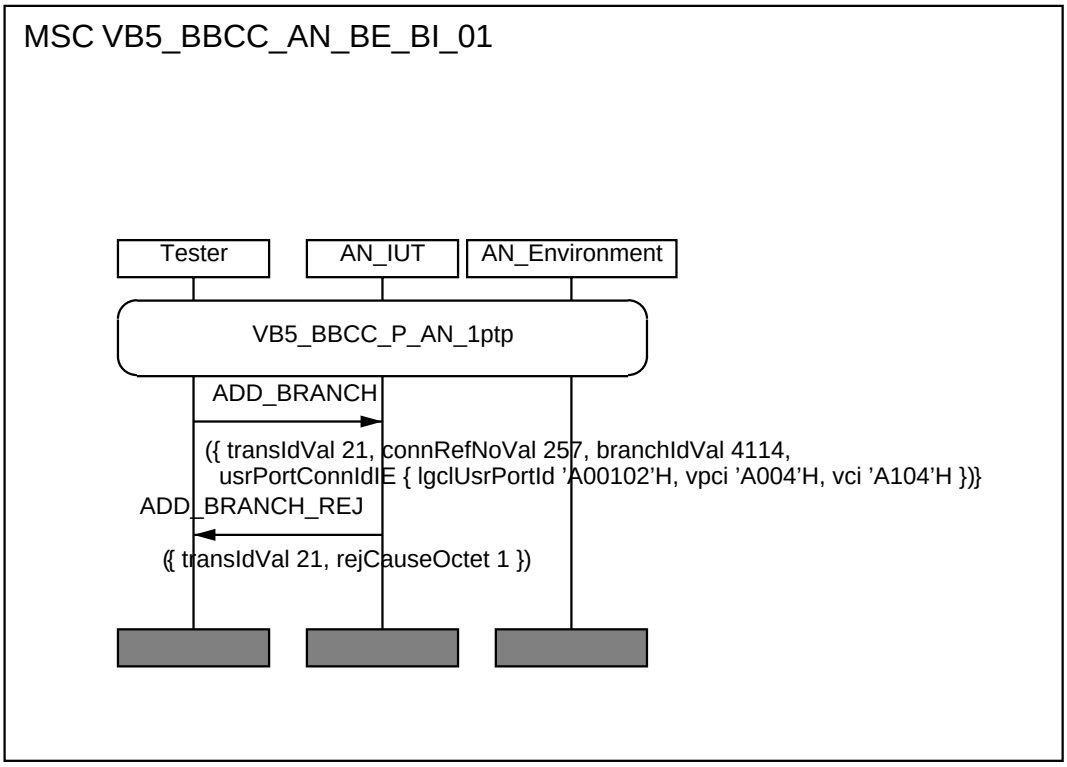

Figure 56

VB5_BBCC_AN_BE_BI_02	Reference EN 301 217-1 [3]: 13.6.3.1.3
Purpose	Check Add Branch reject when branch id already assigned
Test description	The tester issues a **ADD_BRANCH** PDU with mandatory parameters for a branch Id already assigned
Pass criteria	Check that the tester is receiving a **ADD_BRANCH_REJ** PDU within T_AddBranch time, with reject cause: "message not compatible with branch state"
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptmTwoB
Postamble	None
Additional testing	

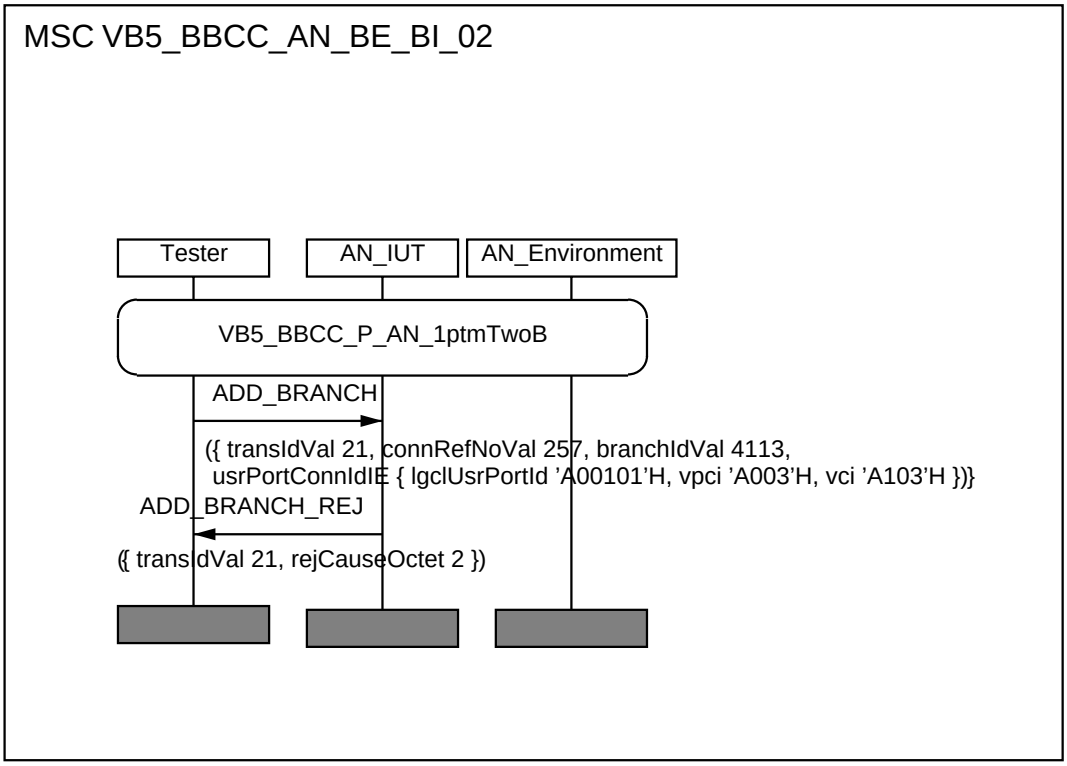

Figure 57

VB5_BBCC_AN_BE_BI_03	Reference EN 301 217-1 [3]: 13.6.3.1.3, 13.6.1.5.4
Purpose	Check Update Branch reject
Test description	The tester issues a **UPDATE_BRANCH** PDU with mandatory parameters for a branch Id not yet assigned (no Add branch)
Pass criteria	Check that the tester is receiving a **UPDATE_BRANCH_REJ** PDU within T_UpdateBranch time, with reject cause: "message not compatible with branch state"
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptm
Postamble	None
Additional testing	

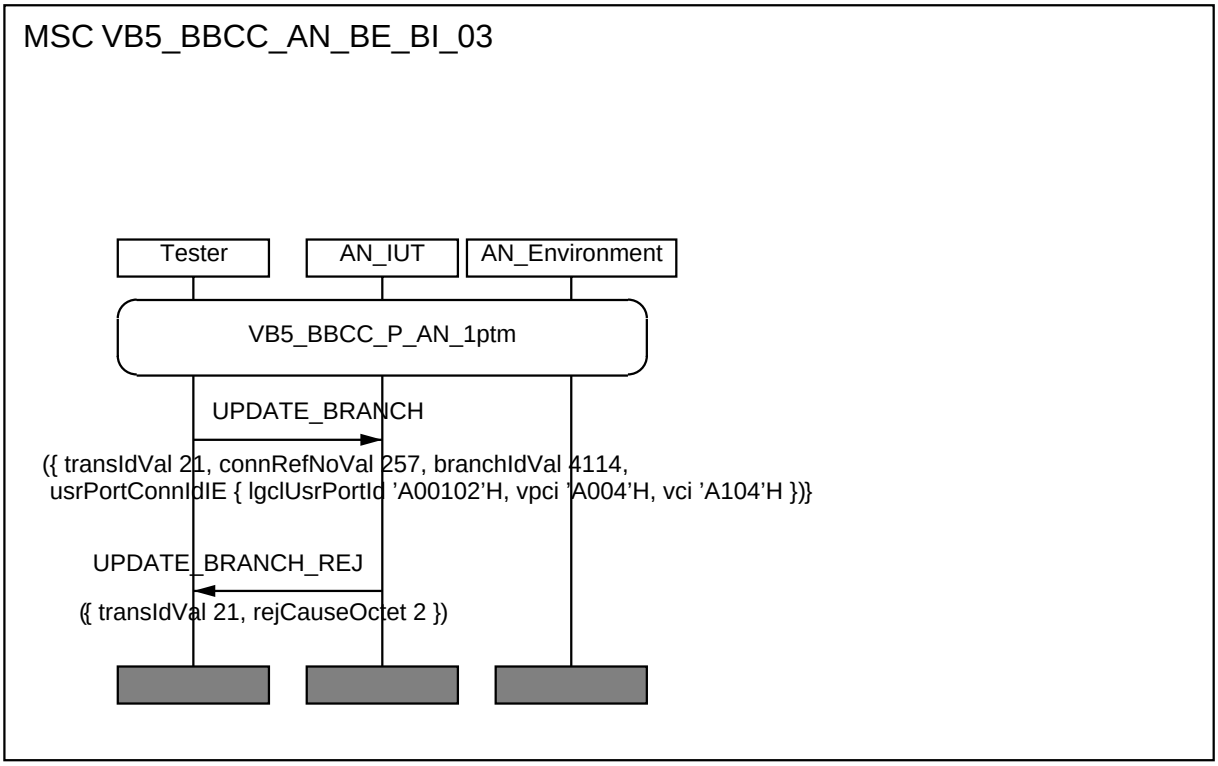

Figure 58

6.1.6 Branch Release procedure (BR)

6.1.6.1 Single Branch release procedure

VB5_BBCC_AN_BR_BV_01	Reference EN 301 217-1 [3]: 13.6.3.2
Purpose	Check Branch Release (Single branch identifier)
Test description	The tester issues a **DROP_BRANCH** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **DROP_BRANCH_ACC** PDU within T_DropBranch time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptmTwoB
Postamble	None
Additional testing	ceeDropBranchInd is sent to AN environment

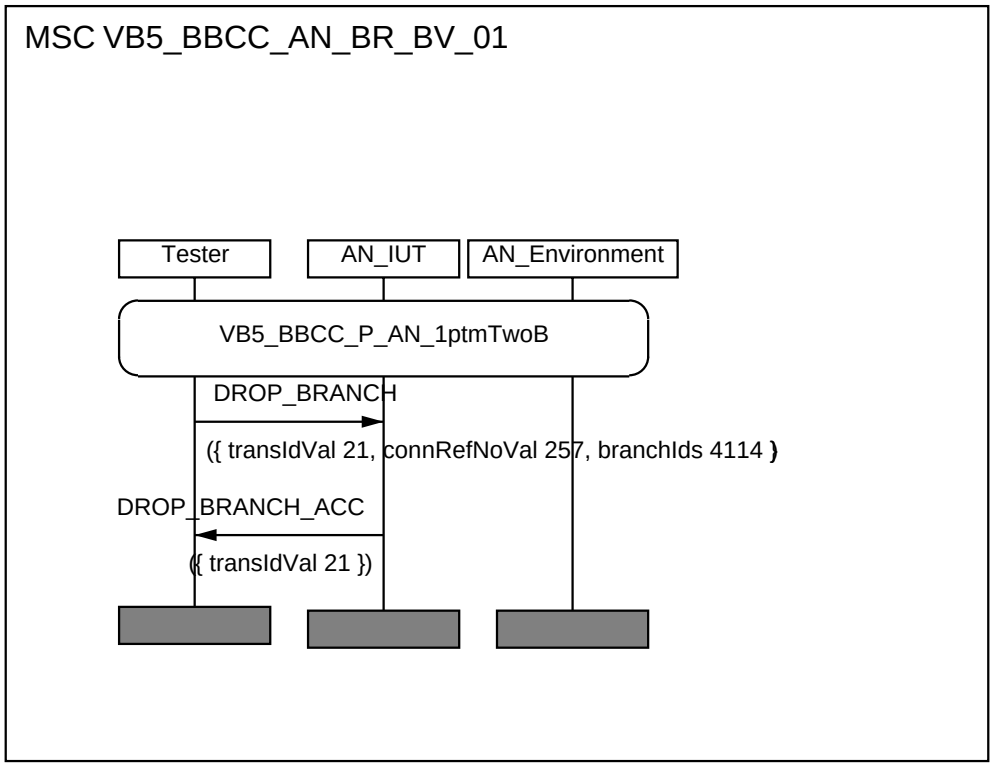

Figure 59

6.1.6.2 Multiple Branch release procedure

VB5_BBCC_AN_BR_BV_02	Reference EN 301 217-1 [3]: 13.6.3.2
Purpose	Check Branch Release (List of branch identifiers)
Test description	The tester issues a **DROP_BRANCH** PDU with mandatory parameters for two branches out of three of a connection
Pass criteria	Check that the tester is receiving a **DROP_BRANCH_ACC** PDU within T_DropBranch time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptmThreeB
Postamble	None
Additional testing	ceeDropBranchInd is sent to AN environment

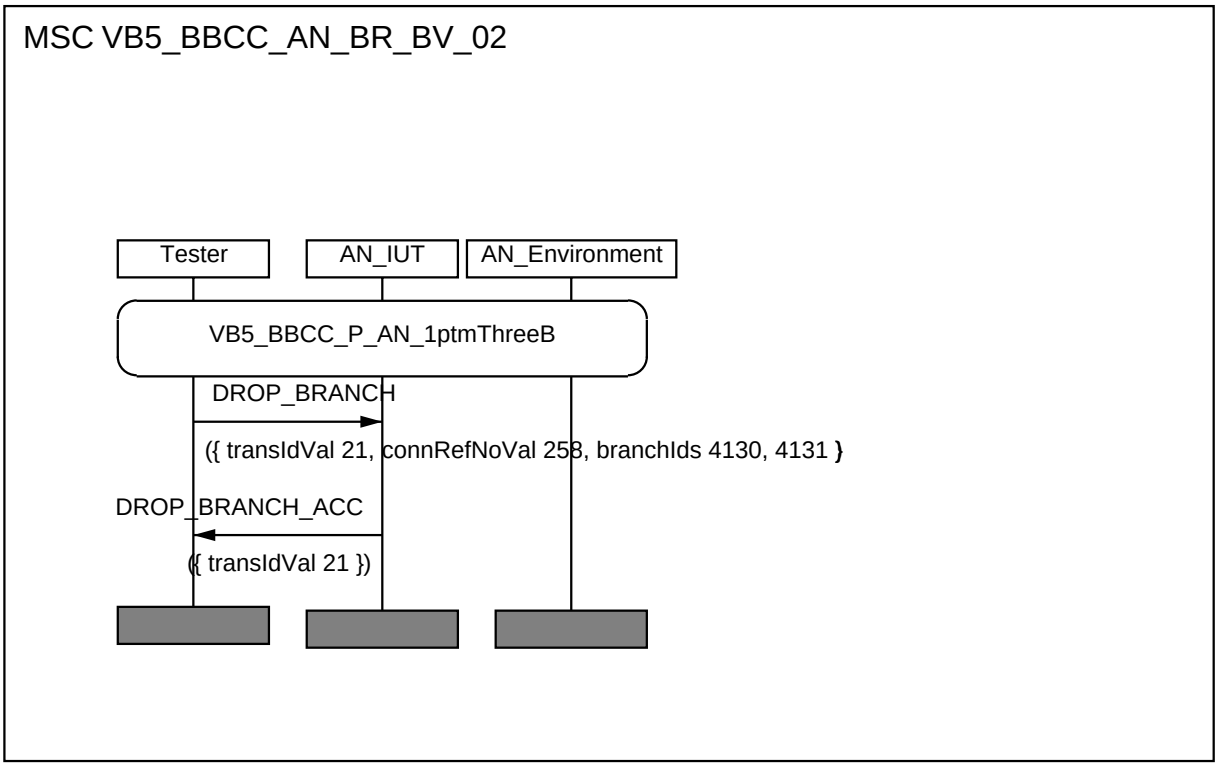

Figure 60

6.1.6.3 Exceptional procedure

VB5_BBCC_AN_BR_BI_01	Reference EN 301 217-1 [3]: 13.6.3.2.3.a
Purpose	Check DROP Branch reject on an unknown connection
Test description	The tester issues a **DROP_BRANCH** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **DROP_BRANCH_REJ** PDU within T_DropBranch time, with reject cause: "message not compatible with connection state"
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_start
Postamble	None
Additional testing	

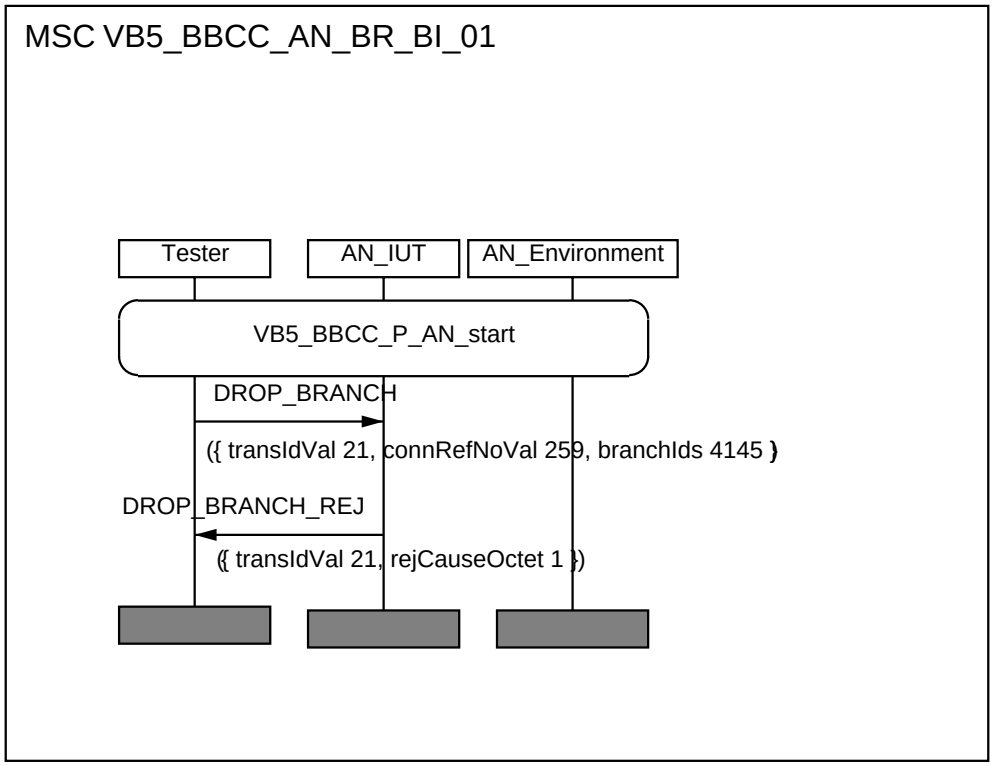

Figure 61

VB5_BBCC_AN_BR_BI_02	Reference EN 301 217-1 [3]: 13.6.3.2.3.c
Purpose	Check DROP Branch reject on "all branch" drop
Test description	The tester issues a **DROP_BRANCH** PDU with mandatory parameters for the branch of the connection
Pass criteria	Check that the tester is receiving a **DROP_BRANCH_REJ** PDU within T_DropBranch time, with reject cause: de-allocation of last branch expected
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptm
Postamble	None
Additional testing	

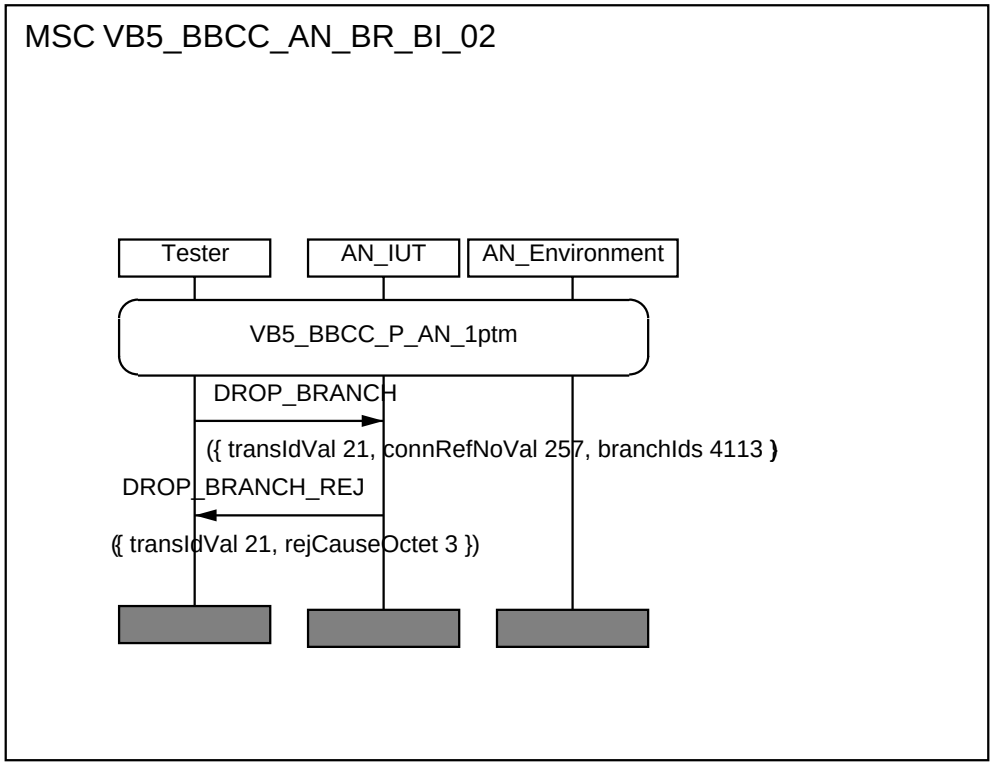

Figure 62

VB5_BBCC_AN_BR_BI_03	Reference EN 301 217-1 [3]: 13.6.3.2.3.b
Purpose	Check DROP Branch(es) of a known connection, one branch being unknown
Test description	The tester issues a **DROP_BRANCH** PDU with mandatory parameters for several branches of the connection, one being unknown
Pass criteria	Check that the tester is receiving a **DROP_BRANCH_ACC** PDU within T_DropBranch time
Selection	A.54/5 AND A.54/6: multipoint connection
Preamble	P_AN_1ptmTwoB
Postamble	None
Additional testing	ceeDropBranchInd is sent to AN environment for the known branches

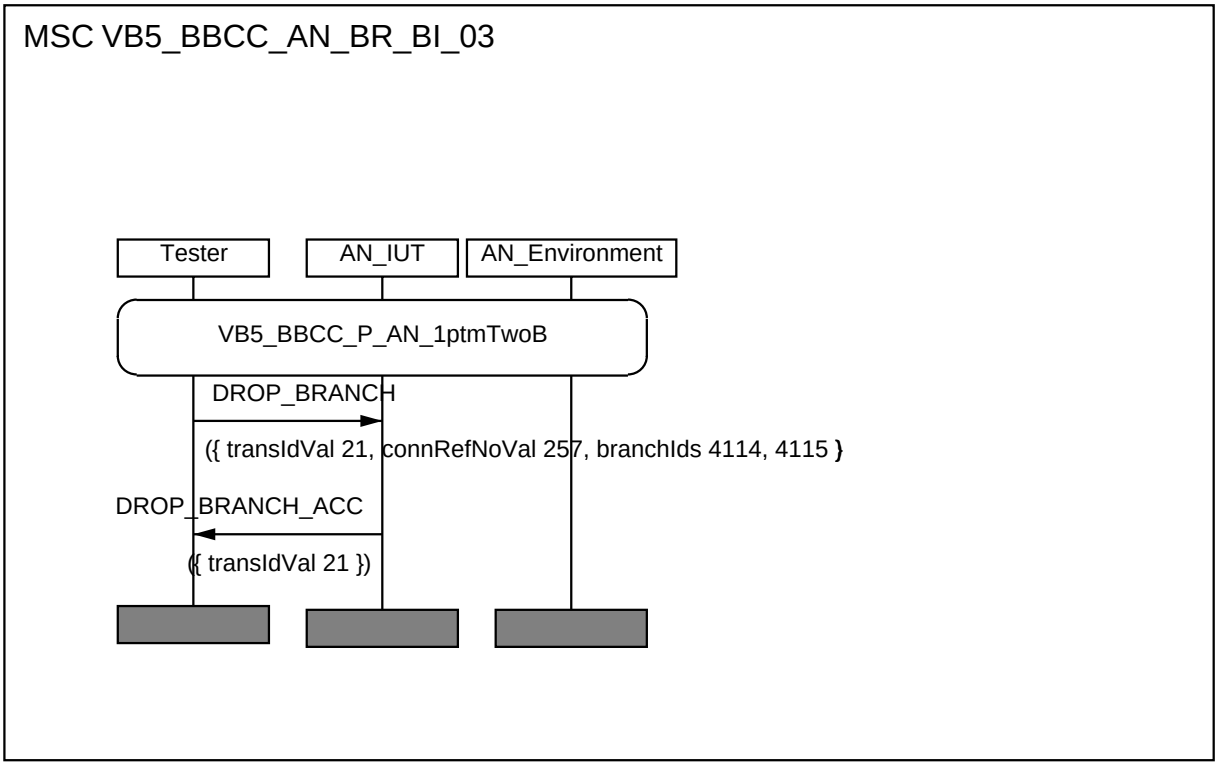

Figure 63

6.1.7 Housekeeping procedure (Reset, Fault)

6.1.7.1 Reset procedure

VB5_BBCC_AN_HK_BV_01	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check Reset Connection at User port
Test description	The tester issues a **BBCC_RESET** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **BBCC_RESET_ACC** PDU within T_BBCCReset time
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeBBCCResetInd is sent to AN environment

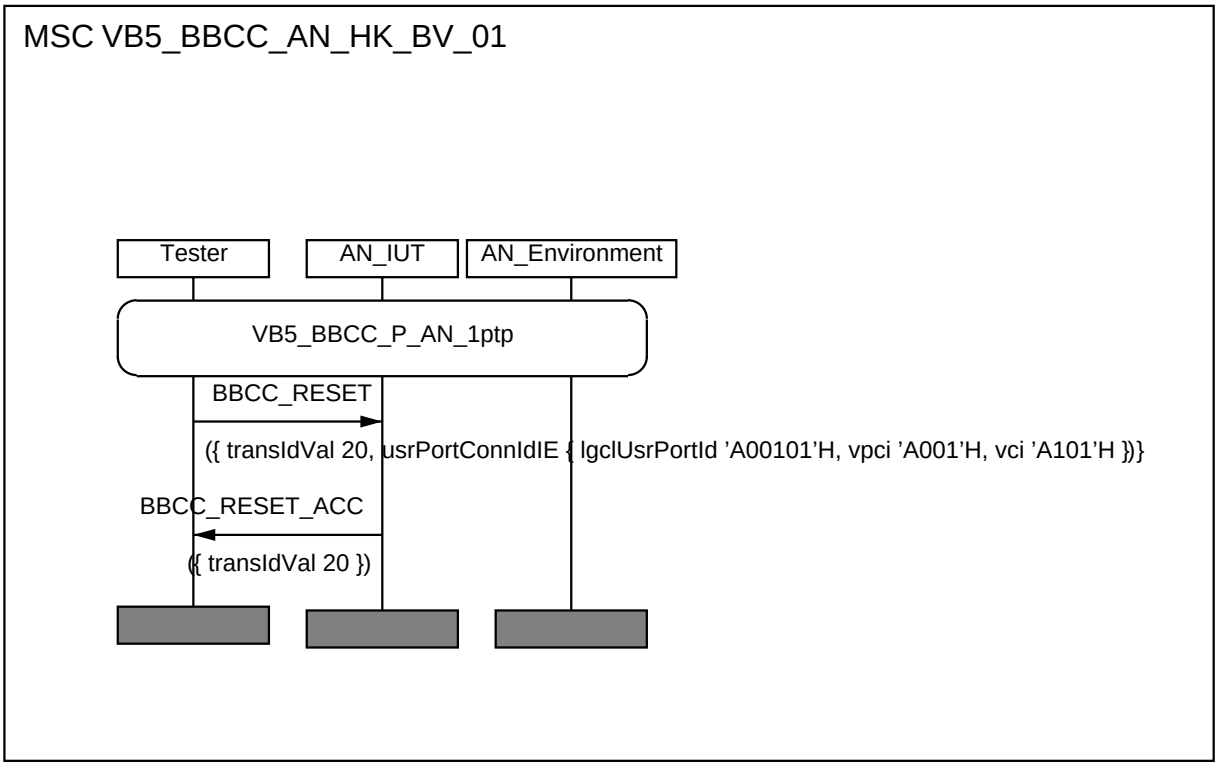

Figure 64

VB5_BBCC_AN_HK_BV_02	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check Reset Connection at Service port
Test description	The tester issues a **BBCC_RESET** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **BBCC_RESET_ACC** PDU within T_BBCCReset time
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	ceeBBCCResetInd is sent to AN environment

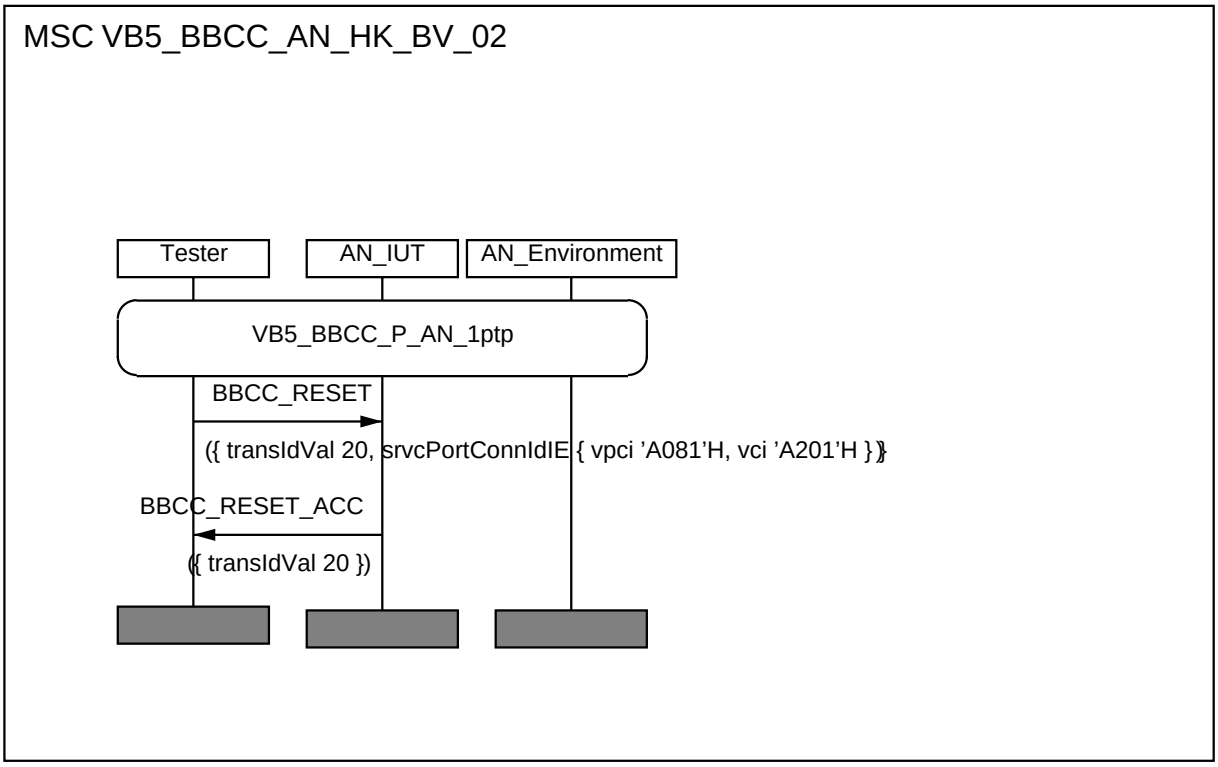

Figure 65

VB5_BBCC_AN_HK_BV_03	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check Reset complete LSP
Test description	The tester issues a **BBCC_RESET** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **BBCC_RESET_ACC** PDU within T_BBCCReset time
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeBBCCResetInd is sent to AN environment

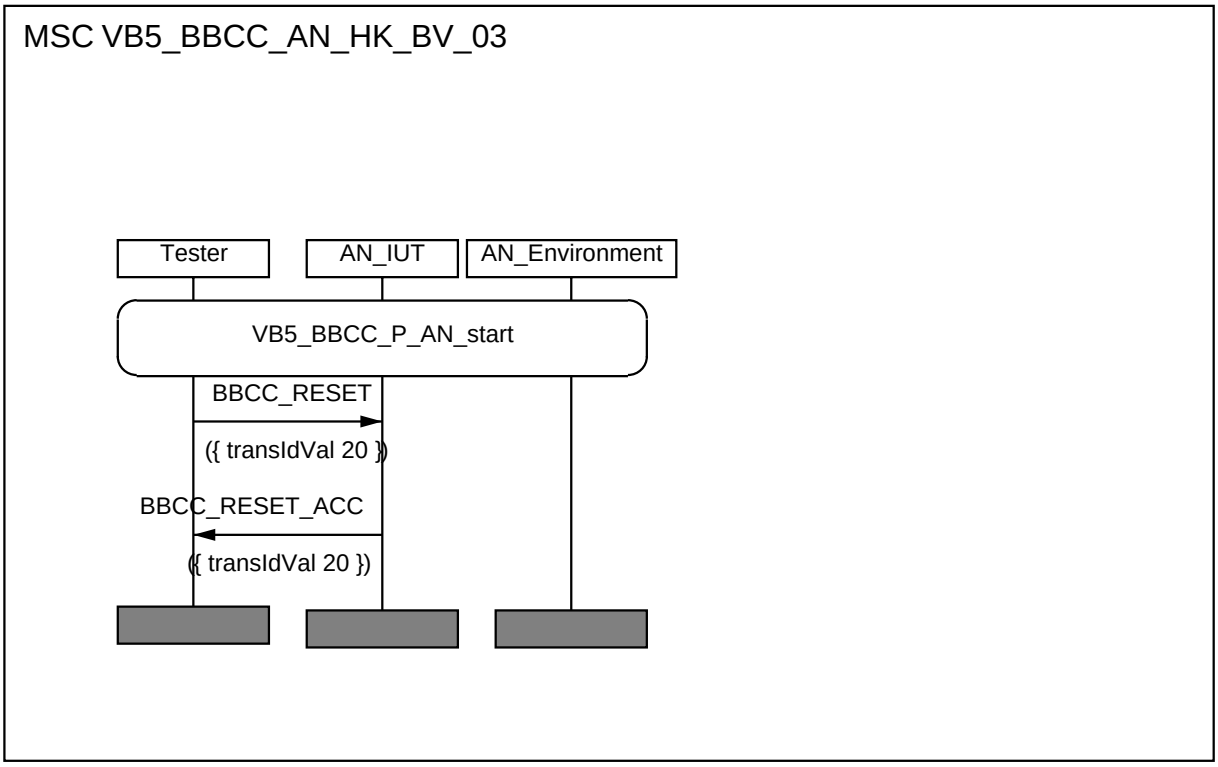

Figure 66

VB5_BBCC_AN_HK_BV_08	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check Reset Connection at Service port and re-use Connection Reference Number
Test description	The tester issues a **BBCC_RESET** PDU with mandatory parameters and receives a **BBCC_RESET_ACC** PDU within T_BBCCReset time. The tester then sends an **ALLOC** PDU with mandatory parameters, re-using the Connection Reference Number of the connection that has been reset
Pass criteria	Check that the tester is receiving an **ALLOC_ACC** PDU
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	

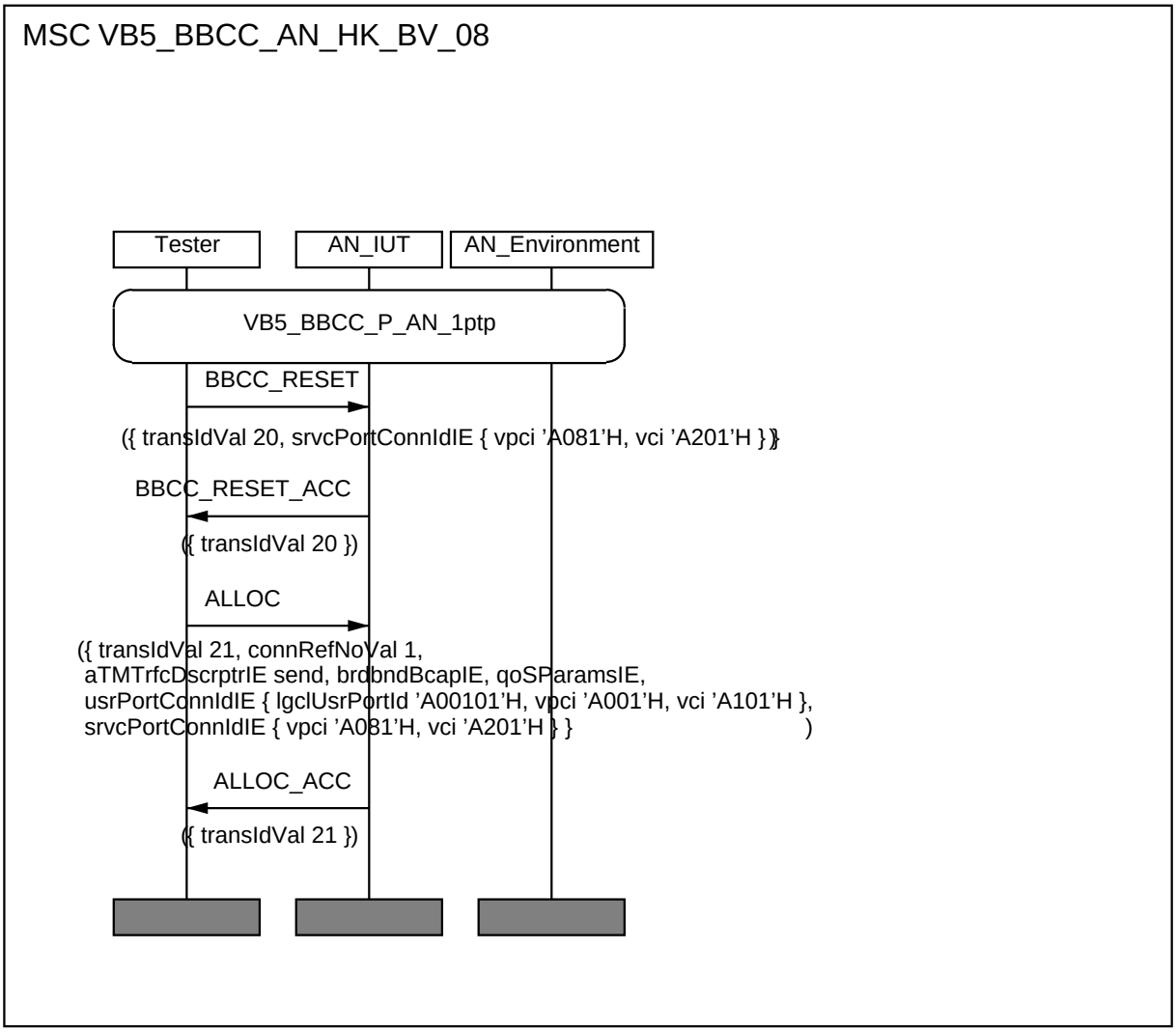

Figure 67

6.1.7.2 AN fault procedure

VB5_BBCC_AN_HK_BV_04	Reference EN 301 217-1 [3]: 13.6.4.2
Purpose	Check AN fault procedure
Test description	The tester issues an implicit send to cause the IUT to initiate an **AN fault** procedure
Pass criteria	Check that the tester is receiving **AN_FAULT** PDU containing mandatory parameters
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	None

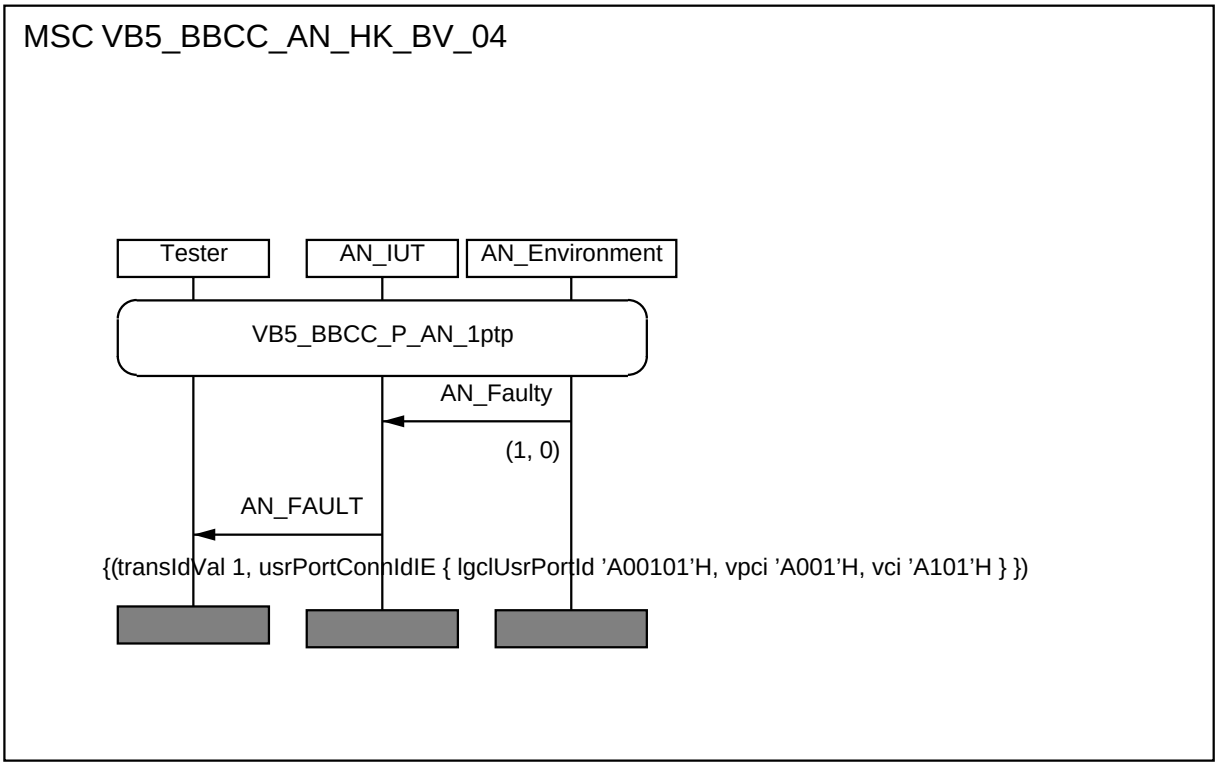

Figure 68

VB5_BBCC_AN_HK_TI_01	Reference EN 301 217-1 [3]: 13.6.4.2
Purpose	Check AN fault timer procedure
Test description	The tester issues an implicit send to cause the IUT to initiate an **AN fault** procedure. The tester is receiving **AN_FAULT** PDU containing mandatory parameters. Then the tester does not answer with **AN_FAULT_ACC** PDU within ANFault timer
Pass criteria	Check that the tester is receiving a second **AN_FAULT** PDU within the acceptance time window, meaning that the first PDU was discarded when time out occurred
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	None

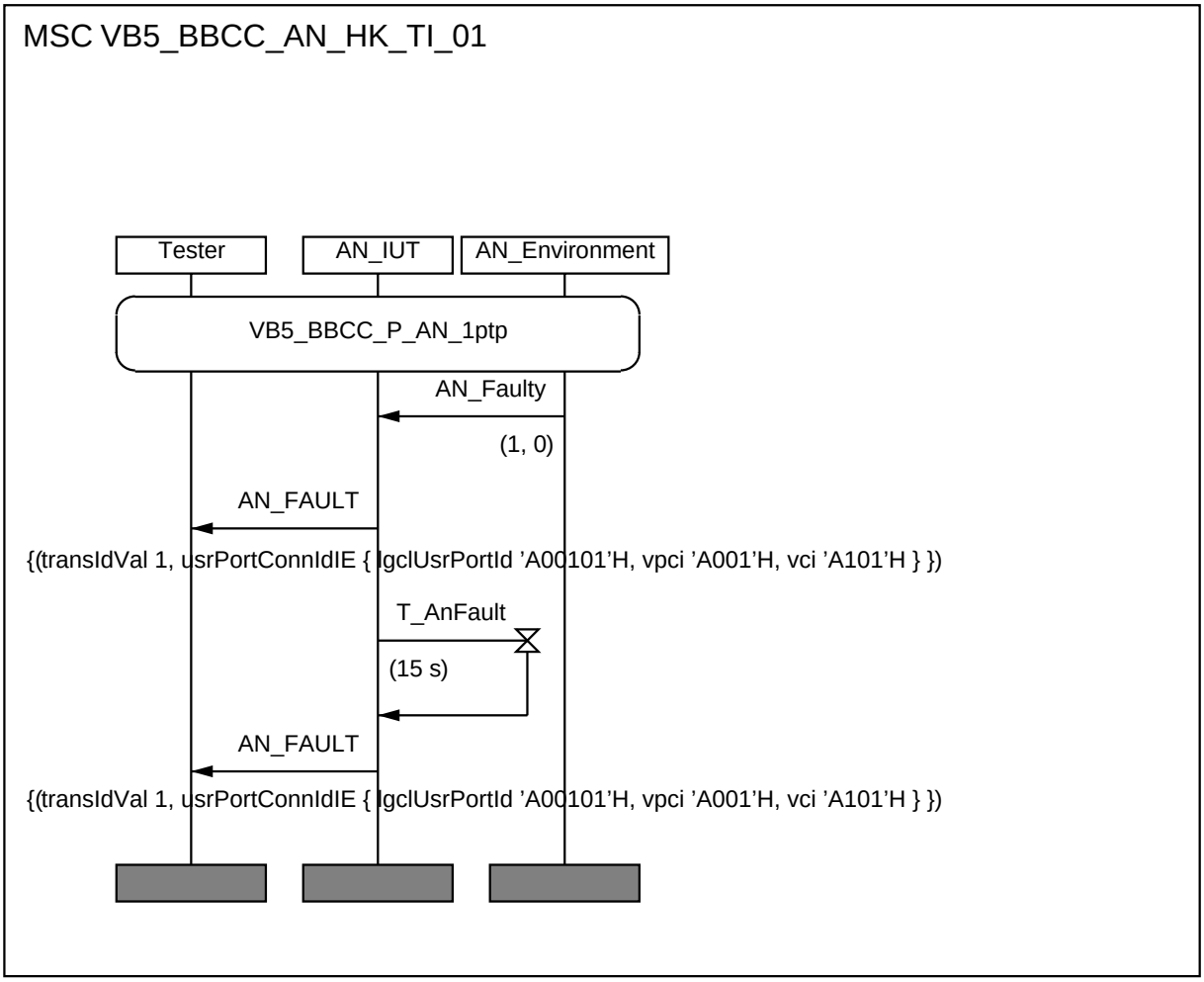

Figure 69

6.1.7.3 BBCC restart procedure

VB5_BBCC_AN_HK_BV_05	Reference EN 301 217-1 [3]: 13.6.4.3
Purpose	Check BBCC pre-sync procedure (LSP)
Test description	The tester issues a **BBCC_PRESYNC** PDU with mandatory parameters for complete LSP
Pass criteria	Check that the tester is receiving a **BBCC_PRESYNC_ACC** PDU within T_BBCCPresync time
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	meeBBCCPresyncInd is sent to AN environment

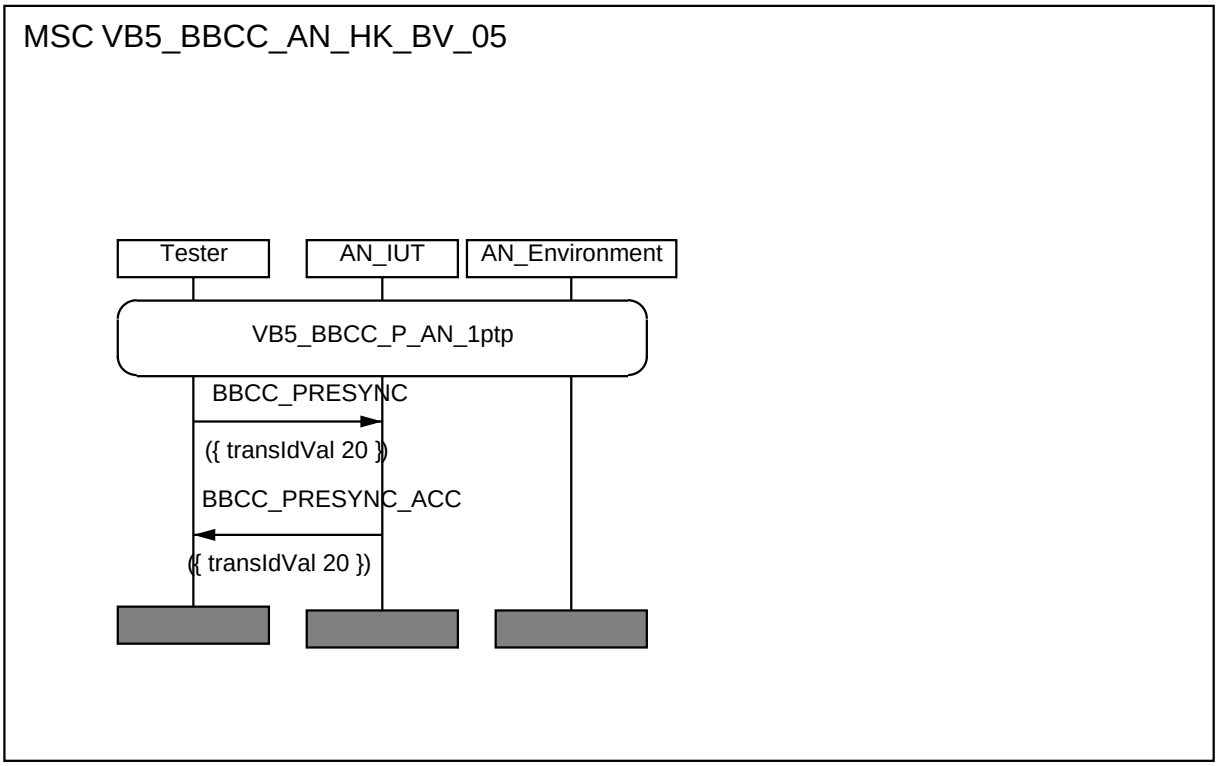

Figure 70

VB5_BBCC_AN_HK_BV_06	Reference EN 301 217-1 [3]: 13.6.4.3, 13.6.1.5.5
Purpose	Check BBCC pre-sync reject procedure upon Connection Control Function decision
Test description	The tester issues a **BBCC_PRESYNC** PDU with mandatory parameters. The Connection Control Function rejects the request
Pass criteria	Check that the tester is receiving a **BBCC_PRESYNC_REJ** PDU within T_BBCCPresync time
Selection	PIX_BBCC_PRESYNC_REJ true
Preamble	P_AN_1ptp
Postamble	None
Additional testing	meeBBCCPresyncInd is sent to AN environment

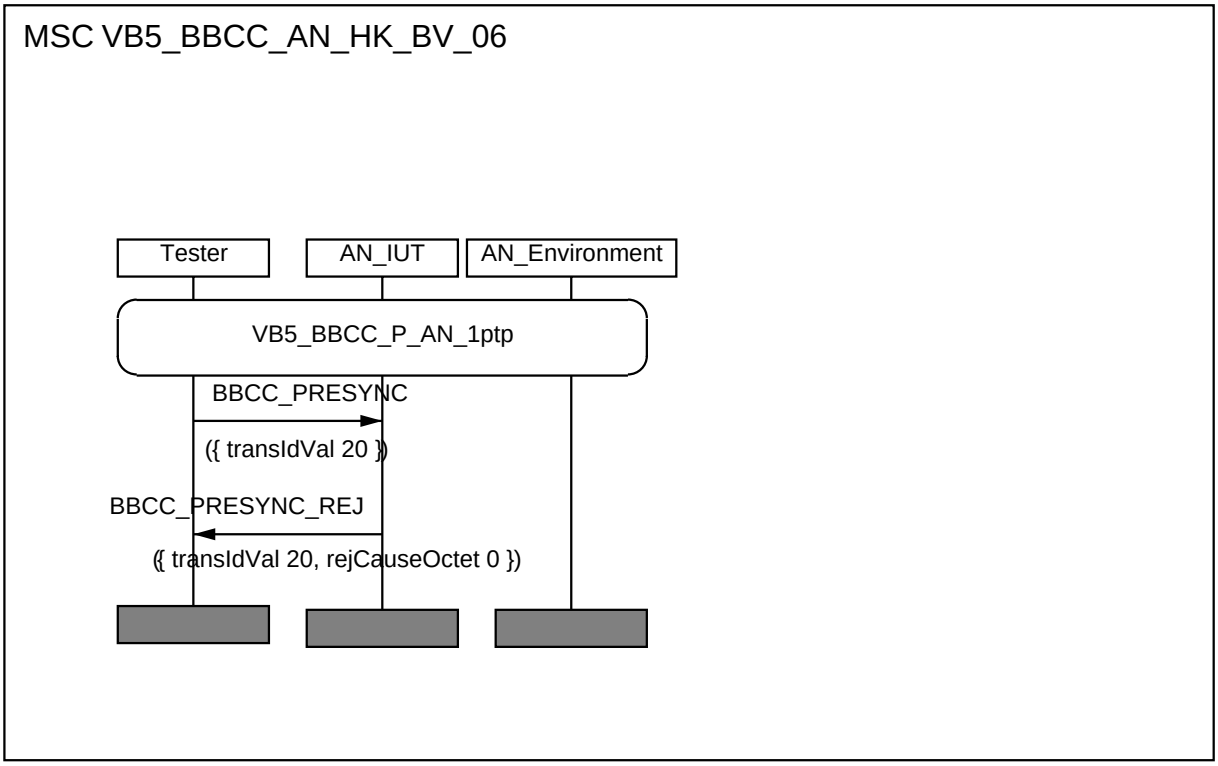

Figure 71

VB5_BBCC_AN_HK_BV_07	Reference EN 301 217-1 [3]: 13.6.4.6, 13.6.1.5.5
Purpose	Check BBCC restart procedure
Test description	The tester issues a **BBCC_PRESYNC** PDU with mandatory parameters. Then the tester is receiving a **BBCC_PRESYNC_REJ** PDU within T_BBCCPresync time, because the Connection Control Function rejects the request. The tester issues a **BBCC_RESET** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **BBCC_RESET_ACC** PDU within T_BBCCReset time
Selection	PIX_BBCC_PRESYNC_REJ true
Preamble	P_AN_1ptp
Postamble	None
Additional testing	meeBBCCPresyncInd is sent to AN environment, followed by ceeBBCCResetInd

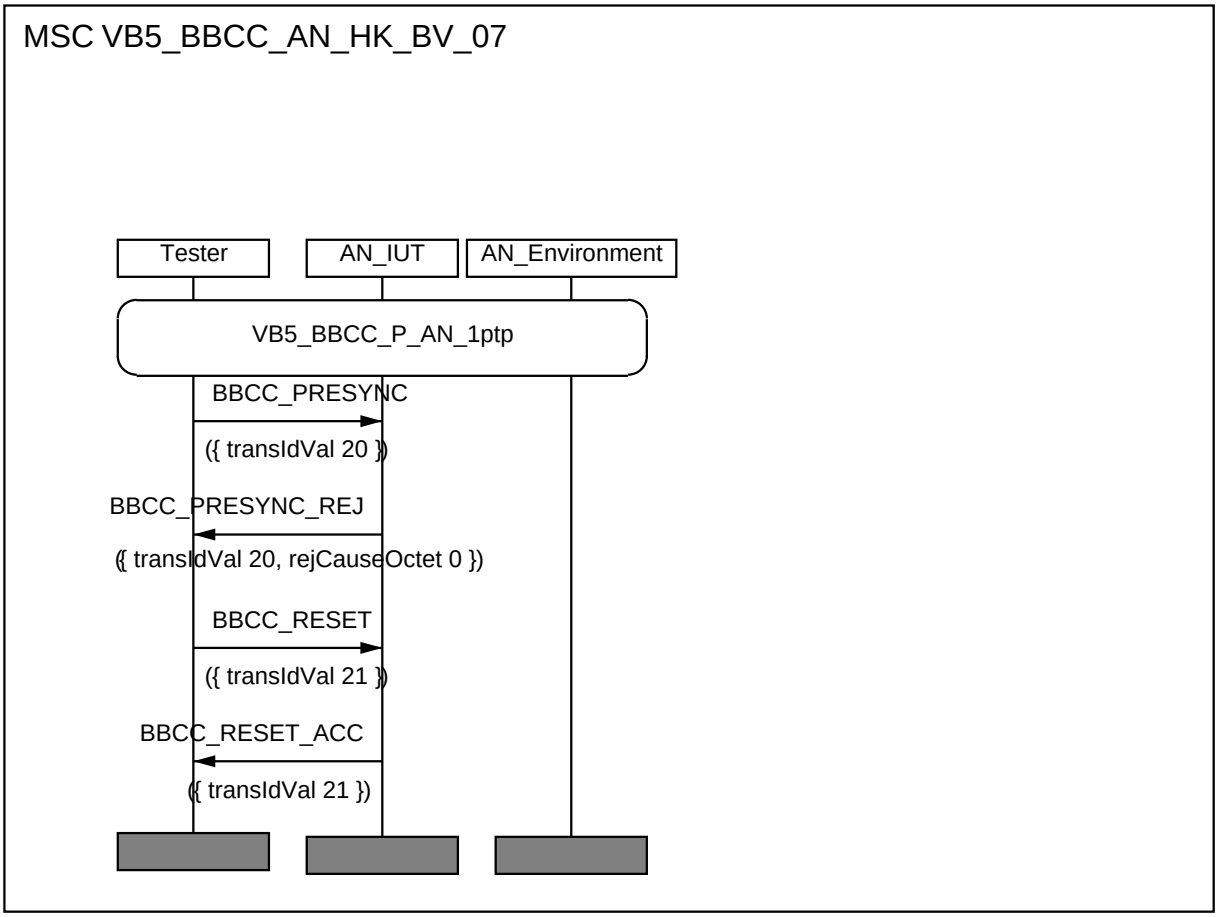

Figure 72

VB5_BBCC_AN_HK_BI_01	Reference EN 301 217-1 [3]: 13.6.4.2.2
Purpose	Check connection state after AN fault procedure
Test description	The tester issues an implicit send to cause the IUT to initiate an **AN fault** procedure. The tester is receiving **AN_FAULT** PDU containing mandatory parameters. Then the tester answers with **AN_FAULT_ACC** PDU within ANFault time then sends **MODIFY** PDU
Pass criteria	Check that the tester is receiving neither **MODIFY_ACC** nor **MODIFY_REJ** PDU within T_Modify time meaning the MODIFY is ignored
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	None

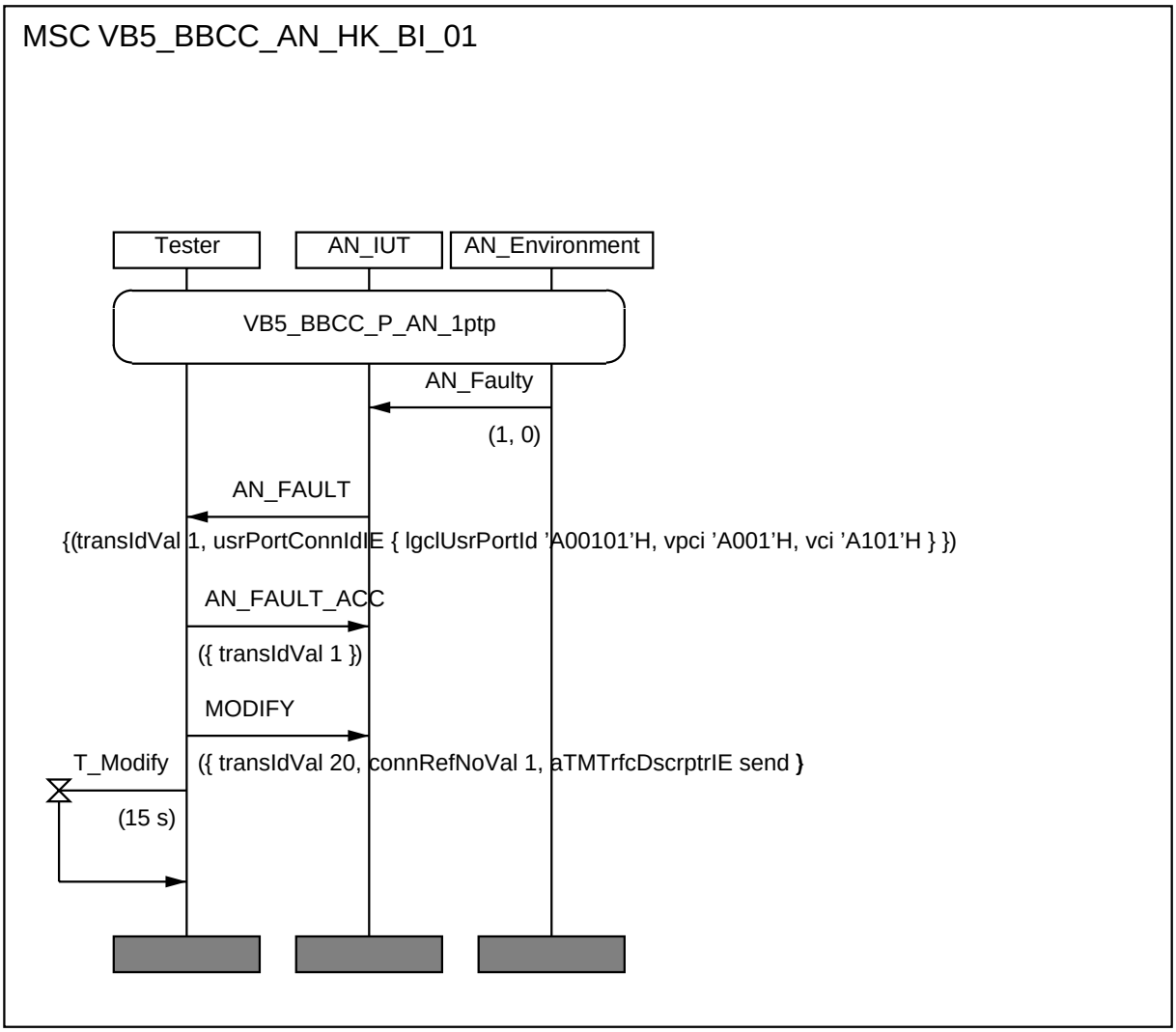

Figure 73

VB5_BBCC_AN_HK_BI_02	Reference EN 301 217-1 [3]: 13.5.11.2, 14.3.3.3
Purpose	Check Reset Connection at User port for an unknown VPCI-VCI
Test description	The tester issues a **BBCC_RESET** PDU with mandatory parameters
Pass criteria	Check that the tester is receiving a **BBCC_RESET_REJ** PDU within T_BBCCReset time, including reject cause: "Invalid user port VPCI"
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeBBCCResetInd is sent to AN environment

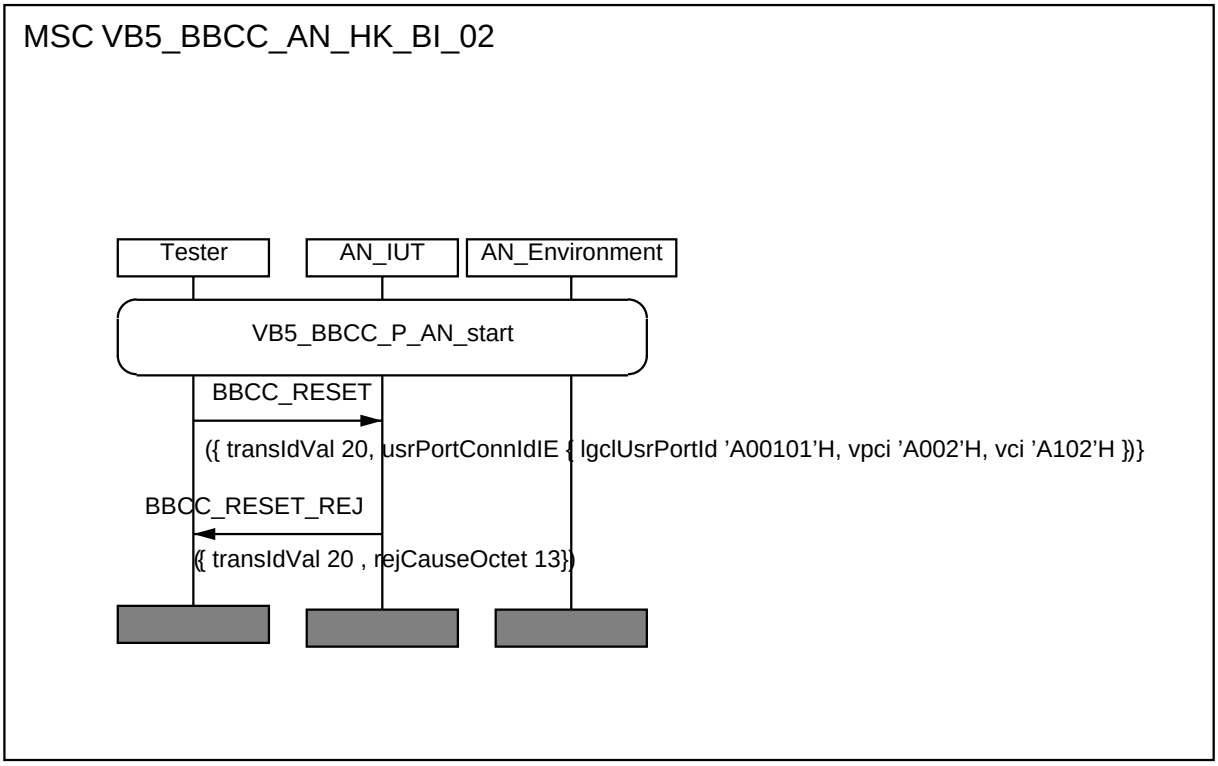

Figure 74

6.1.8 Common Error Handling (CEH) procedure

6.1.8.1 Error Handling on Message Header

This subclause includes the checking of miscellaneous protocol error detections by the IUT, the errors being provoked by the tester.

VB5_BBCC_AN_CEH_BI_01	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of wrong protocol discriminator
Test description	The tester sends **BBCC_RESET** PDU to the IUT, with protocol discriminator set to invalid value (value "AA"H is used)
Pass criteria 1	Check that the tester is not receiving **BBCC_RESET_ACK** PDU, meaning that the PDU is discarded
Test description	The tester now sends **BBCC_RESET** PDU to the IUT, with protocol discriminator set to valid value (value "49"H)
Pass criteria 2	Check that the tester is receiving **BBCC_RESET_ACK** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	meeErrorInd is sent to AN environment when wrong protocol discriminator is detected

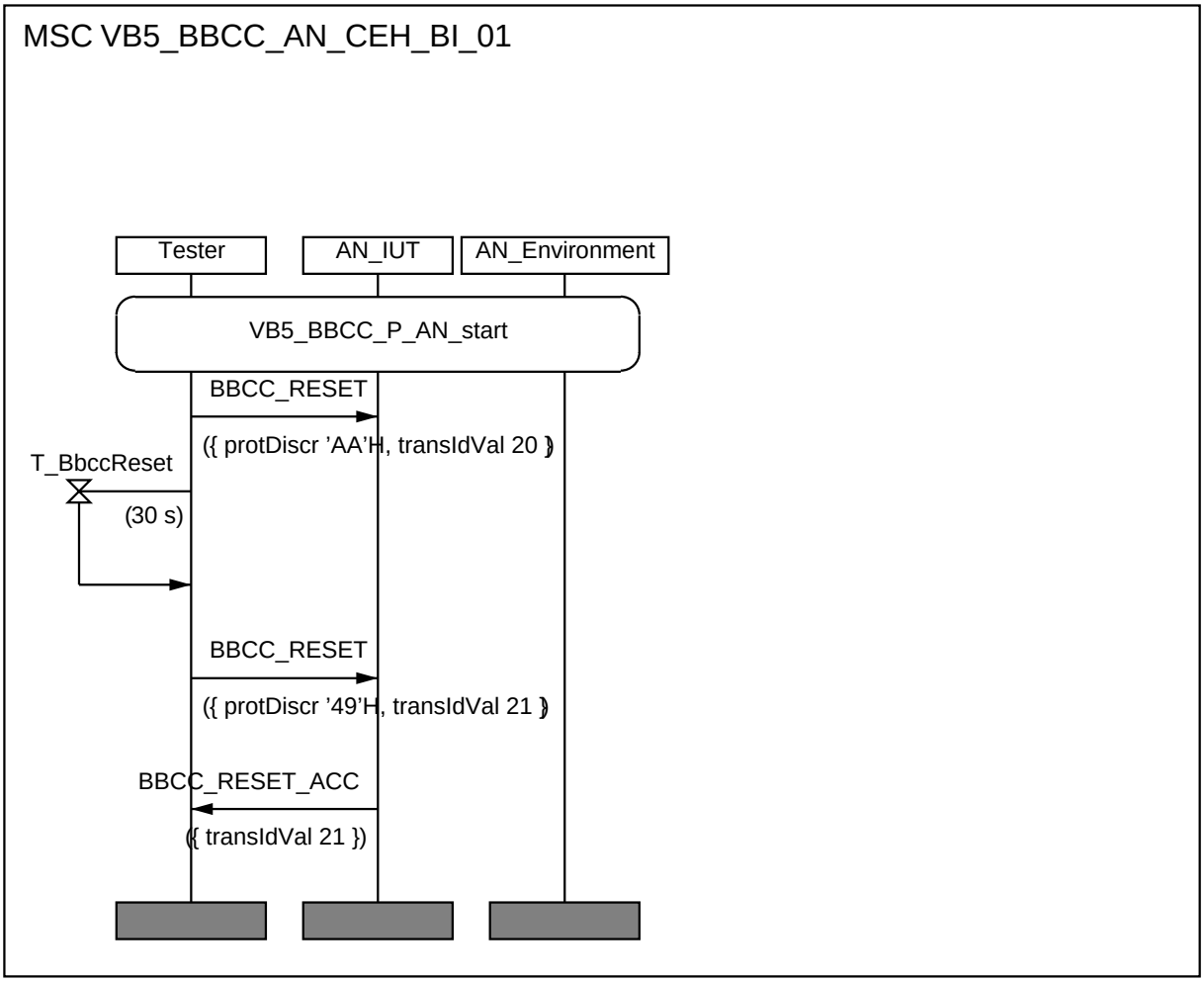

Figure 75

VB5_BBCC_AN_CEH_BI_02	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of wrong transaction identifier format
Test description	The tester sends **BBCC_RESET** PDU to the IUT, with bits 5 to 8 of element octet 1 are different from 0000 (set to 1010)
Pass criteria 1	Check that the tester is not receiving **BBCC_RESET_ACK** PDU, meaning that the PDU is discarded
Test description	The tester now sends **BBCC_RESET** PDU to the IUT, with correct transaction identifier
Pass criteria 2	Check that the tester is receiving **BBCC_RESET_ACK** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	meeErrorInd is sent to AN environment when wrong transaction identifier format is detected

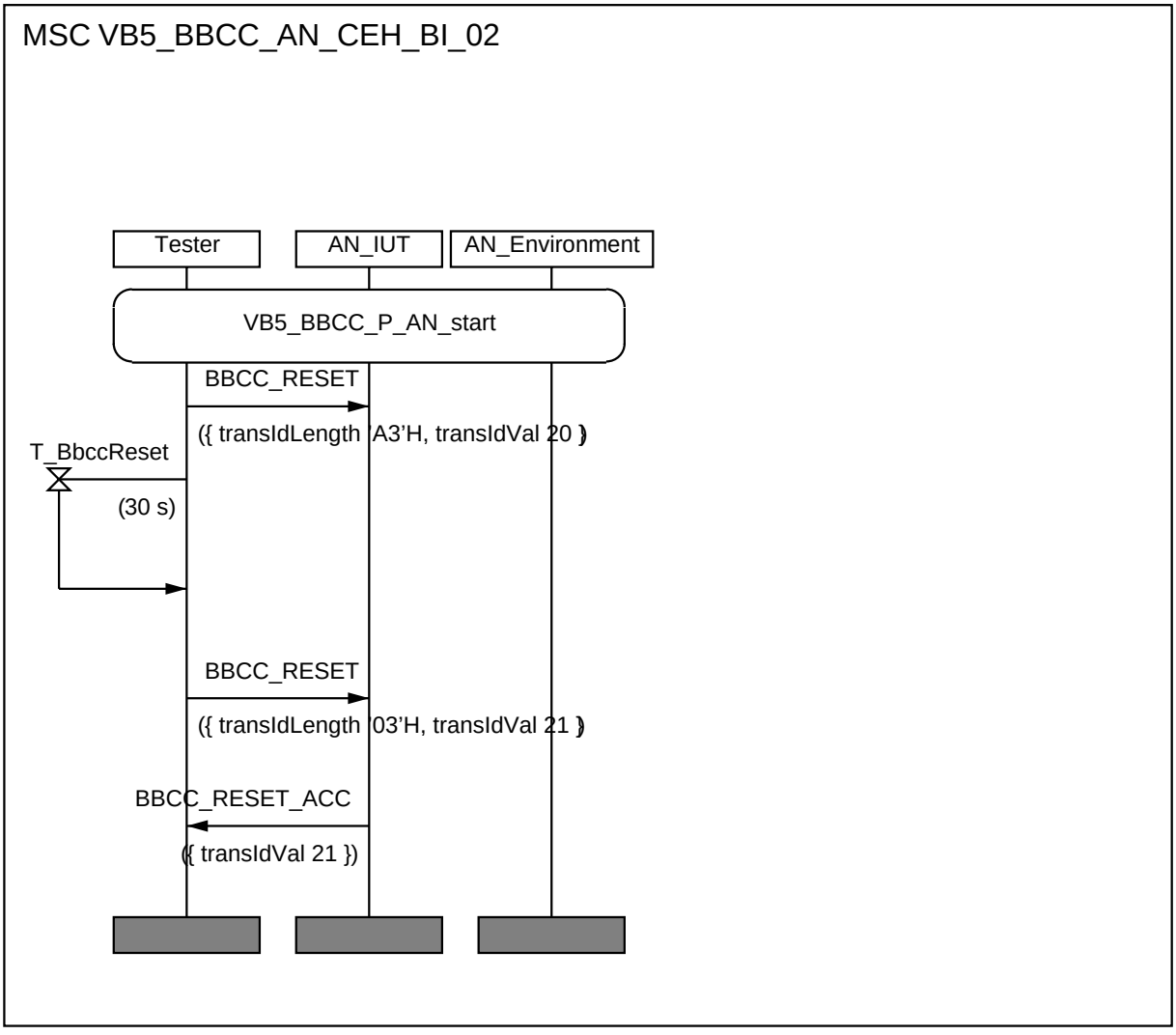

Figure 76

VB5_BBCC_AN_CEH_BI_03	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of wrong length of transaction identifier
Test description	The tester sends **BBCC_RESET** PDU to the IUT, with bits 1 to 4 of element octet 1 are different from length = 3 (set to 1010)
Pass criteria 1	Check that the tester is not receiving **BBCC_RESET_ACK** PDU, meaning that the PDU is discarded
Test description	The tester now sends **BBCC_RESET** PDU to the IUT, with correct length of transaction identifier
Pass criteria 2	Check that the tester is receiving **BBCC_RESET_ACK** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	meeErrorInd is sent to AN environment when wrong length off transaction identifier format is detected

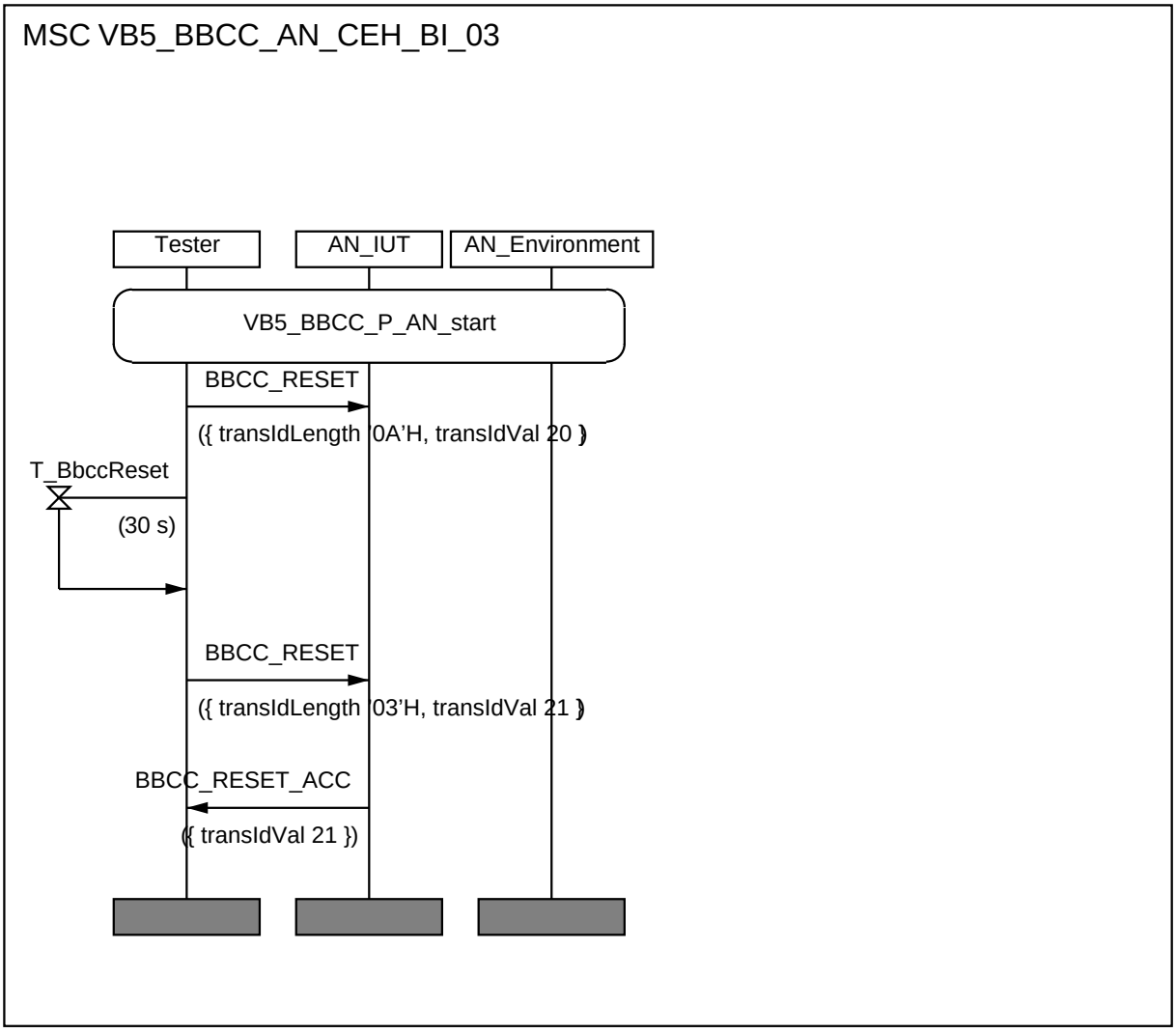

Figure 77

VB5_BBCC_AN_CEH_BI_04	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a message too short
Test description	The tester sends **BBCC_RESET** PDU to the IUT, with data truncated (common message info minus the last byte giving the least significant octet of the length, no info element)
Pass criteria 1	Check that the tester is not receiving **BBCC_RESET_ACK** PDU, meaning that the PDU is discarded
Test description	The tester now sends **BBCC_RESET** PDU to the IUT, with correct length and parameters
Pass criteria 2	Check that the tester is receiving **BBCC_RESET_ACK** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	meeErrorInd is sent to AN environment when wrong length of message is detected

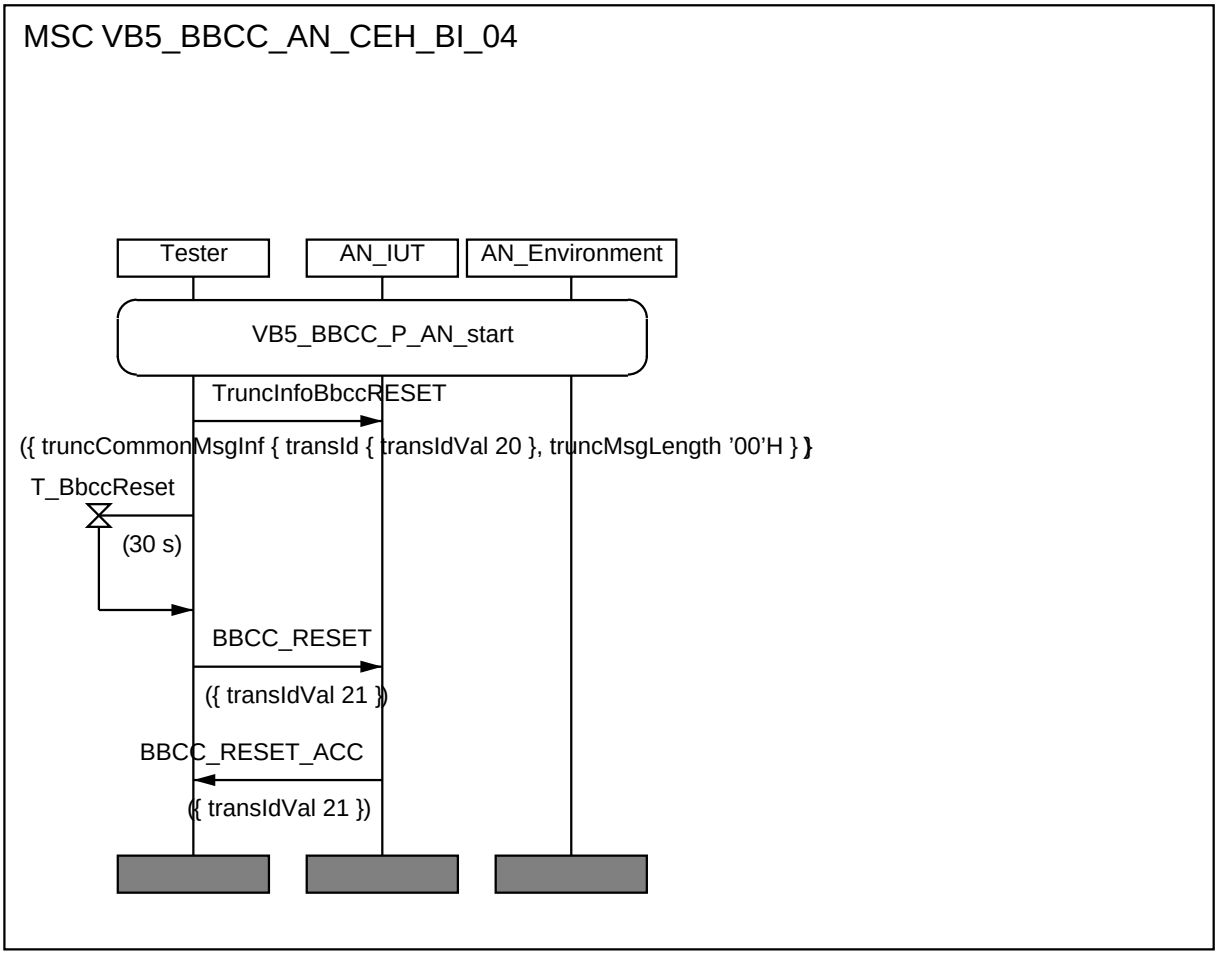

Figure 78

VB5_BBCC_AN_CEH_BI_05	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a wrong transaction identifier value
Test description	The tester issues an implicit send to cause the IUT to initiate a **AN_FAULT** procedure. The tester is receiving **AN_FAULT** PDU then it answers with **AN_FAULT_ACC** PDU including a wrong transaction identifier value
Pass criteria	Check that the tester is receiving a second **AN_FAULT** PDU, meaning that the **AN_FAULT_ACC** PDU was discarded and a time out on **AN_FAULT_ACC** occurred
Selection	None
Preamble	P_AN_1ptp
Postamble	None
Additional testing	

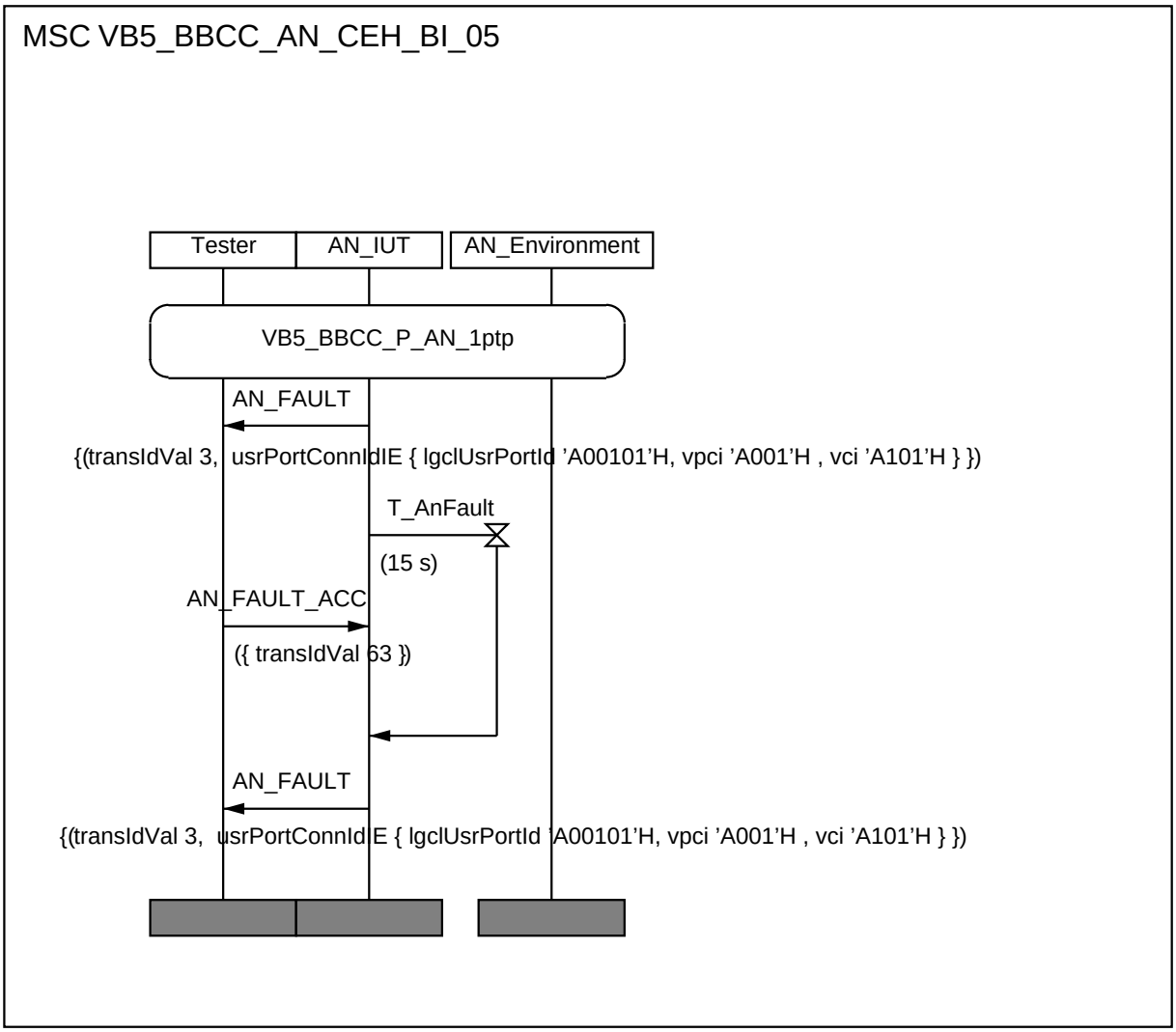

Figure 79

VB5_BBCC_AN_CEH_BI_06	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a wrong transaction identifier flag
Test description	The tester sends **BBCC_RESET** PDU to the IUT, with transaction identifier flag set to 1 as for an ACC
Pass criteria 1	Check that the tester is not receiving **BBCC_RESET_ACC** PDU, meaning that the PDU is discarded
Test description	The tester now sends **BBCC_RESET** PDU to the IUT, with correct parameters
Pass criteria 2	Check that the tester is receiving **BBCC_RESET_ACC** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	meeErrorInd is sent to AN environment when wrong transaction identifier flag is detected

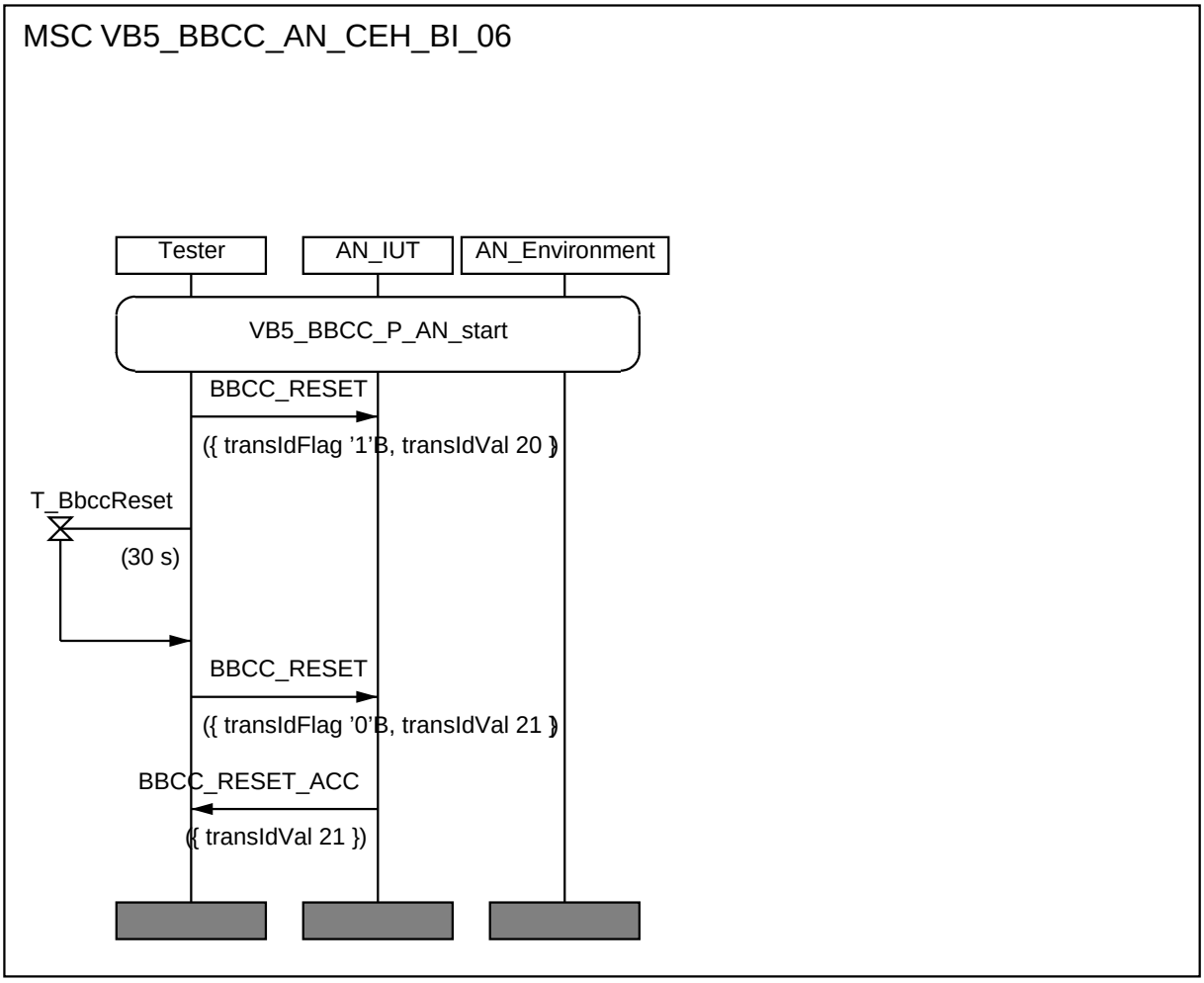

Figure 80

VB5_BBCC_AN_CEH_BI_07	Reference EN 301 217-1 [3]: 13.6.1.5.1, EN 301 005-1 [1]: 13.3.1.5.1
Purpose	Check detection of a wrong message type
Test description	The tester sends **an unknown** PDU to the IUT (message type=AB)
Pass criteria	Check that the tester is receiving **BBCC_PROTOCOL_ERROR**, with Protocol error cause value = message type unrecognized, meaning that the PDU is unknown
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	meeErrorInd is sent to AN environment when wrong message type is detected

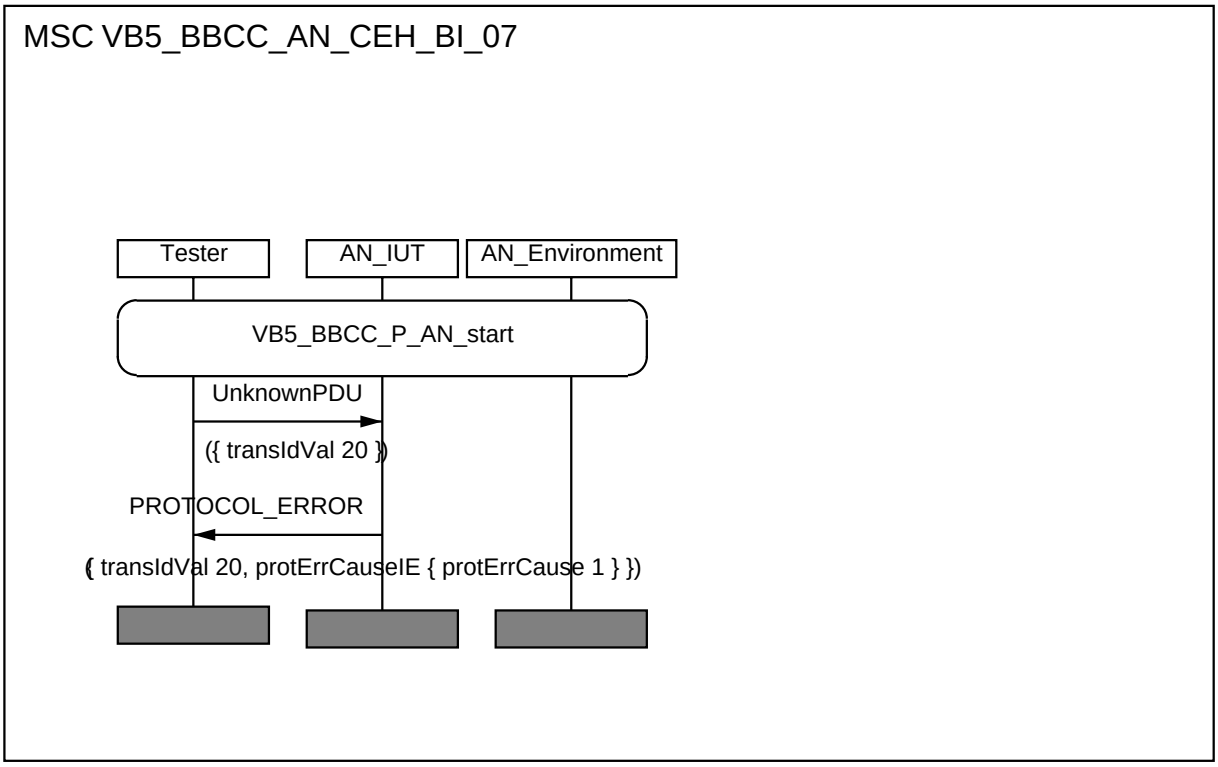

Figure 81

6.1.8.2 Error Handling on Information Element (IE)

VB5_BBCC_AN_CEH_BI_11	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a missing Information Element (IE)
Test description	The tester sends **BBCC_RESET** PDU to the IUT, which has no IE (deletion of IE "service port connection identifier"), msg length null
Pass criteria	Check that the tester is receiving **BBCC_PROTOCOL_ERROR**, with Protocol error cause value = mandatory IE missing, meaning that the PDU is incomplete
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	meeErrorInd is sent to AN environment when error is detected

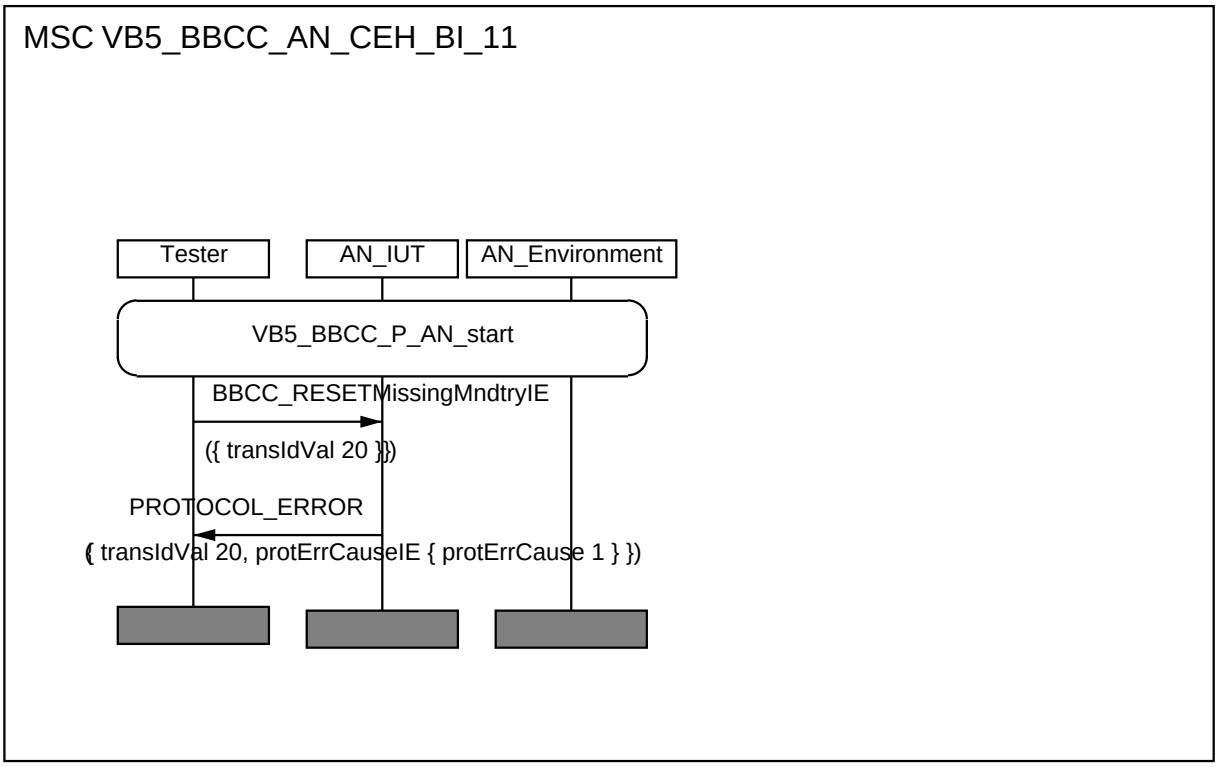

Figure 82

VB5_BBCC_AN_CEH_BI_12	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check discarding of an unknown Information Element (IE)
Test description	The tester sends **BBCC_RESET** PDU to the IUT, which has an additional unknown IE
Pass criteria	Check that the tester is receiving **BBCC_RESET_ACC**, meaning that the IUT has treated correctly the valid information and has discarded the unknown IE
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeBBCCResetInd is sent to AN environment

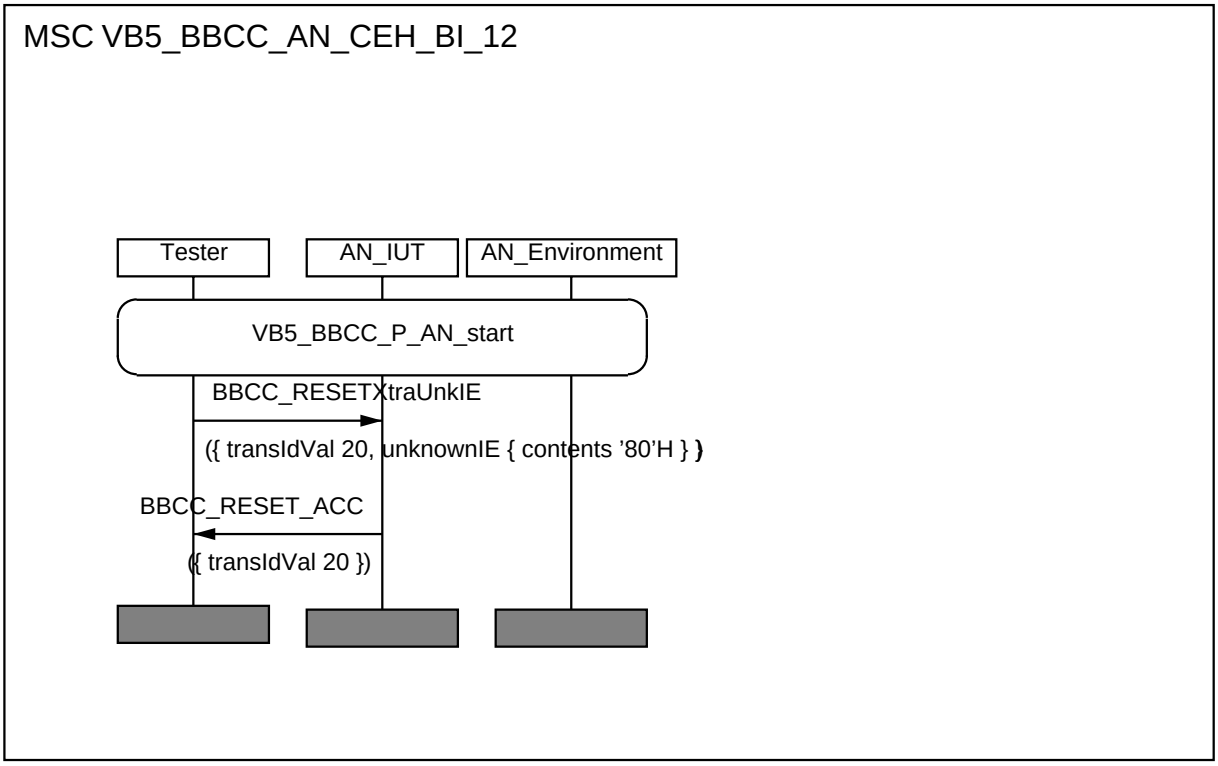

Figure 83

VB5_BBCC_AN_CEH_BI_13	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check discarding of an Information Element (IE) unexpected recognized
Test description	The tester sends **BBCC_RESET** PDU to the IUT, which has an IE not allowed in this PDU type
Pass criteria	Check that the tester is receiving **BBCC_RESET_ACC**, meaning that the IUT has treated correctly the valid information and has discarded the unexpected IE
Selection	None
Preamble	P_AN_start
Postamble	None
Additional testing	ceeBBCCResetInd is sent to AN environment

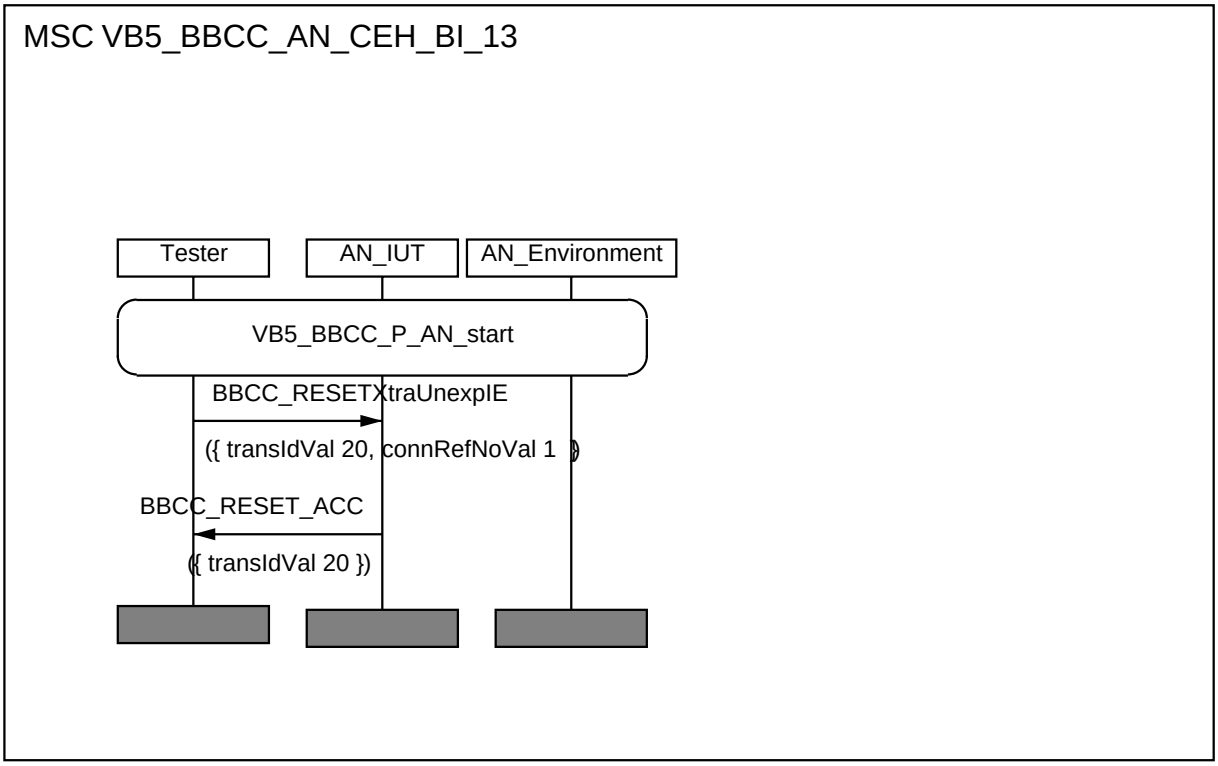

Figure 84

6.2 SN is the IUT

6.2.1 Basic capability tests (CA)

This test verifies the capability of the SN to exchange valid messages with the tester. It consists in starting up the SN BBCC.

Start Up procedure (ST).

VB5_BBCC_SN_ST_CA_01	Reference **EN 301 217-1 [3]: 13.6.4.5**
Purpose	Check start up of BBCC.
Test description	The tester issues an implicit send to cause the IUT to start-up the IUT and initialize layer 2
Pass criteria	Check that the tester is receiving a **BBCC_RESET** PDU with mandatory parameters
Selection	None
Preamble	None
Postamble	None
Additional testing	The SN environment receives meeBBCCStartTrafficInd at SAAL establishment, then ceeBBCCResetInd

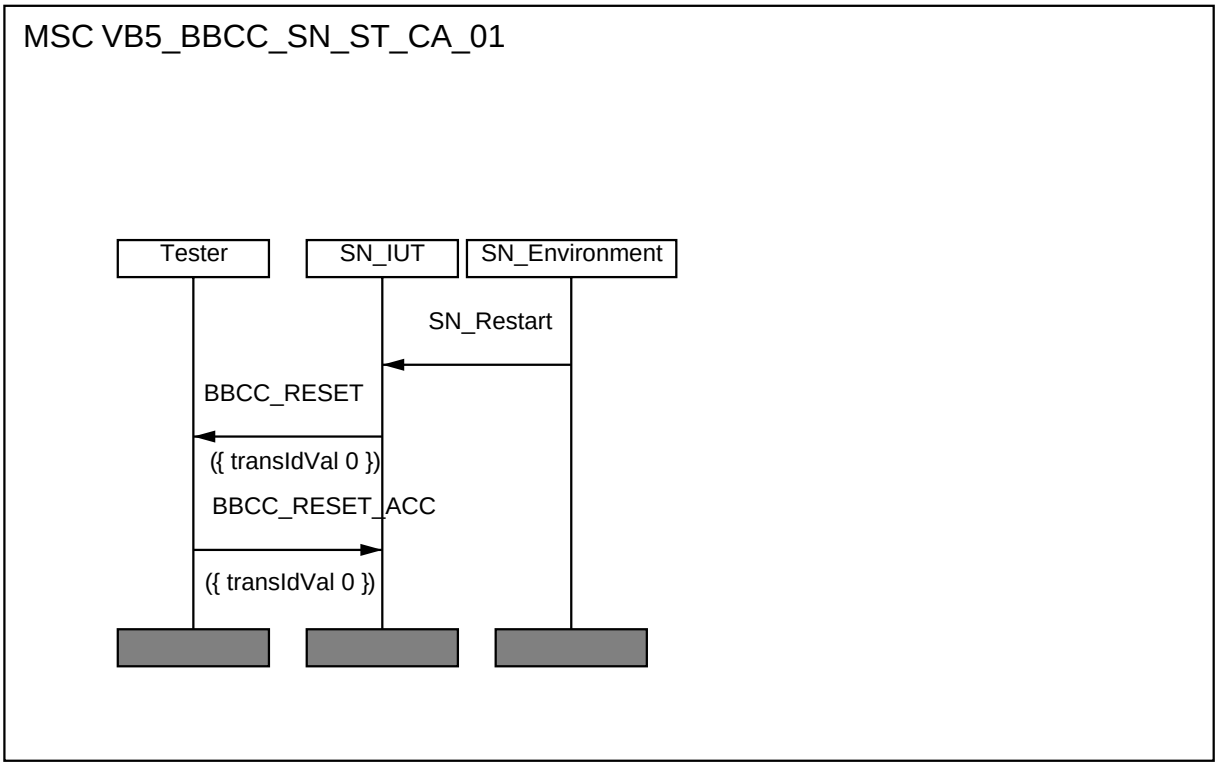

Figure 85

6.2.2 Connection Establishment procedure (CE)

6.2.2.1 Point to Point Connection Establishment procedure

Allocation.

VB5_BBCC_SN_CE_BV_01	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation (simple reservation)
Test description	The tester issues an implicit send to cause the IUT to initiate an **ALLOC** resource procedure for a PtP connection
Pass criteria	Check that the tester is receiving **ALLOC** PDU containing mandatory parameters.
Selection	None
Preamble	P_SN_start
Postamble	None
Additional testing	None

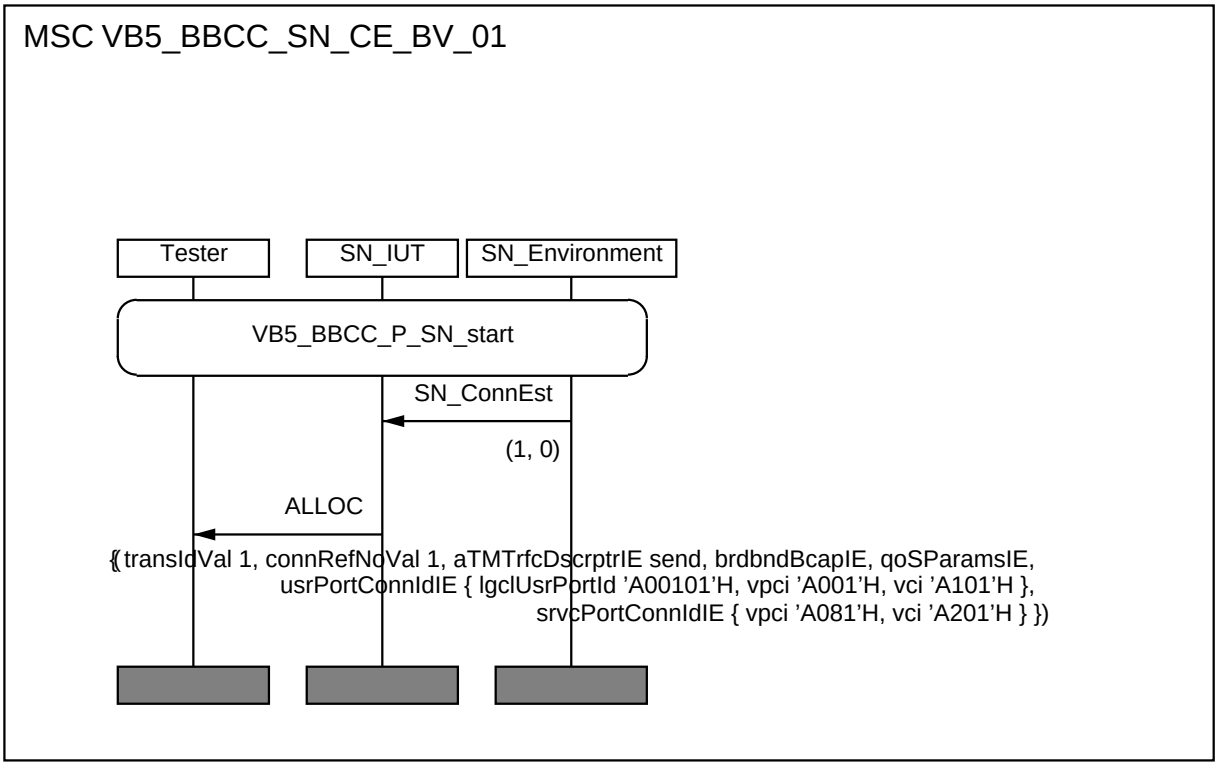

Figure 86

Based on preceding test purpose numbered VB5_BBCC_SN_CE_BV_01, which is using a set of basic mandatory parameters (see MSC for details), the following additional test purposes, based on variation of ALLOC PDU parameters, are defined:

VB5_BBCC_SN_CE_BV_01b	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Alternate User port VPCI 2
Selection	None

VB5_BBCC_SN_CE_BV_01c	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Alternate Service port VPCI 1
Selection	None

VB5_BBCC_SN_CE_BV_01d	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using ABR setup parameter
Selection	A.26/1: ABR support

VB5_BBCC_SN_CE_BV_01e	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using CDVT descriptor
Selection	A.28/1: CDVT support

VB5_BBCC_SN_CE_BV_01f	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using End to end transit delay
Selection	None

VB5_BBCC_SN_CE_BV_01g	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Alternative ATM traffic descriptor
Selection	A.17/13: Connection characteristic negotiation procedure during connection establishment AND A.29/1: Alternative ATM traffic descriptor

VB5_BBCC_SN_CE_BV_01h	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using Minimum acceptable ATM traffic descriptor
Selection	A.17/13: Connection characteristic negotiation procedure during connection establishment AND A.30/1: Minimum acceptable ATM traffic descriptor

VB5_BBCC_SN_CE_BV_01i	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation with ALLOC PDU using OAM traffic descriptor
Selection	None

T_Alloc timer test.

VB5_BBCC_SN_CE_TI_01	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check T_Alloc timer
Test description	The tester issues an implicit send to cause the IUT to initiate an **ALLOC** resource procedure. The tester is receiving **ALLOC** PDU containing mandatory parameters. The tester does not answer with **ALLOC_ACK** within T_Alloc time
Pass criteria	Check that the tester is receiving a second **ALLOC** PDU containing mandatory parameters within the acceptance time window
Selection	None
Preamble	P_SN_start
Postamble	None
Additional testing	None

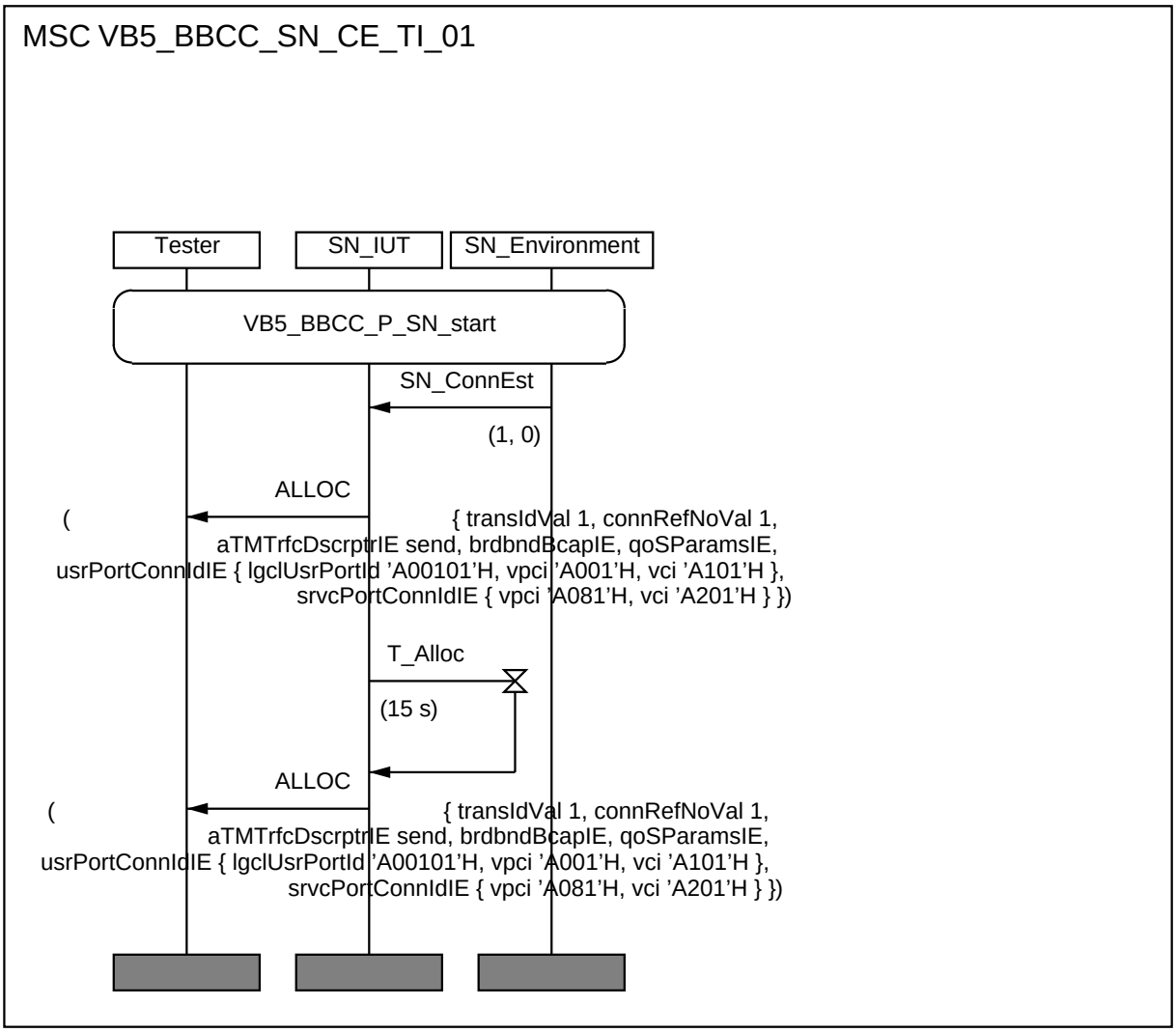

Figure 87

Allocation complete.

VB5_BBCC_SN_CE_BV_02	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check Allocation complete, PtP connection, mandatory parameters only
Test description	The tester issues an implicit send to cause the IUT to initiate an **ALLOC** procedure. The tester receives **ALLOC** PDU containing mandatory parameters, then it answers with **ALLOC_ACK** within T_Alloc time
Pass criteria	Check that the tester is receiving **ALLOC_COMP** PDU containing mandatory parameters
Selection	None
Preamble	P_SN_start
Postamble	None
Additional testing	ceeAllocAccConf is sent to SN environment

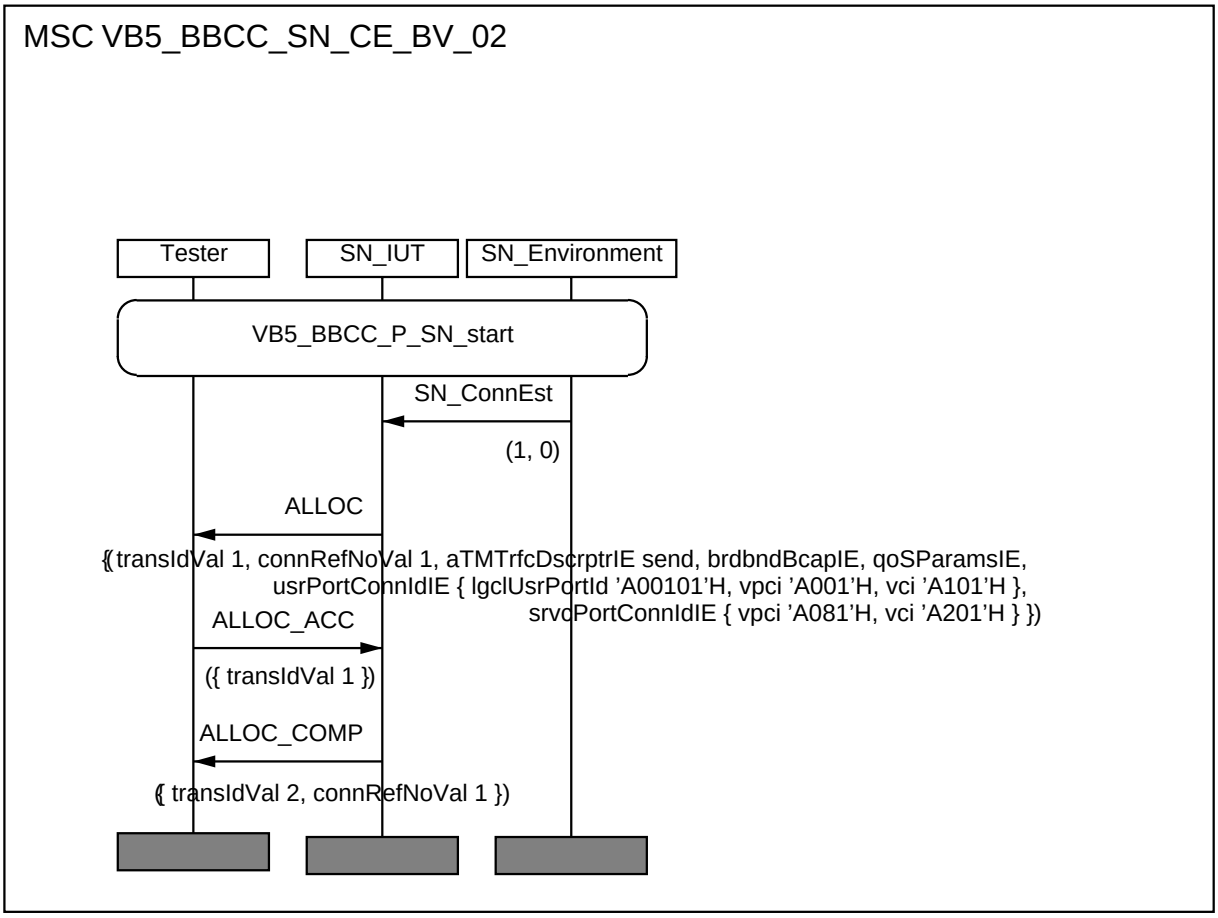

Figure 88

VB5_BBCC_SN_CE_BV_03	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check negotiation procedure during Allocation complete, PtP connection
Test description	The tester issues an implicit send to cause the IUT to initiate an **ALLOC** procedure. The tester receives **ALLOC** PDU, then it answers with **ALLOC_ACK** PDU containing a traffic descriptor and an alternate within T_Alloc time
Pass criteria	Check that the tester is receiving **ALLOC_COMP** PDU containing a choice of traffic descriptor parameter, either the proposed one or its alternate
Selection	A.17/13: Connection characteristic negotiation procedure during connection establishment
Preamble	P_SN_start
Postamble	None
Additional testing	ceeAllocAccConf is sent to SN environment

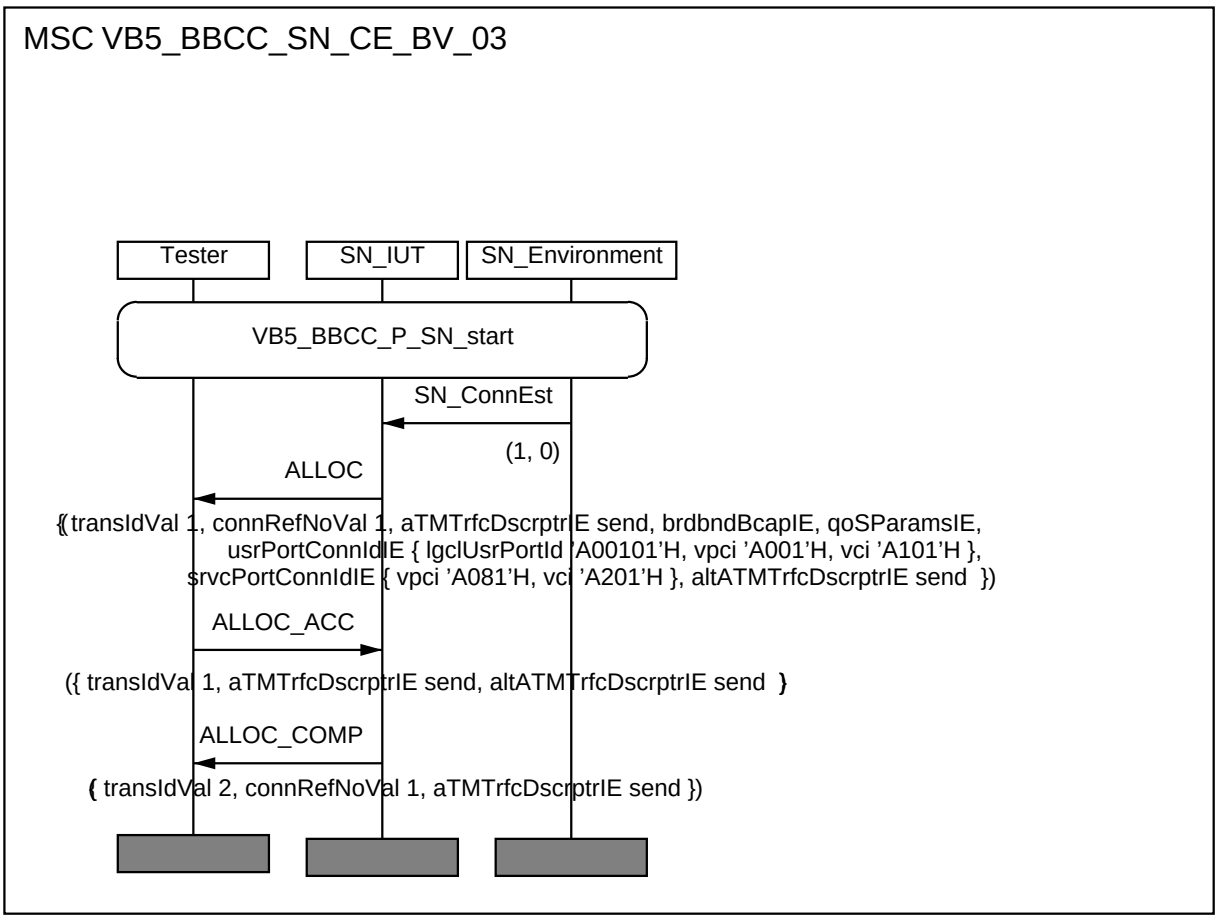

Figure 89

T_AllocComp timer test.

VB5_BBCC_SN_CE_TI_02	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check T_AllocComp timer
Test description	The tester issues an implicit send to cause the IUT to initiate an **ALLOC** procedure. The tester receives **ALLOC** PDU containing mandatory parameters then answers with **ALLOC_ACC**. The tester is receiving **ALLOC_COMP** PDU containing mandatory parameters. The tester does not answer with **ALLOC_COMP ACK** within T_Alloc time
Pass criteria	Check that the tester is receiving a second **ALLOC_COMP** PDU containing mandatory parameters, within the acceptance time window
Selection	None
Preamble	P_SN_start
Postamble	None
Additional testing	ceeAllocAccConf is sent to SN environment

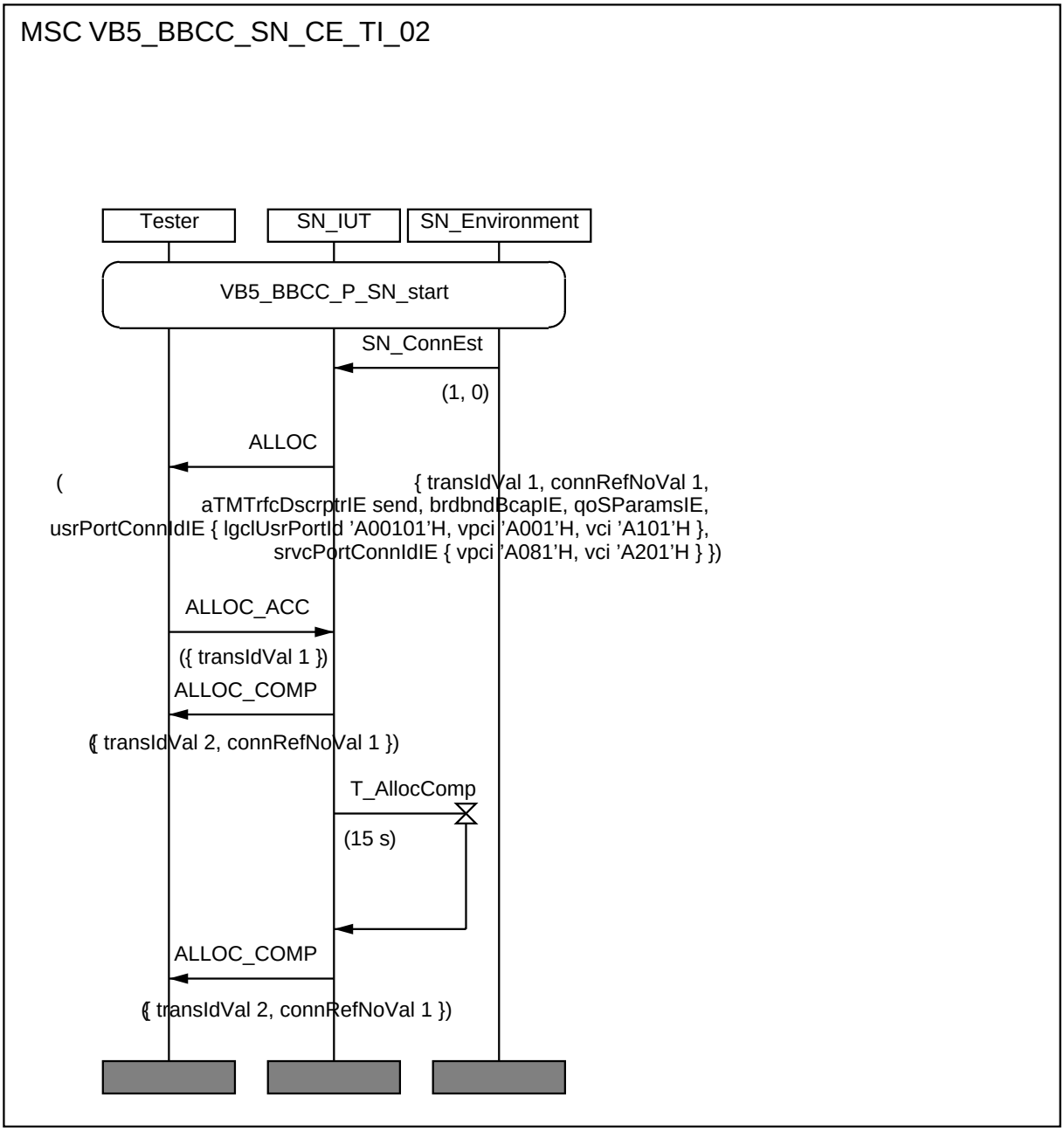

Figure 90

6.2.2.2 Point to Multipoint Connection Establishment procedure

Allocation.

VB5_BBCC_SN_CE_BV_11	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check allocation (simple reservation)
Test description	The tester issues an implicit send to cause the IUT to initiate an **ALLOC** resource procedure for a PtM connection
Pass criteria	Check that the tester is receiving **ALLOC** PDU containing mandatory parameters
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_start
Postamble	None
Additional testing	None

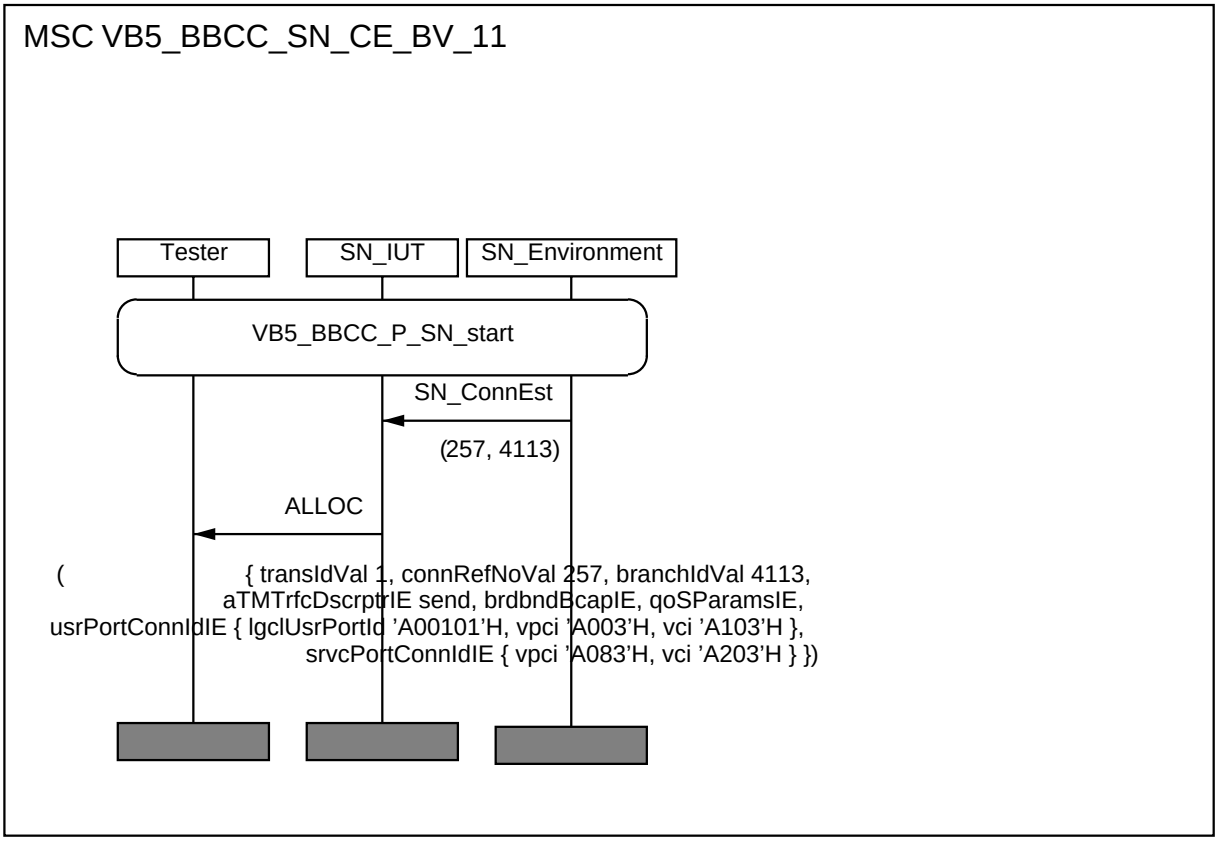

Figure 91

Allocation complete.

VB5_BBCC_SN_CE_BV_12	Reference EN 301 217-1 [3]: 13.6.2.1.2
Purpose	Check Allocation complete, PtM connection
Test description	The tester issues an implicit send to cause the IUT to initiate an **ALLOC** procedure. The tester receives **ALLOC** PDU containing mandatory parameters then answers with **ALLOC_ACC**
Pass criteria	Check that the tester is receiving **ALLOC_COMP** PDU containing mandatory parameters
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_start
Postamble	None
Additional testing	ceeAllocAccConf is sent to SN environment

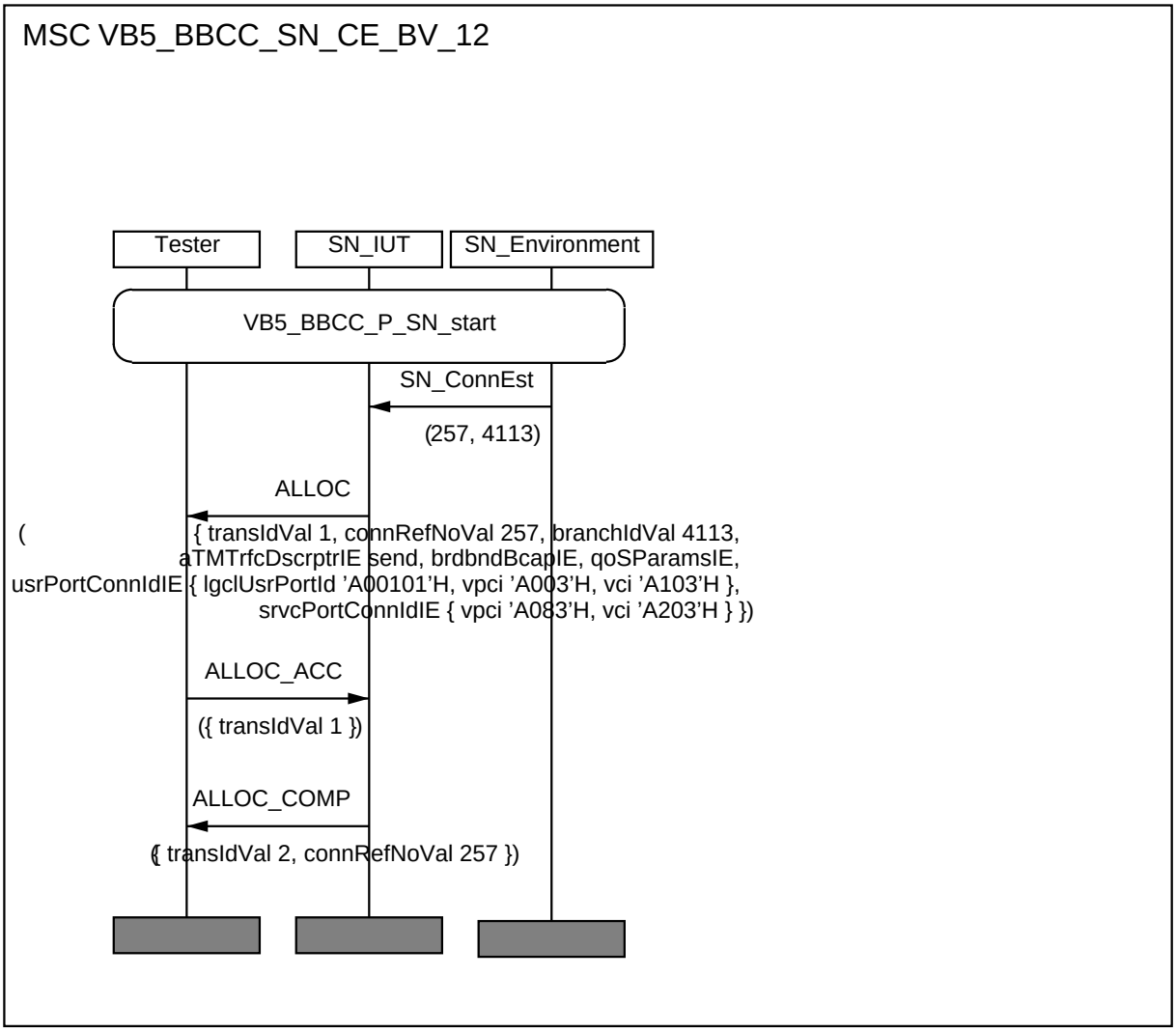

Figure 92

6.2.3 Connection Release procedure (CR)

6.2.3.1 Single connection Release procedure

Single PtP Connection.

VB5_BBCC_SN_CR_BV_01	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check Release of a single PtP Connection
Test description	The tester issues an implicit send to cause the IUT to initiate a **DEALLOC** resource procedure for a single PtP connection
Pass criteria	Check that the tester is receiving **DEALLOC** PDU containing mandatory parameters (Connection Ref Numb List, one ref)
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

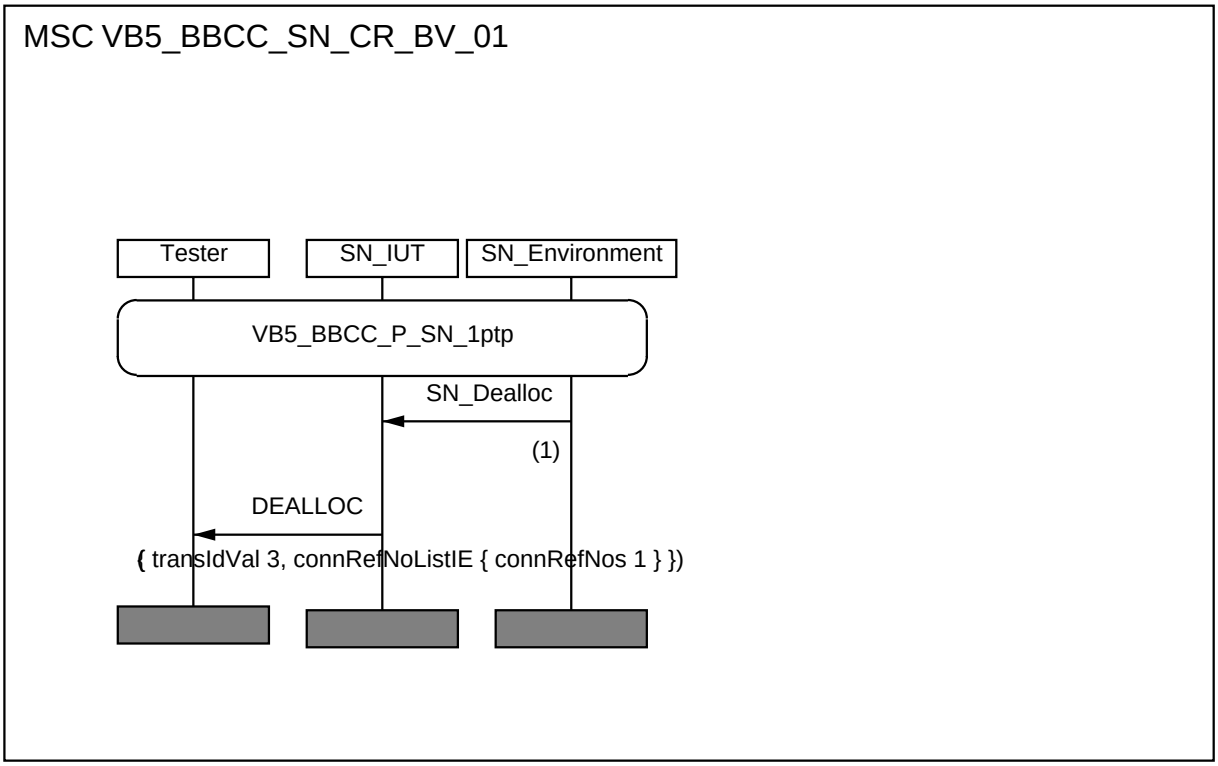

Figure 93

Single PtM Connection.

VB5_BBCC_SN_CR_BV_02	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check Release of a single PtM Connection
Test description	The tester issues an implicit send to cause the IUT to initiate a **DEALLOC** resource procedure for a PtM connection
Pass criteria	Check that the tester is receiving **DEALLOC** PDU containing mandatory parameters (Connection Ref Numb List, one ref)
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptmTwoB
Postamble	None
Additional testing	None

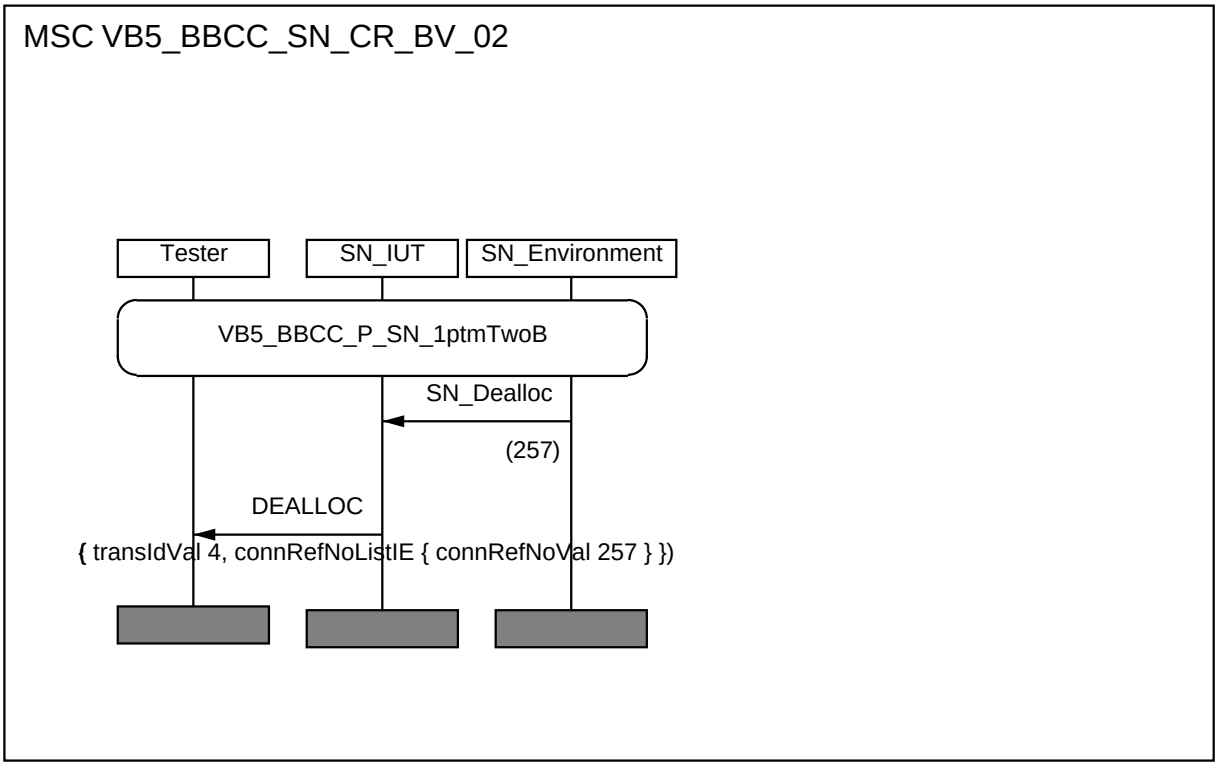

Figure 94

T_Dealloc timer test.

VB5_BBCC_SN_CR_TI_01	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check T_Dealloc timer
Test description	The tester issues an implicit send to cause the IUT to initiate **DEALLOC** resource procedure. The tester is receiving **DEALLOC** PDU containing mandatory parameters. The tester does not answer with **DEALLOC_ACK** within T_Dealloc time
Pass criteria	Check that the tester is receiving a second **DEALLOC** PDU containing mandatory parameters, within the acceptance time window
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

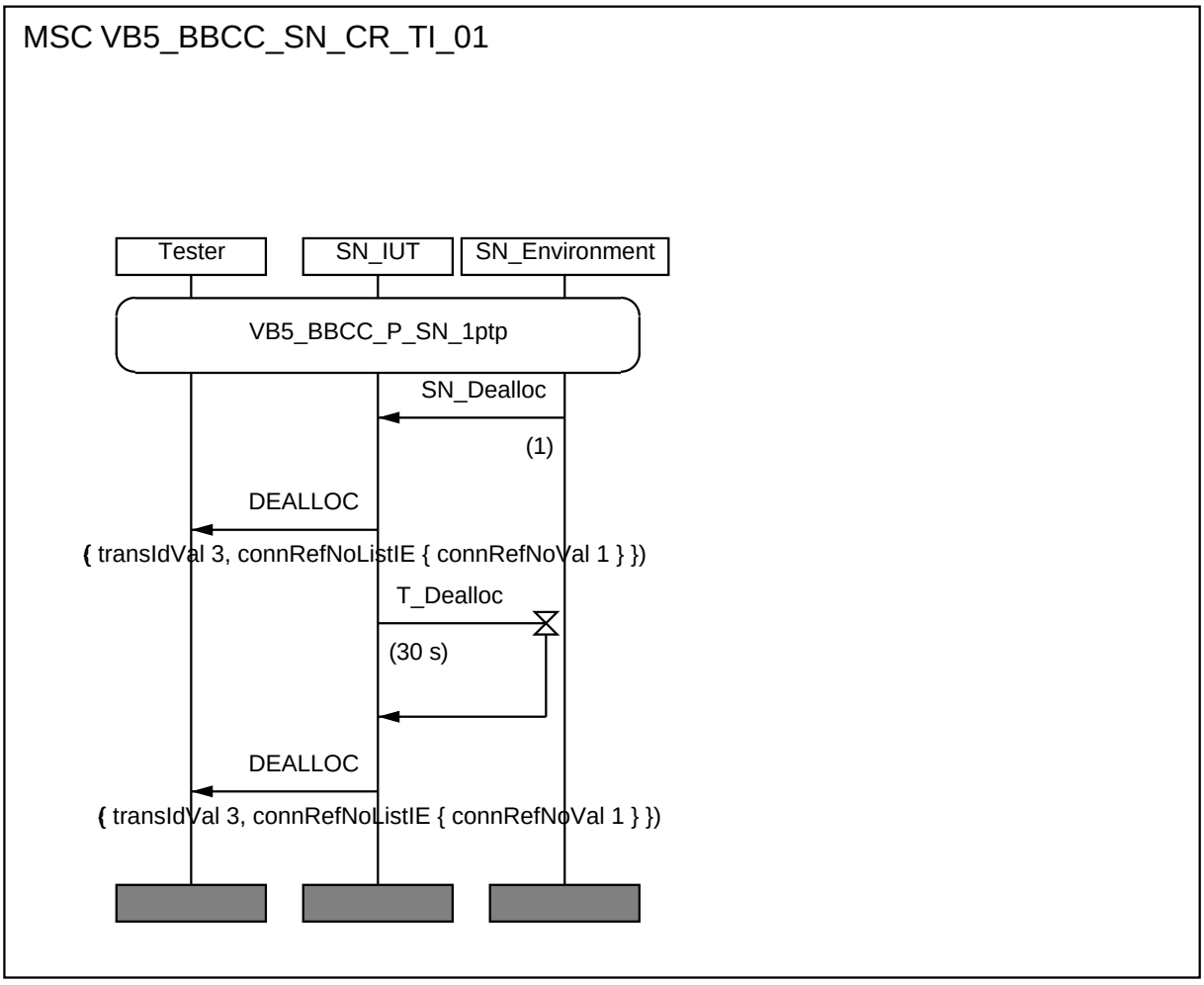

Figure 95

6.2.3.2 Multiple connections Release procedure

Multiple PtP Connections.

VB5_BBCC_SN_CR_BV_11	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check Release of a set of PtP Connections
Test description	The tester issues an implicit send to cause the IUT to initiate a **DEALLOC** resource procedure for a set of PtP connections
Pass criteria	Check that the tester is receiving **DEALLOC** PDU containing mandatory parameters (Connection Ref Numb List, several ref)
Selection	None
Preamble	P_SN_2ptp
Postamble	None
Additional testing	None

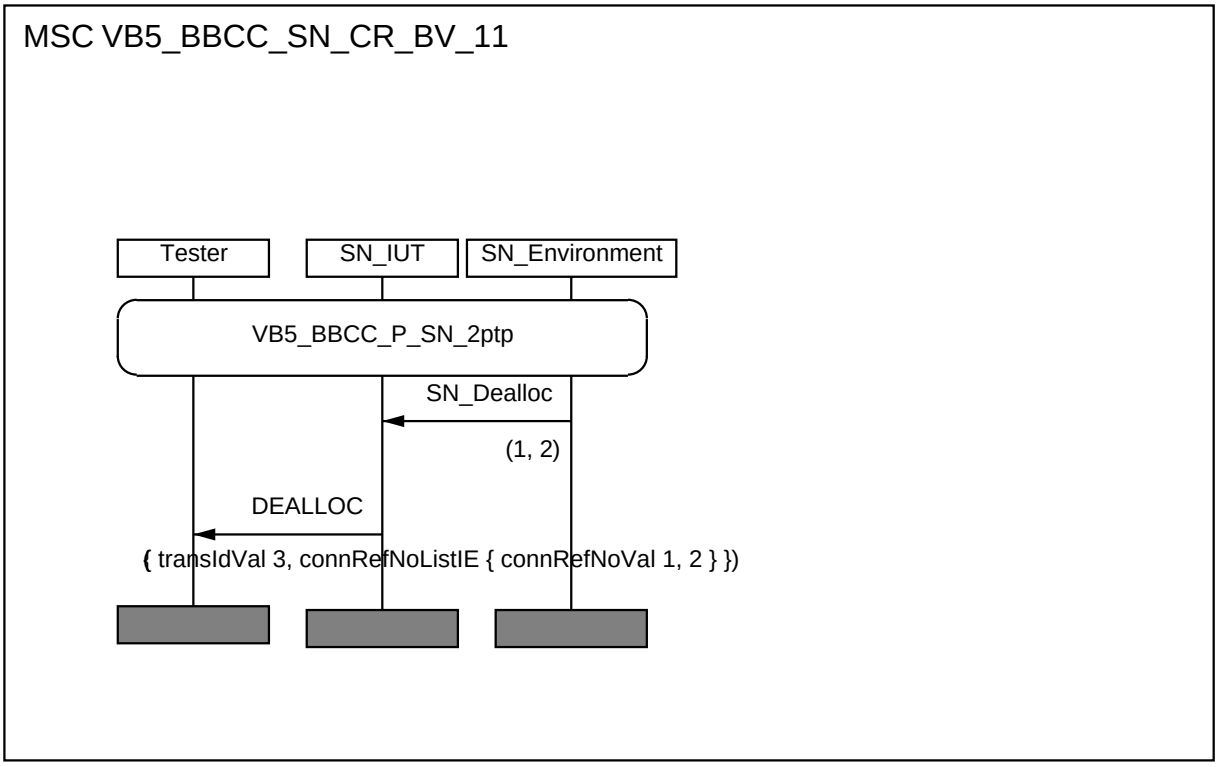

Figure 96

Multiple Connections.

VB5_BBCC_SN_CR_BV_12	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check Release of a set of PtP and PtM Connections
Test description	The tester issues an implicit send to cause the IUT to initiate a **DEALLOC** resource procedure for a set of PtP and PtM connections
Pass criteria	Check that the tester is receiving **DEALLOC** PDU containing mandatory parameters (Connection Ref Numb List, several ref)
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptp1ptm
Postamble	None
Additional testing	None

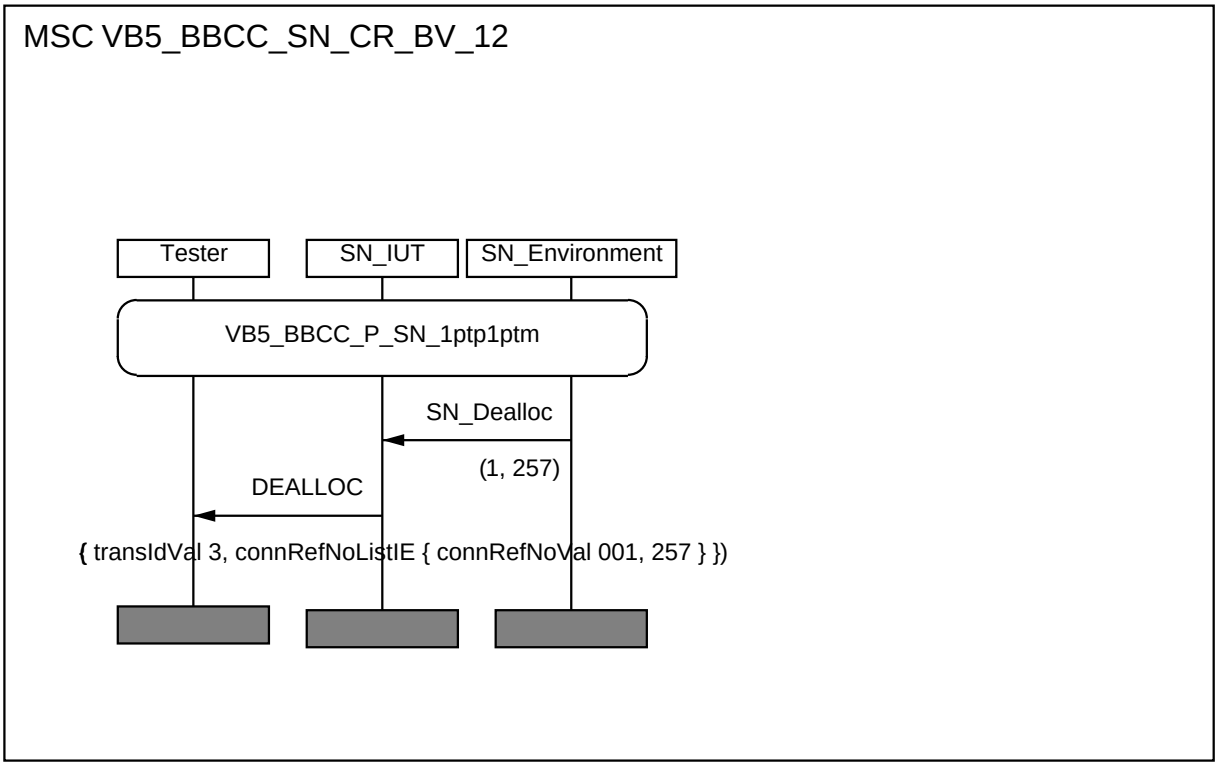

Figure 97

Multiple PtM Connections.

VB5_BBCC_SN_CR_BV_13	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check Release of a set of PtM Connections
Test description	The tester issues an implicit send to cause the IUT to initiate a **DEALLOC** resource procedure for a set of PtM connections
Pass criteria	Check that the tester is receiving **DEALLOC** PDU containing mandatory parameters (Connection Ref Numb List, several ref)
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_2ptm
Postamble	None
Additional testing	None

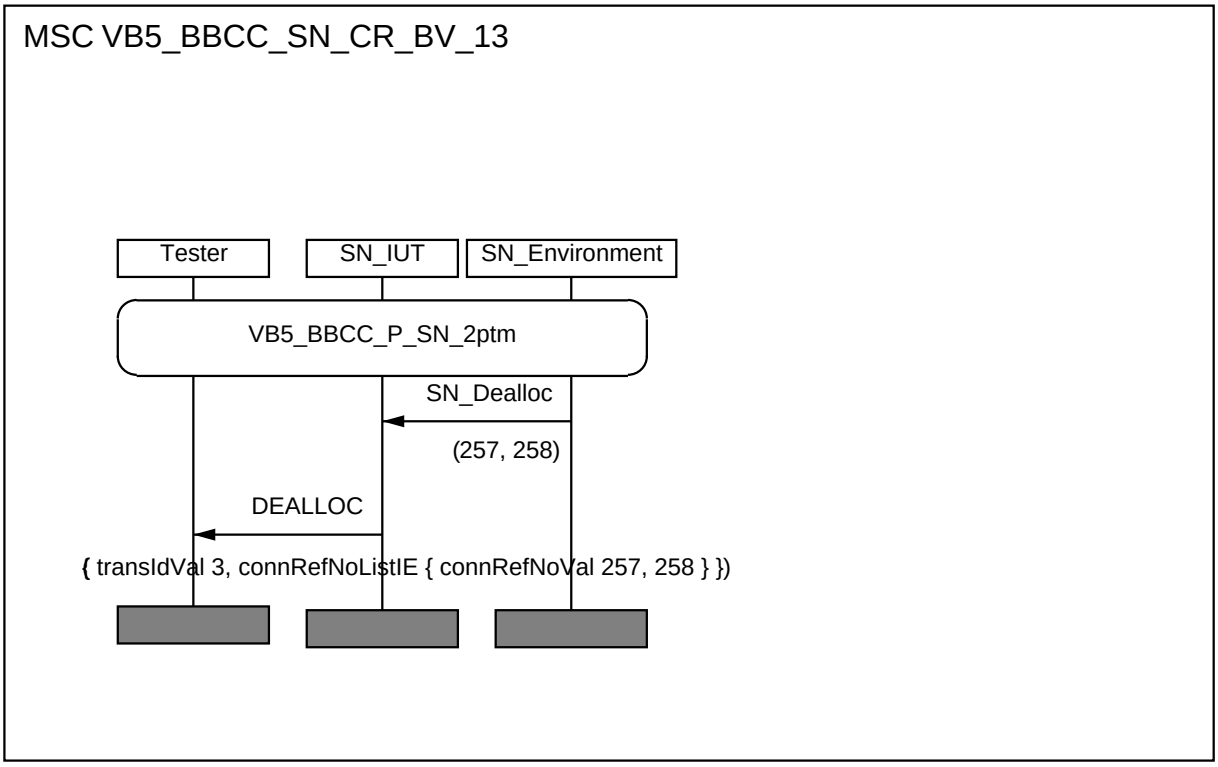

Figure 98

6.2.4 Connection modification procedure (CM)

Point to point configuration only.

6.2.4.1 Modification (first step) procedure

VB5_BBCC_SN_CM_BV_01	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification: first step, mandatory IE
Test description	The tester issues an implicit send to cause the IUT to initiate a **MODIFY** resource procedure for a single PtP connection
Pass criteria	Check that the tester is receiving **MODIFY** PDU containing mandatory parameters
Selection	A.17/4: Bearer connection modification procedure
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

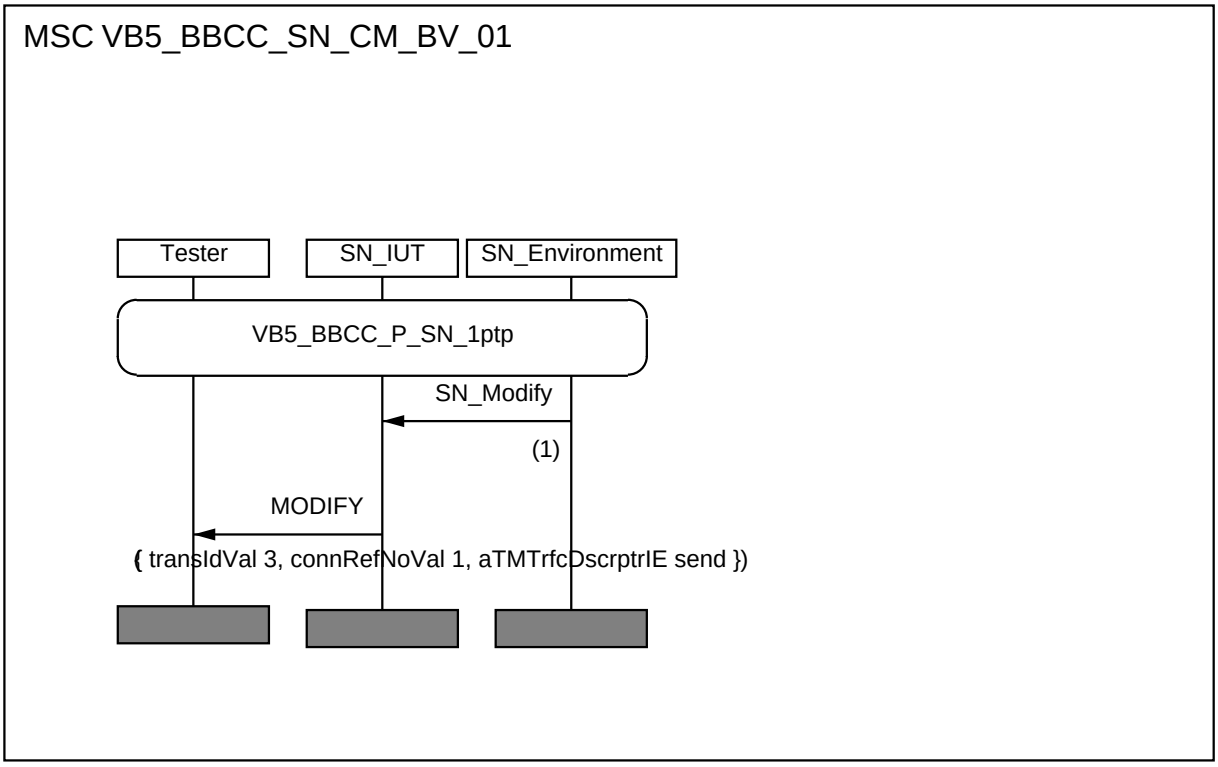

Figure 99

VB5_BBCC_SN_CM_BV_02	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification complete, mandatory IEs
Test description	The tester issues an implicit send to cause the IUT to initiate a **MODIFY** procedure. The tester receives **MODIFY** PDU containing mandatory parameters then answers with **MODIFY_ACC** within T_Modify time. The tester issues an implicit send to cause the IUT to initiate a **MODIFY_COMP** procedure
Pass criteria	Check that the tester is receiving **MODIFY_COMP** PDU containing mandatory parameters
Selection	A.17/4: Bearer connection modification procedure
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

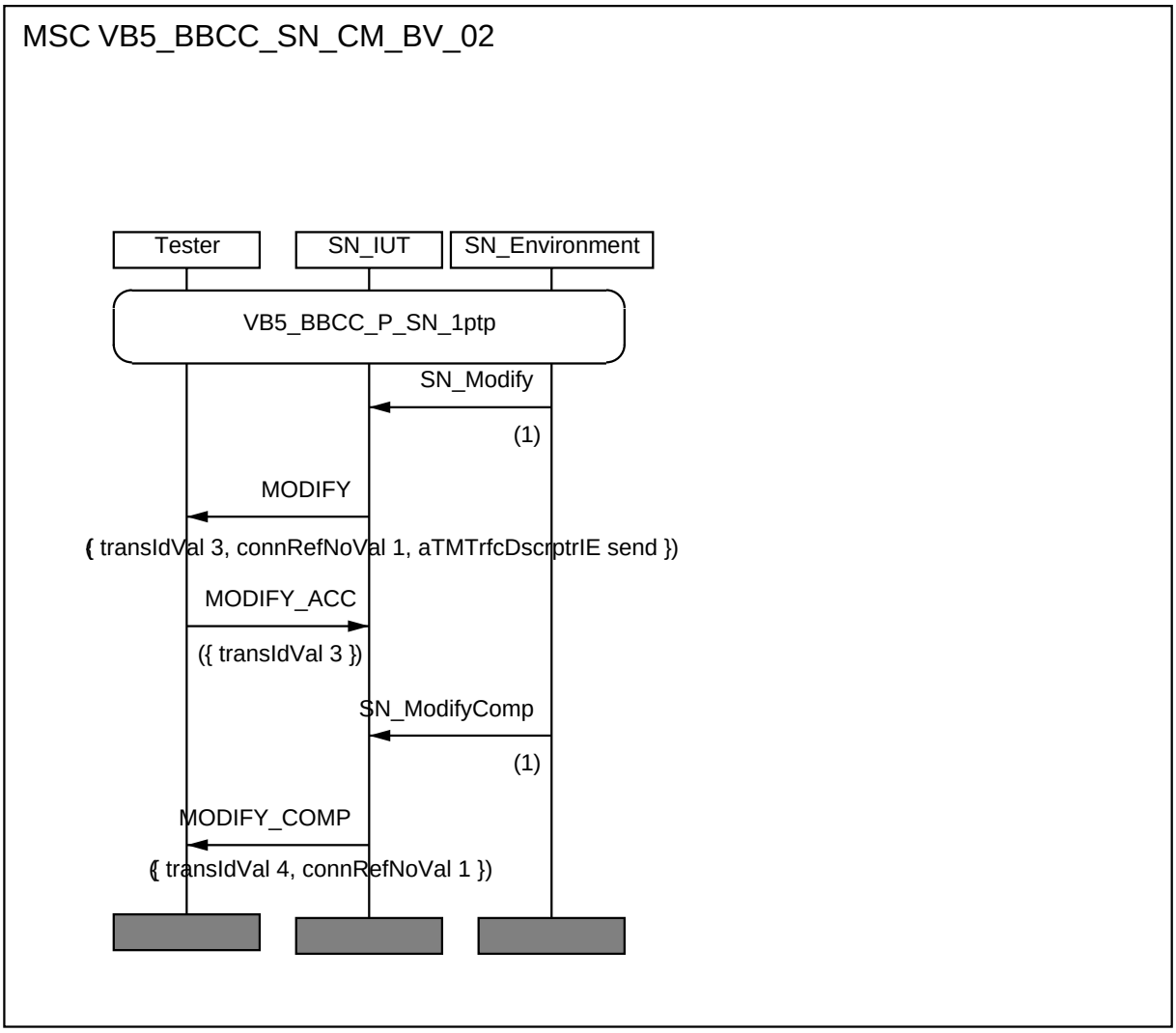

Figure 100

T_Modify timer test.

VB5_BBCC_SN_CM_TI_01	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check T_Modify timer
Test description	The tester issues an implicit send to cause the IUT to initiate **MODIFY** resource procedure. The tester is receiving **MODIFY** PDU containing mandatory parameters. The tester does not answer with **MODIFY_ACK** within T_Modify time
Pass criteria	Check that the tester is receiving a second **MODIFY** PDU containing mandatory parameters, within the acceptance time window
Selection	A.17/4: Bearer connection modification procedure
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

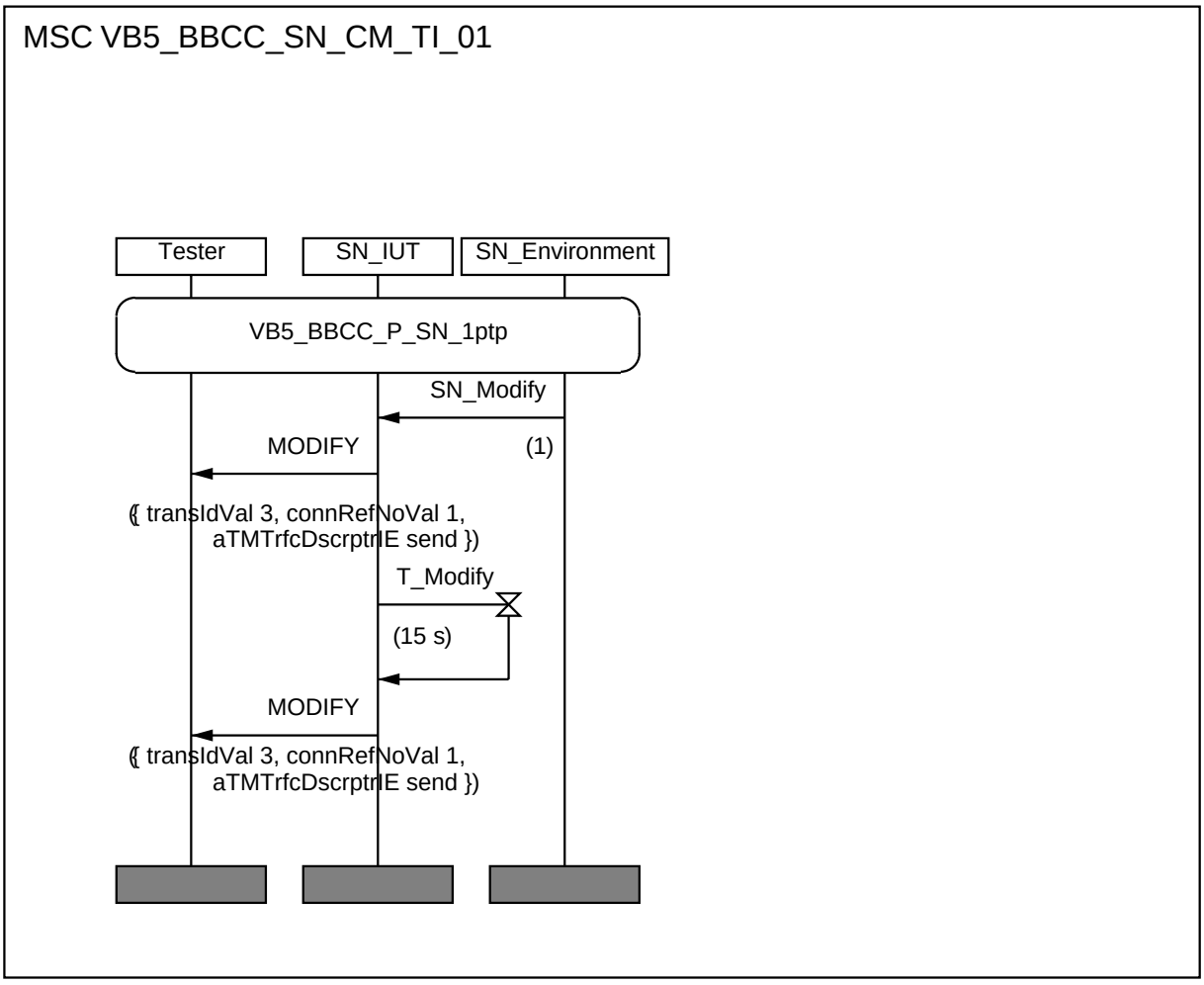

Figure 101

6.2.4.2 Modification Complete procedure

VB5_BBCC_SN_CM_BV_03	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification complete, optional IEs
Test description	The tester issues an implicit send to cause the IUT to initiate a **MODIFY** procedure. The tester receives **MODIFY** PDU containing mandatory and optional parameters then answers with **MODIFY_ACC** within T_Modify time. The tester issues an implicit send to cause the IUT to initiate a **MODIFY_COMP** procedure
Pass criteria	Check that the tester is receiving **MODIFY_COMP** PDU containing mandatory and optional parameters
Selection	A.17/4: Bearer connection modification procedure AND A.17/14: ATM traffic descriptor modification with negotiation procedure
Preamble	P_SN_1ptp
Postamble	None
Additional testing	ceeModifyAccConf is sent to SN environment

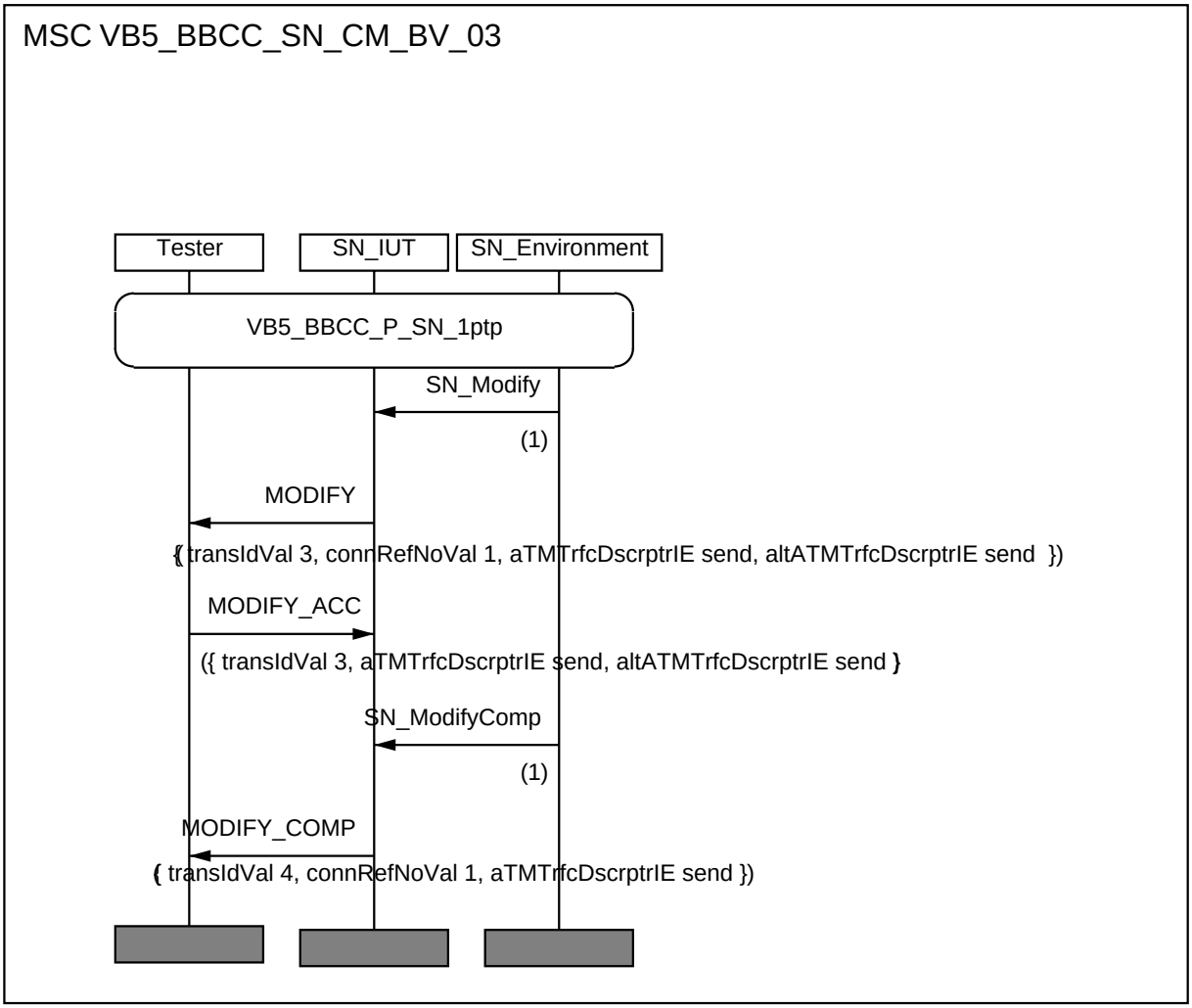

Figure 102

T_ModifyComp timer test.

VB5_BBCC_SN_CM_TI_02	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check T_ModifyComp timer
Test description	The tester issues an implicit send to cause the IUT to initiate a **MODIFY** procedure. The tester receives **MODIFY** PDU containing mandatory parameters then answers with **MODIFY_ACC**. The tester issues an implicit send to cause the IUT to initiate an **MODIFY_COMP** procedure. The tester is receiving **MODIFY_COMP** PDU containing mandatory parameters. The tester does not answer with **MODIFY_COMP ACK** within T_ModifyComp time
Pass criteria	Check that the tester is receiving a second **MODIFY_COMP** PDU containing mandatory parameters, within the acceptance time window
Selection	A.17/4: Bearer connection modification procedure
Preamble	P_SN_1ptp
Postamble	None
Additional testing	ceeModifyAccConf is sent to SN environment

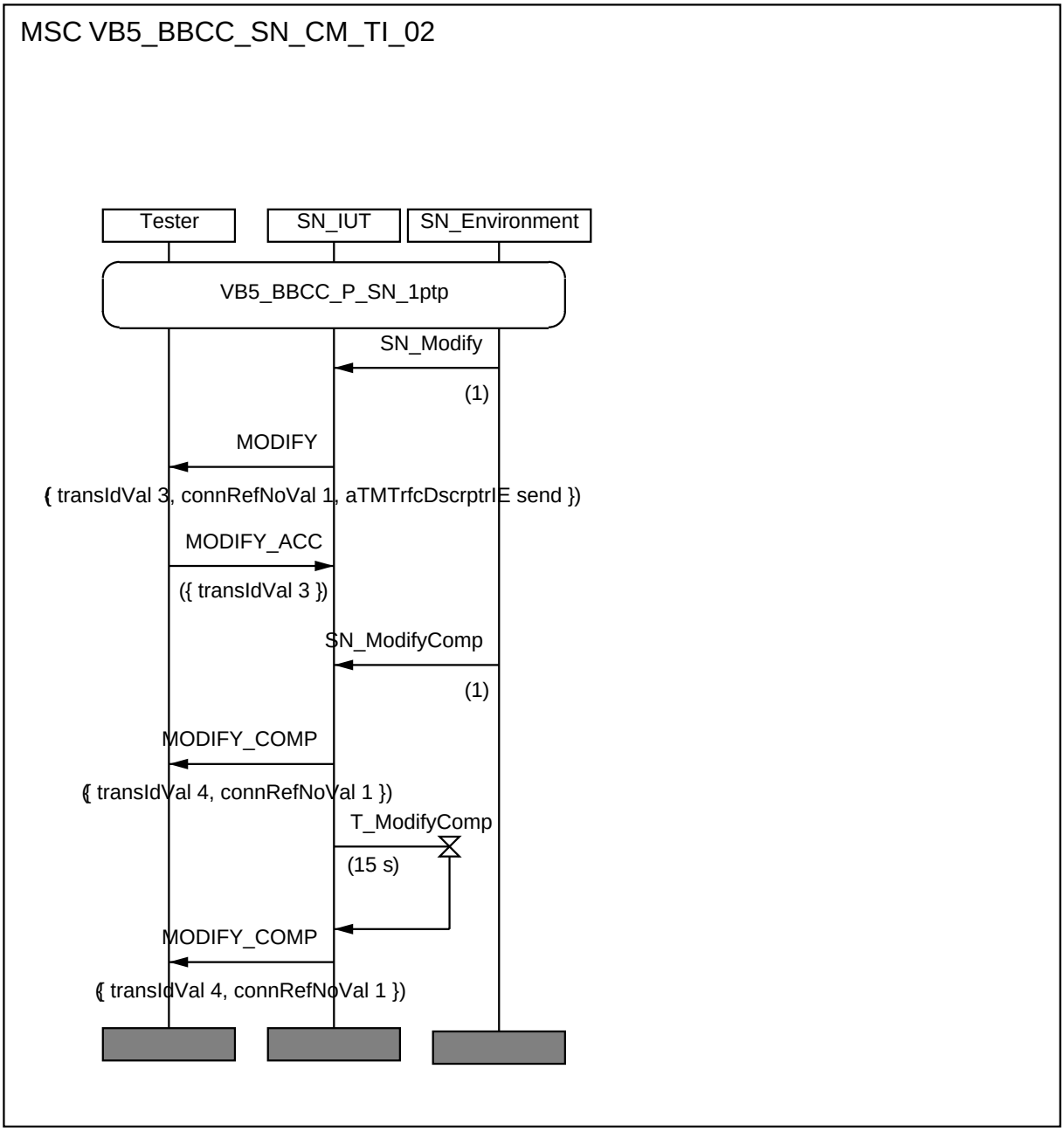

Figure 103

6.2.4.3 Modification Abort procedure

VB5_BBCC_SN_CM_BV_04	Reference EN 301 217-1 [3]: 13.6.2.3
Purpose	Check modification abort
Test description	The tester issues an implicit send to cause the IUT to initiate a **MODIFY** procedure. The tester receives **MODIFY** PDU containing mandatory parameters then answers with **MODIFY_ACC** within T_Modify time. The tester issues an implicit send to cause the IUT to initiate a **MODIFY_ABORT** procedure
Pass criteria	Check that the tester is receiving **MODIFY_ABORT** PDU containing mandatory parameters
Selection	A.17/4: Bearer connection modification procedure
Preamble	P_SN_1ptp
Postamble	None
Additional testing	ceeModifyAccConf is sent to SN environment

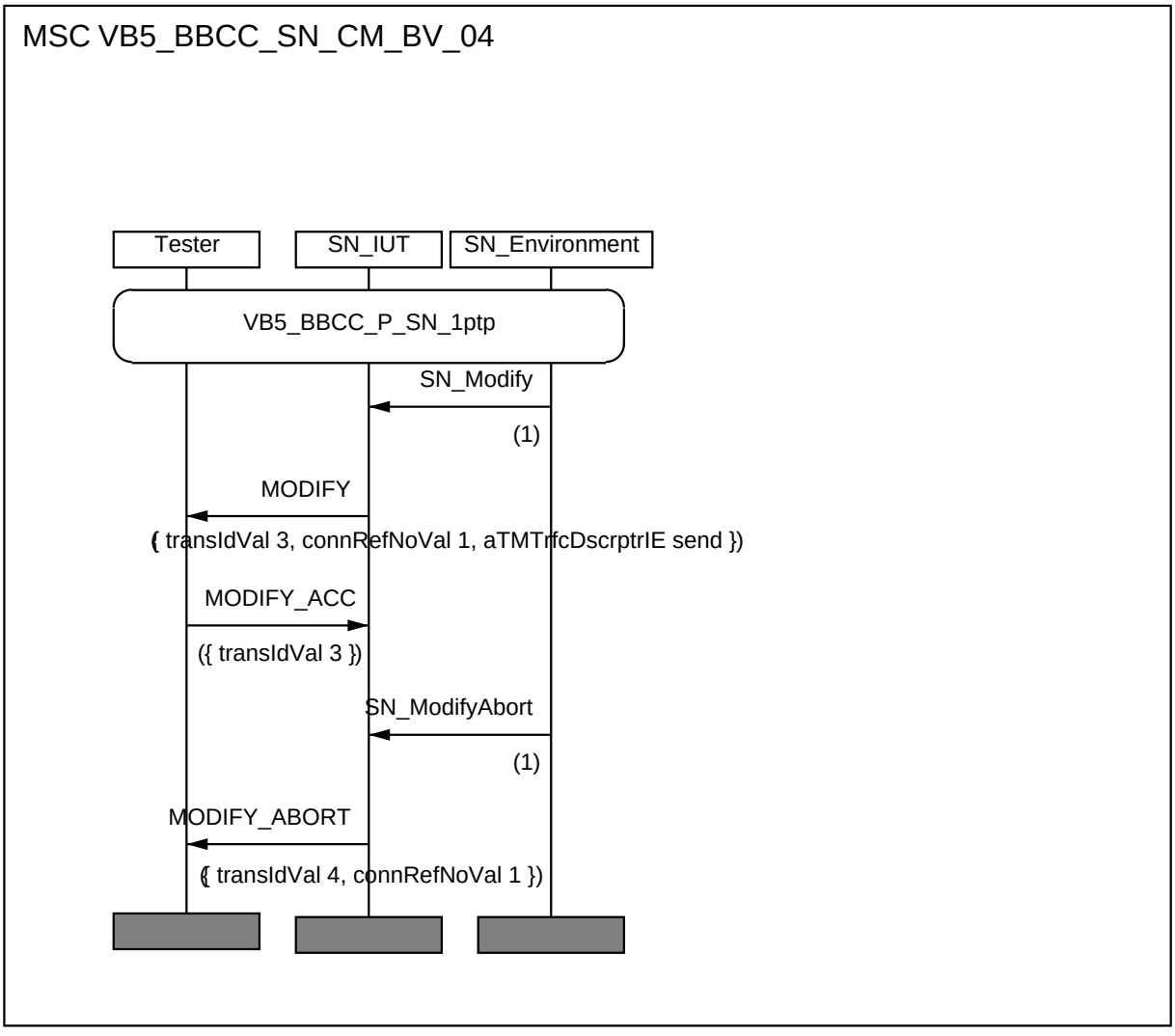

Figure 104

T_ModifyAbort timer test.

VB5_BBCC_SN_CM_TI_03	Reference EN 301 217-1 [3]: 13.6.2.2
Purpose	Check T_ModifyAbort timer
Test description	The tester issues an implicit send to cause the IUT to initiate a **MODIFY** procedure. The tester receives **MODIFY** PDU containing mandatory parameters then answers with **MODIFY_ACC**. The tester issues an implicit send to cause the IUT to initiate an **MODIFY_ABORT** procedure. The tester is receiving **MODIFY_ABORT** PDU containing mandatory parameters. The tester does not answer with **MODIFY_ABORT ACK** within T_ModifyAbort time
Pass criteria	Check that the tester is receiving a second **MODIFY_ABORT** PDU containing mandatory parameters, within the acceptance time window
Selection	A.17/4: Bearer connection modification procedure
Preamble	P_SN_1ptp
Postamble	None
Additional testing	ceeModifyAccConf is sent to SN environment

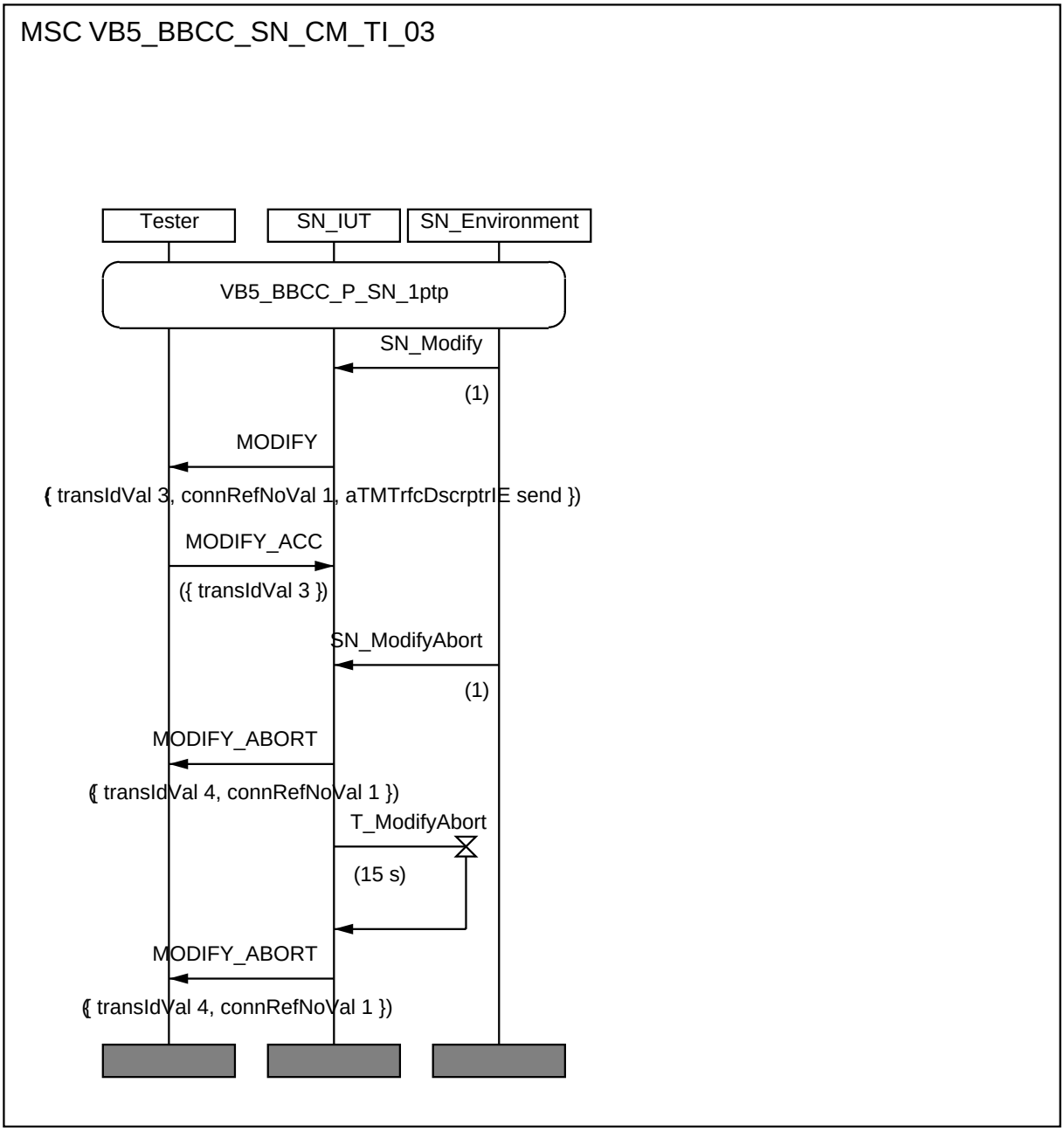

Figure 105

6.2.5 Branch Establishment procedure (BE)

6.2.5.1 Add Branch procedure

PtM connection only.

VB5_BBCC_SN_BE_BV_01	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check Branch establishment, ADD only
Test description	The tester issues an implicit send to cause the IUT to initiate an **ADD_BRANCH** procedure for a single PtM connection
Pass criteria	Check that the tester is receiving **ADD_BRANCH** PDU containing mandatory parameters
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptm
Postamble	None
Additional testing	None

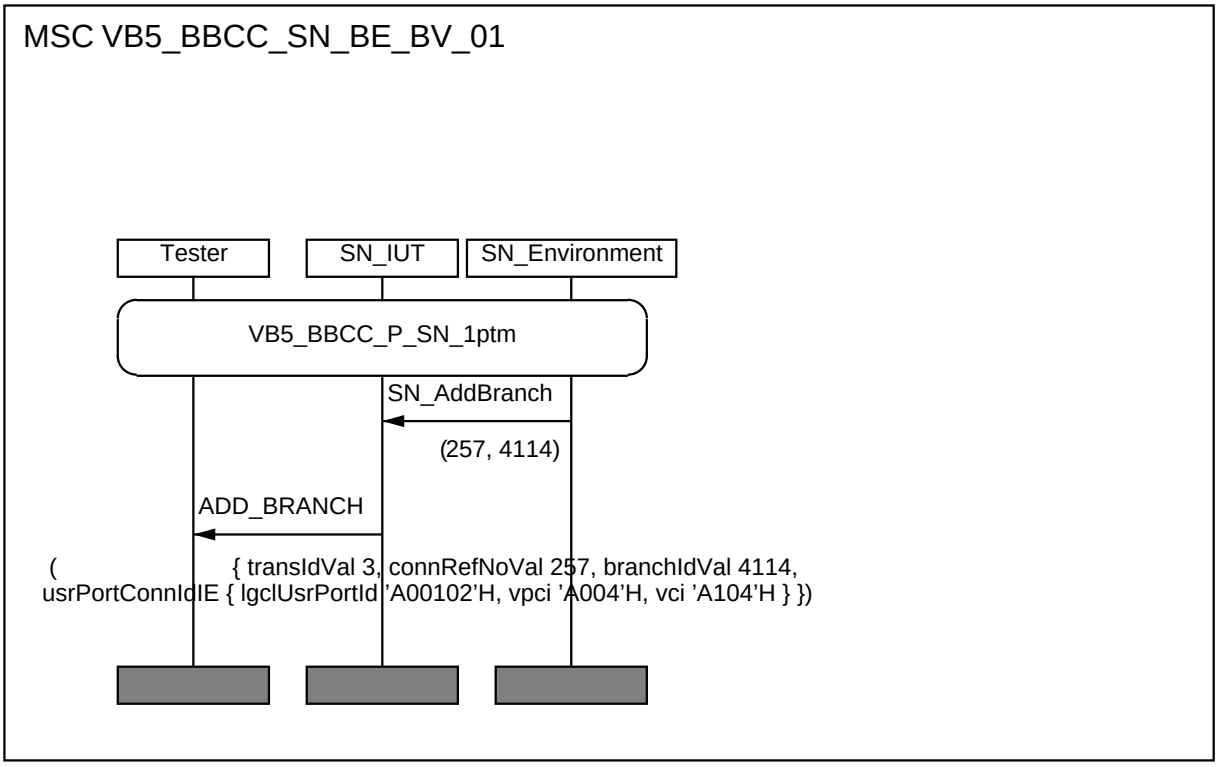

Figure 106

VB5_BBCC_SN_BE_BV_02	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check Branch establishment, ADD only, no VCI in IE
Test description	The tester issues an implicit send to cause the IUT to initiate an **ADD_BRANCH** procedure for a single PtM connection
Pass criteria	Check that the tester is receiving **ADD_BRANCH** PDU containing mandatory parameters
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptm
Postamble	None
Additional testing	None

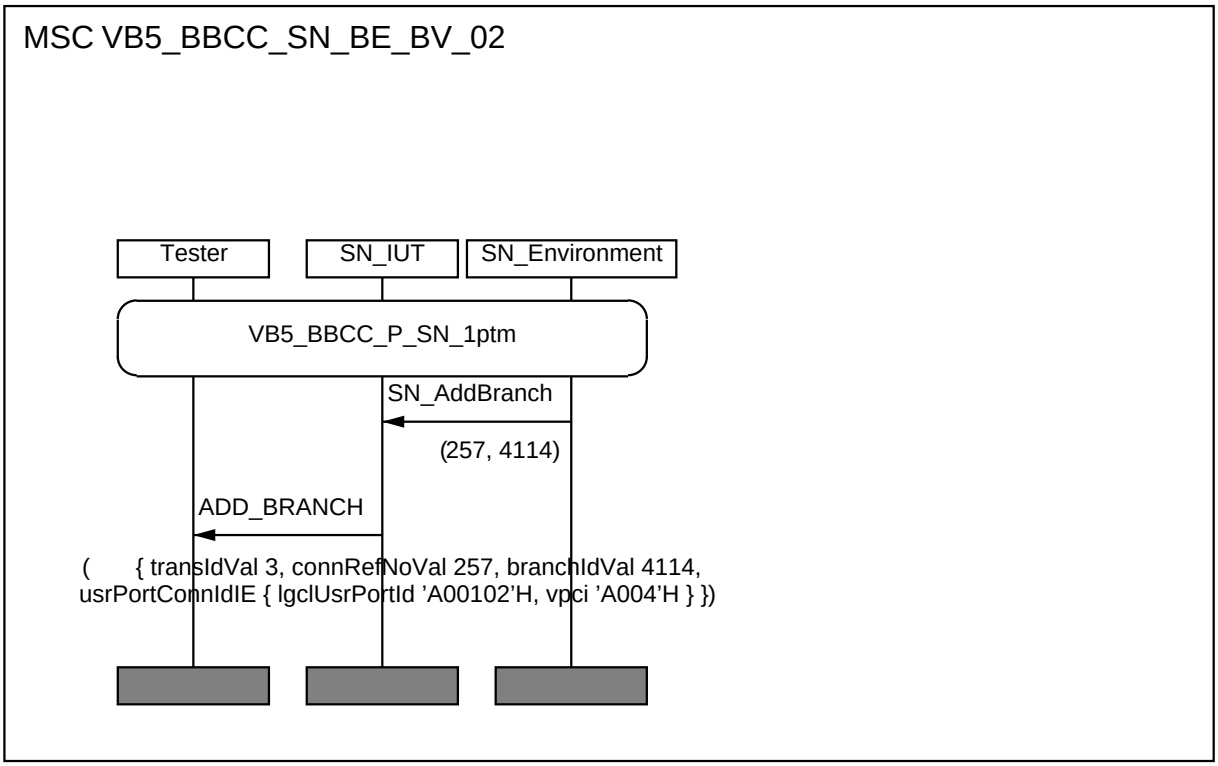

Figure 107

VB5_BBCC_SN_BE_TI_01	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check T_AddBranch timer
Test description	The tester issues an implicit send to cause the IUT to initiate an **ADD_BRANCH** procedure for a single PtM connection. The tester is receiving **ADD_BRANCH** PDU containing mandatory parameters, and does not answer with **ADD_BRANCH_ACC** within T_AddBranch time
Pass criteria	Check that the tester is receiving a second **ADD_BRANCH** PDU containing mandatory parameters, within the acceptance time window
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptm
Postamble	None
Additional testing	None

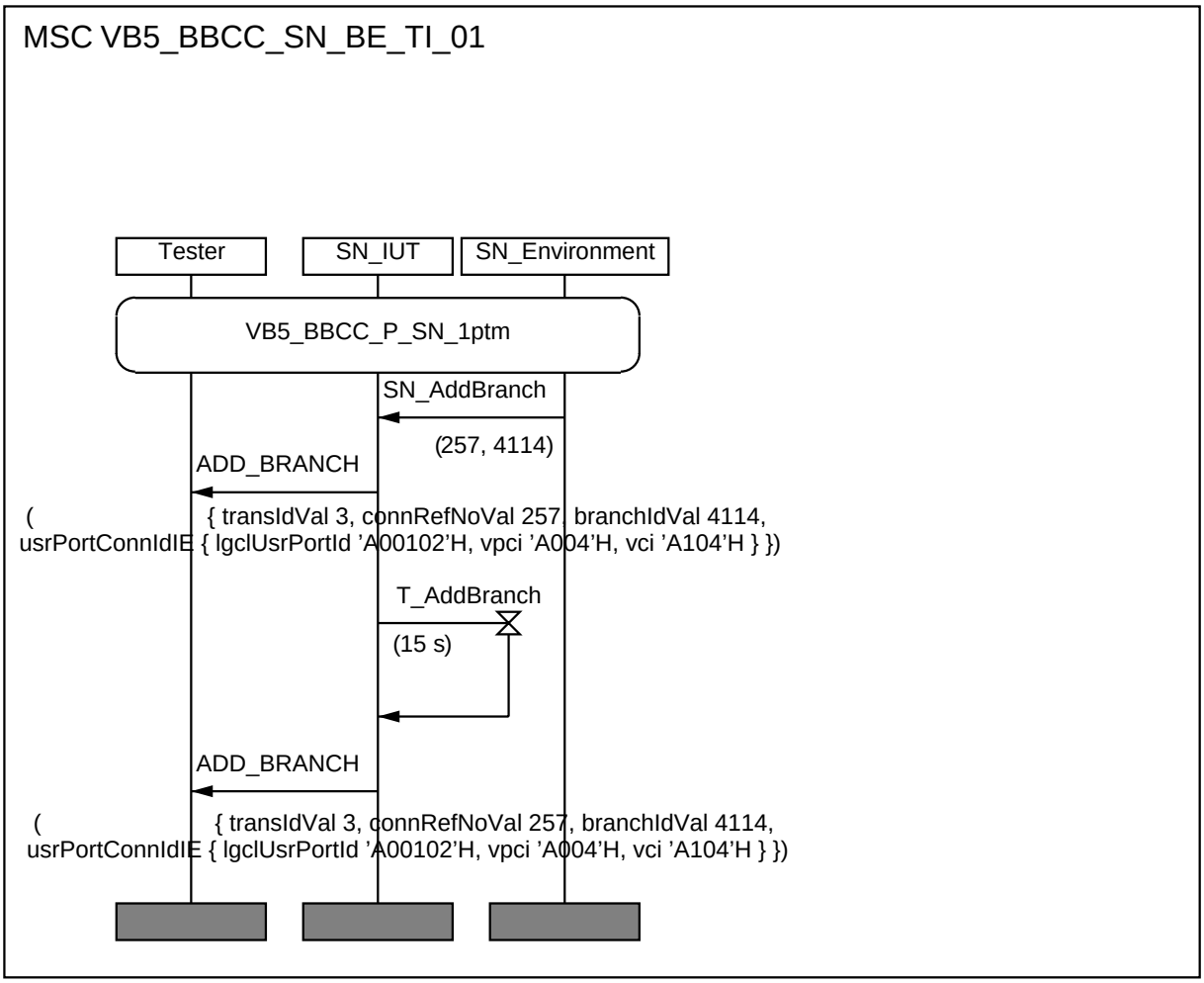

Figure 108

6.2.5.2 Add Branch / Update procedure

VB5_BBCC_SN_BE_BV_03	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check Branch establishment, ADD then UPDATE
Test description	The tester issues an implicit send to cause the IUT to initiate an **ADD_BRANCH** procedure. The tester receives **ADD_BRANCH** PDU containing mandatory parameters (no VCI) then answers with **ADD_BRANCH_ACC** within T_Modify time. The tester issues an implicit send to cause the IUT to initiate a **UPDATE_BRANCH** procedure
Pass criteria	Check that the tester is receiving **UPDATE_BRANCH** PDU containing mandatory parameters
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptm
Postamble	None
Additional testing	ceeAddBranchAccConf is sent to SN environment

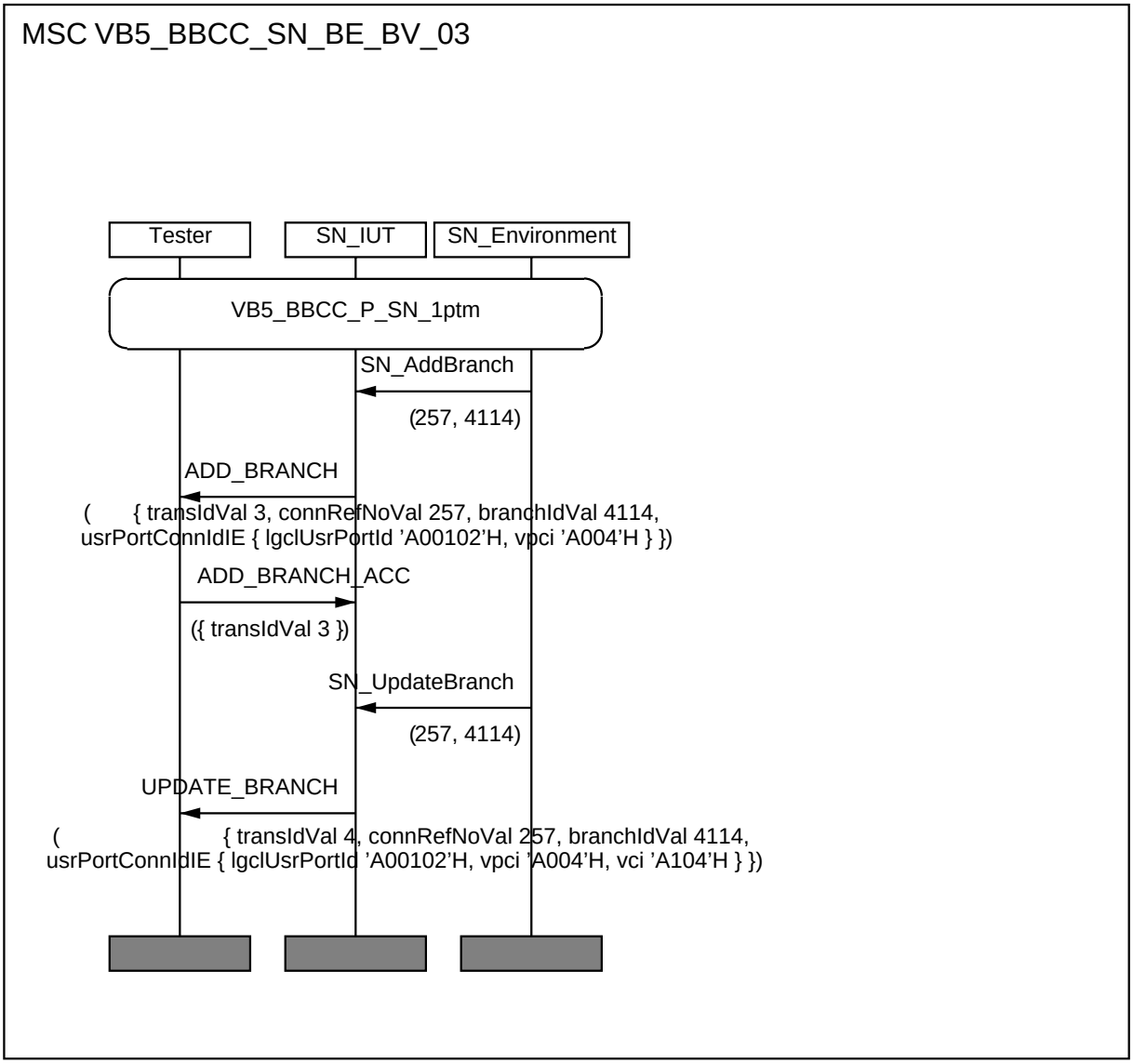

Figure 109

VB5_BBCC_SN_BE_TI_02	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check T_UpdateBranch timer
Test description	The tester issues an implicit send to cause the IUT to initiate an **ADD_BRANCH** procedure. The tester receives **ADD_BRANCH** PDU containing mandatory parameters (no VCI) then answers with **ADD_BRANCH_ACC** within T_Modify time. The tester issues an implicit send to cause the IUT to initiate a **UPDATE_BRANCH** procedure. The tester is receiving **UPDATE_BRANCH** PDU containing mandatory parameters and does not answer with **UPDATE_BRANCH_ACC** within T_UpdateBranch time
Pass criteria	Check that the tester is receiving a second **UPDATE_BRANCH** PDU containing mandatory parameters, within the acceptance time window
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptm
Postamble	None
Additional testing	ceeAddBranchAccConf is sent to SN environment

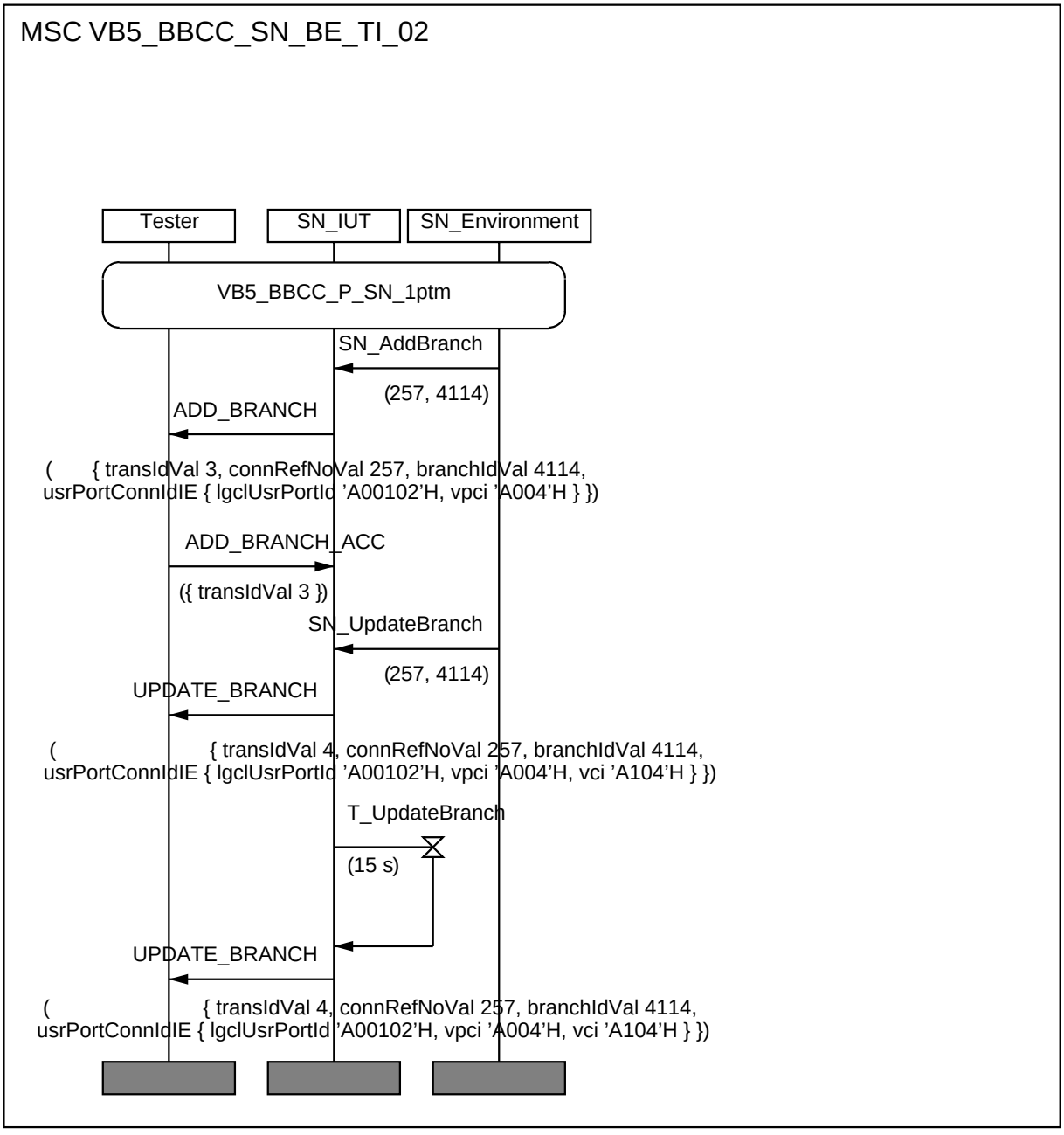

Figure 110

6.2.6 Branch Release procedure (BR)

VB5_BBCC_SN_BR_BV_01	Reference EN 301 217-1 [3]: 13.6.3.2
Purpose	Check Branch Release (Single branch identifier)
Test description	The tester issues an implicit send to cause the IUT to initiate a **DROP_BRANCH** procedure for a single PtM connection
Pass criteria	Check that the tester is receiving **DROP_BRANCH** PDU containing mandatory parameters
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptmTwoB
Postamble	None
Additional testing	None

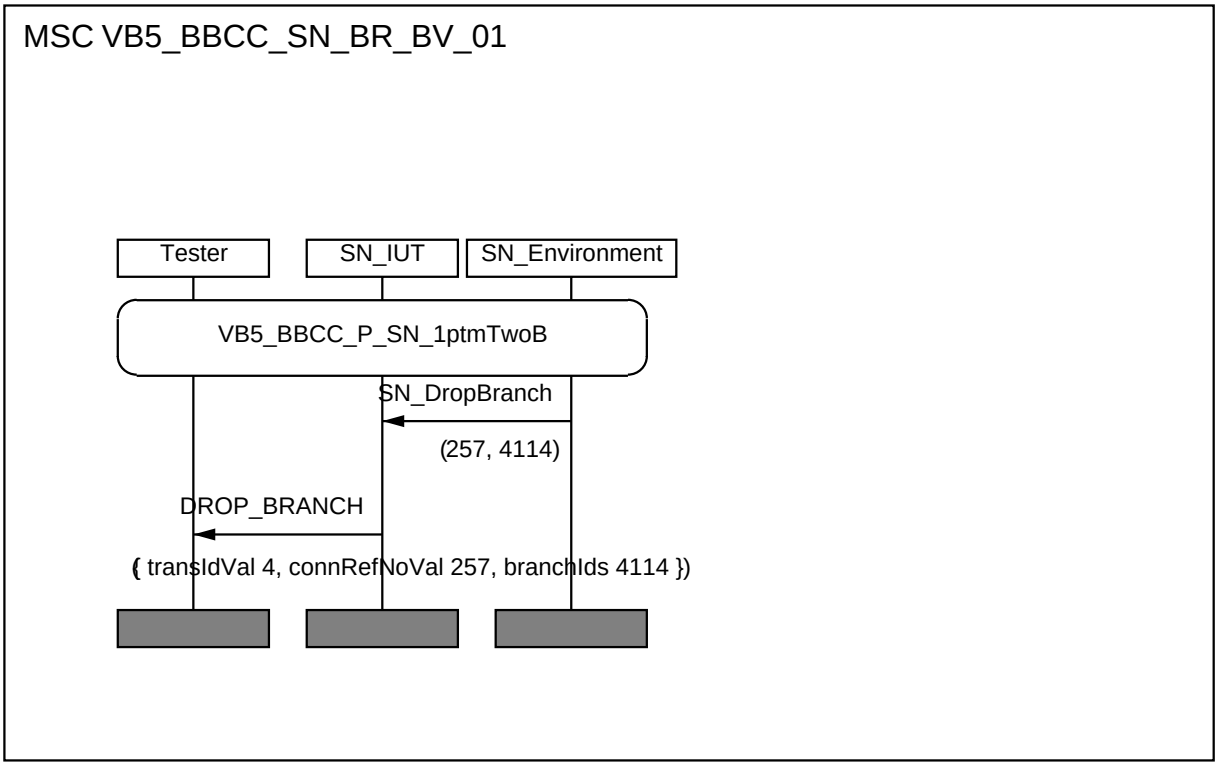

Figure 111

VB5_BBCC_SN_BR_BV_02	Reference EN 301 217-1 [3]: 13.6.3.2
Purpose	Check Branch Release (List of branch identifiers)
Test description	The tester issues an implicit send to cause the IUT to initiate a **DROP_BRANCH** procedure for several branches of a PtM connection
Pass criteria	Check that the tester is receiving **DROP_BRANCH** PDU containing mandatory parameters
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptmThreeB
Postamble	None
Additional testing	None

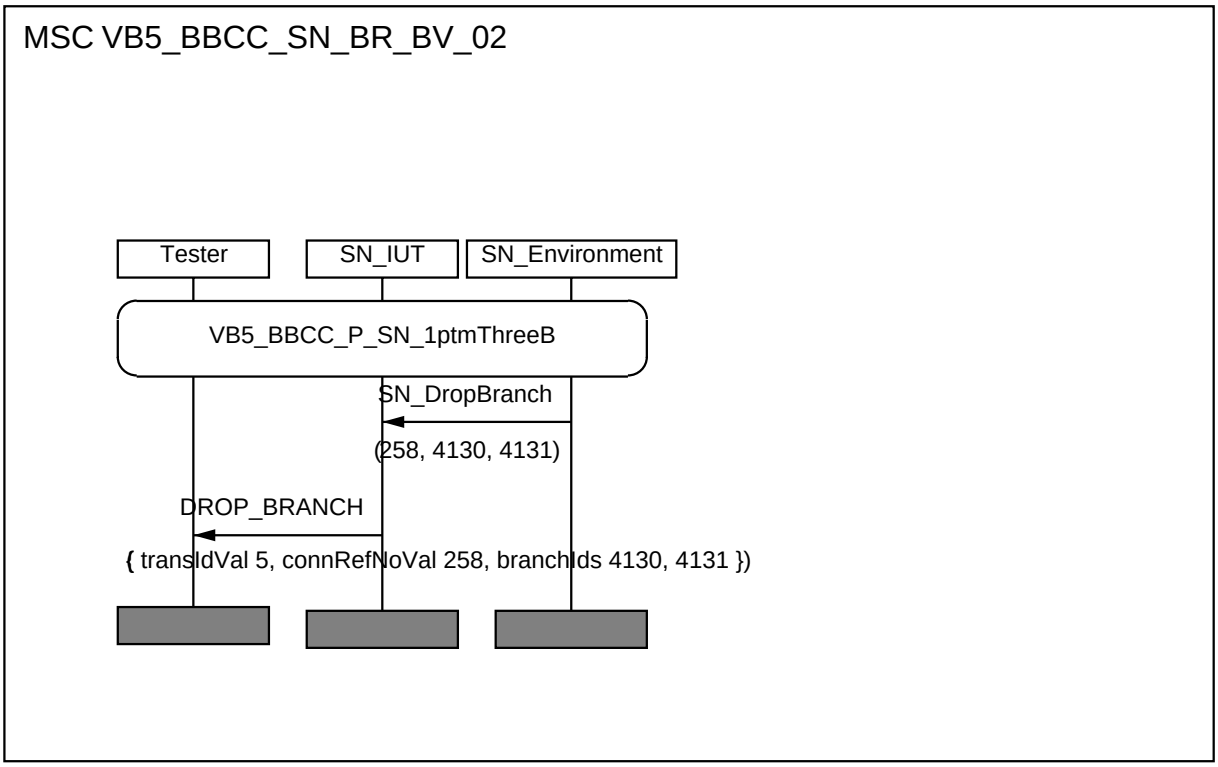

Figure 112

VB5_BBCC_SN_BR_TI_01	Reference EN 301 217-1 [3]: 13.6.3.1
Purpose	Check T_DropBranch timer
Test description	The tester issues an implicit send to cause the IUT to initiate a **DROP_BRANCH** procedure for a single PtM connection. The tester is receiving **DROP_BRANCH** PDU containing mandatory parameters, and does not answer with **DROP_BRANCH_ACC** within T_DropBranch time
Pass criteria	Check that the tester is receiving a second **DROP_BRANCH** PDU containing mandatory parameters, within the acceptance time window
Selection	A.17/5 AND A.17/6: multipoint connection
Preamble	P_SN_1ptmTwoB
Postamble	None
Additional testing	None

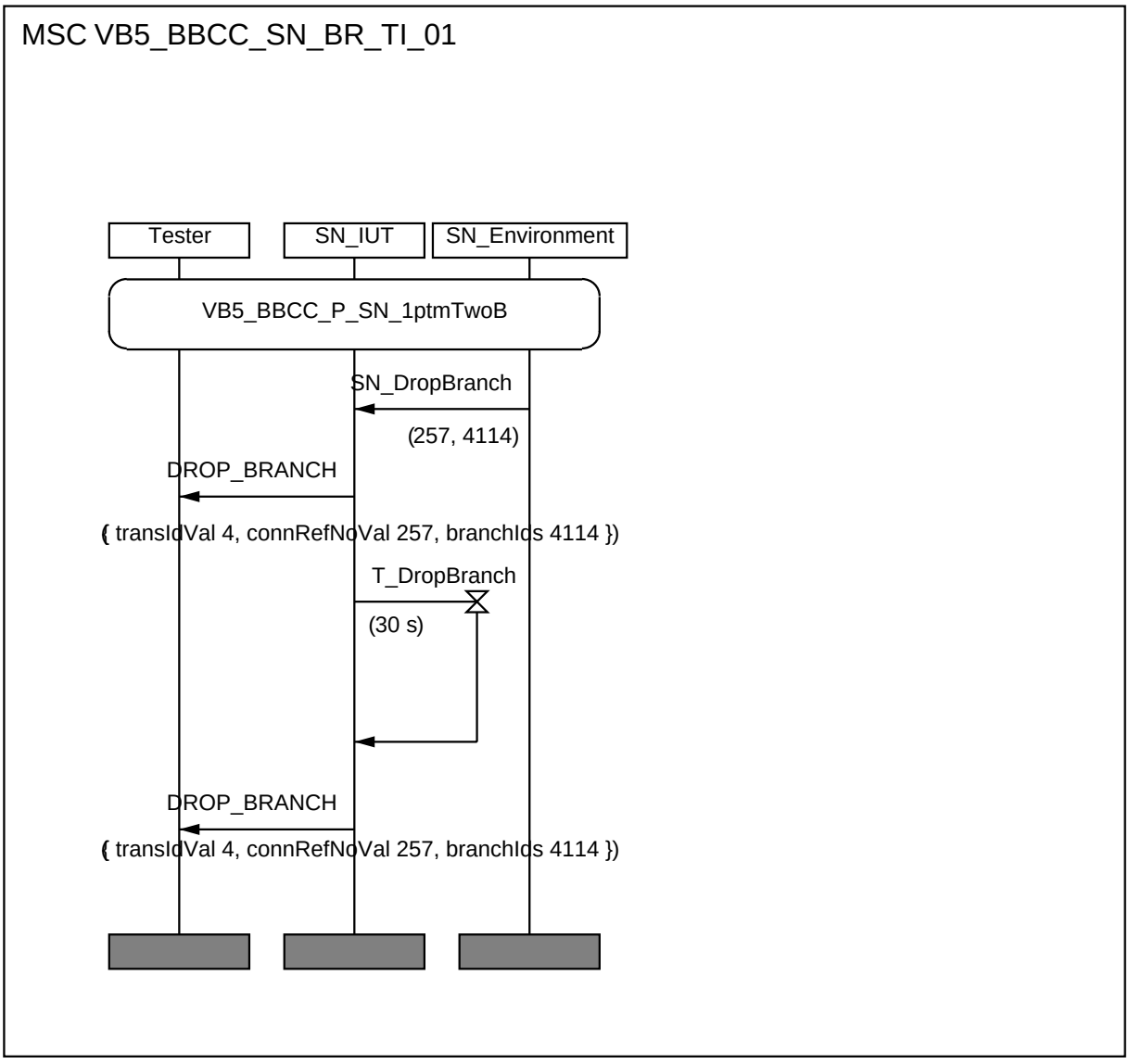

Figure 113

6.2.7 Housekeeping procedure (Reset, Fault)

6.2.7.1 Reset procedure

VB5_BBCC_SN_HK_BV_01	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check Reset VCC at User port
Test description	The tester issues an implicit send to cause the IUT to initiate a **RESET** procedure for a VCC at a User Port
Pass criteria	Check that the tester is receiving a **BBCC_RESET** PDU with mandatory parameters
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

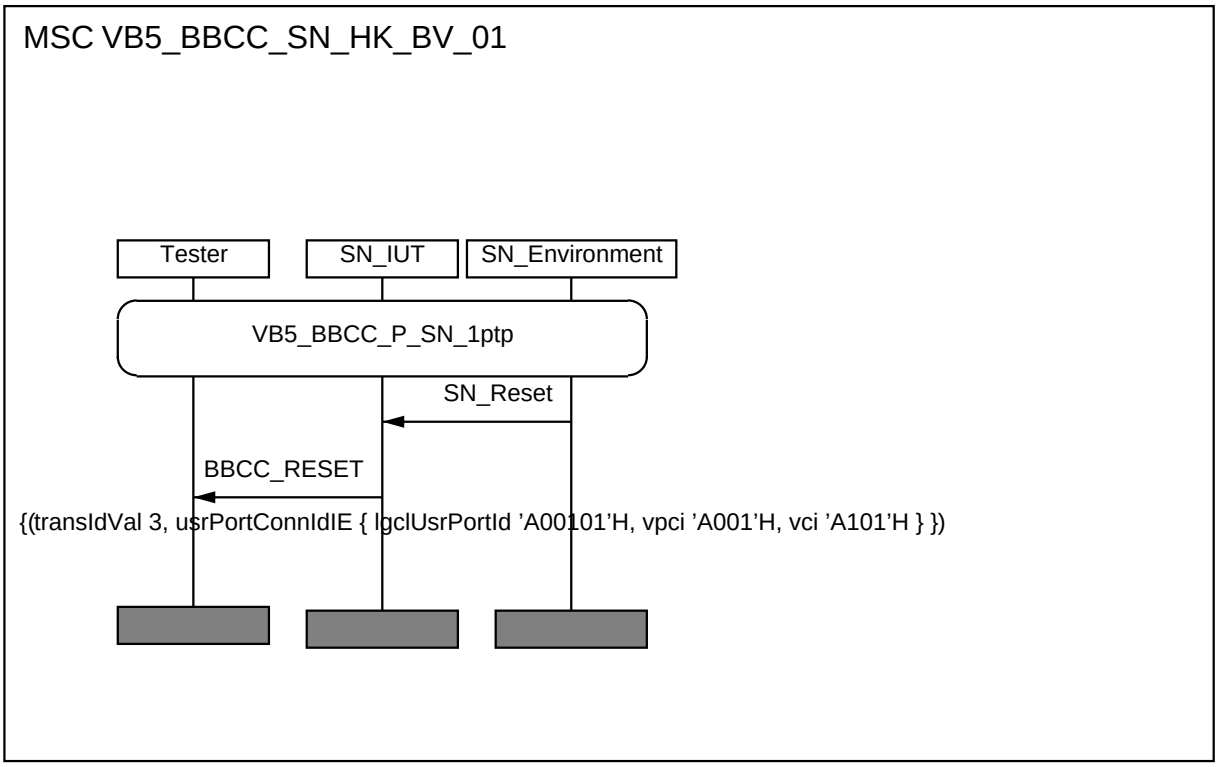

Figure 114

VB5_BBCC_SN_HK_BV_02	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check Reset VCC at Service port
Test description	The tester issues an implicit send to cause the IUT to initiate a **RESET** procedure for a VCC at the Sevice Port
Pass criteria	Check that the tester is receiving a **BBCC_RESET** PDU with mandatory parameters
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

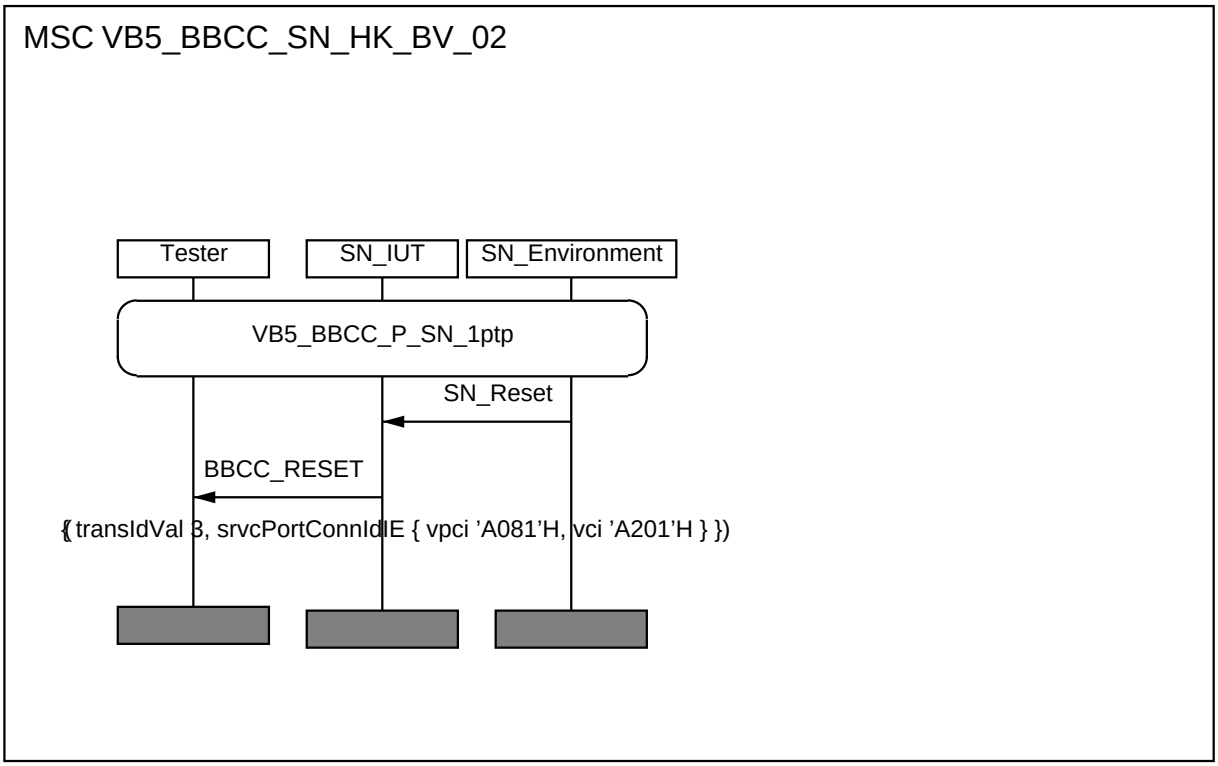

Figure 115

VB5_BBCC_SN_HK_BV_03	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check Reset complete LSP
Test description	The tester issues an implicit send to cause the IUT to initiate a **RESET** complete LSP procedure
Pass criteria	Check that the tester is receiving a **BBCC_RESET** PDU with mandatory parameters
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

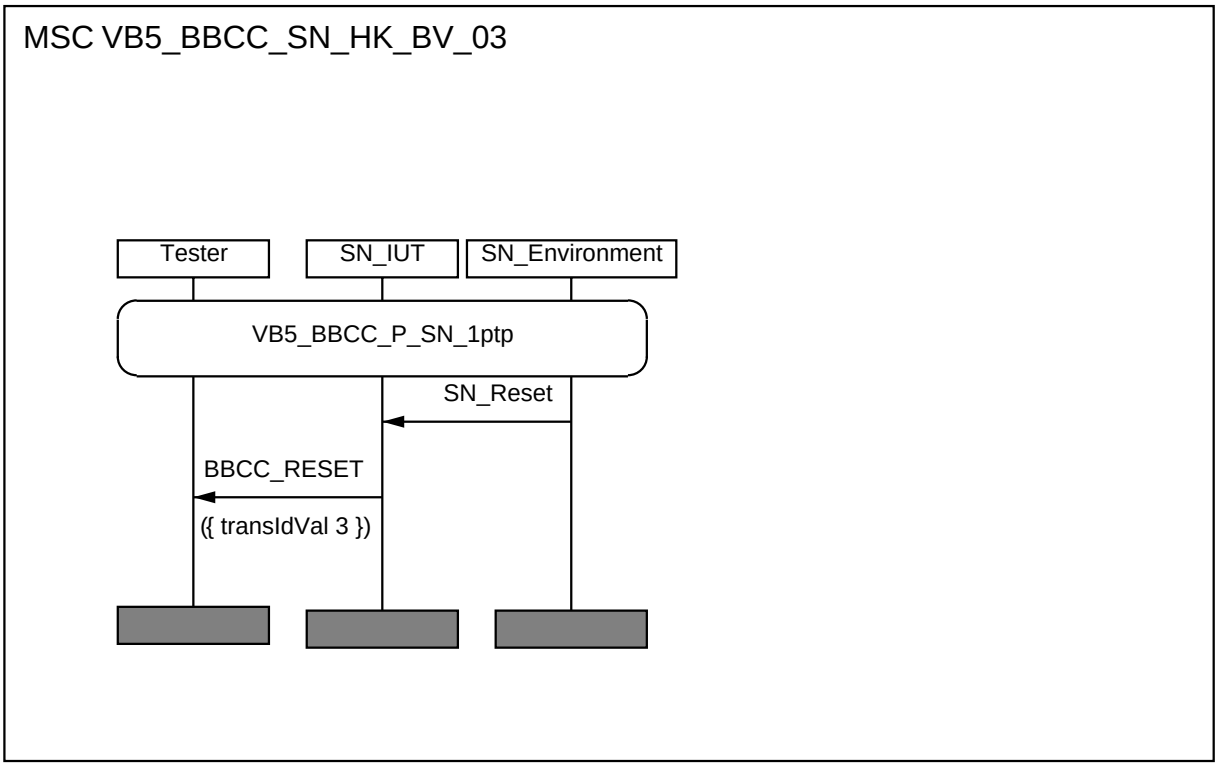

Figure 116

VB5_BBCC_SN_HK_TI_01	Reference EN 301 217-1 [3]: 13.6.4.1
Purpose	Check T_BBCCReset timer
Test description	The tester issues an implicit send to cause the IUT to initiate a **RESET** complete LSP procedure. The tester is receiving a **BBCC_RESET** PDU with mandatory parameters, and it does not answer with **BBCC_RESET_ACC** within T_BBCCReset time
Pass criteria	Check that the tester is receiving a second **BBCC_RESET** PDU with mandatory parameters within the acceptance time window, meaning that the first PDU was discarded when time out occurred
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

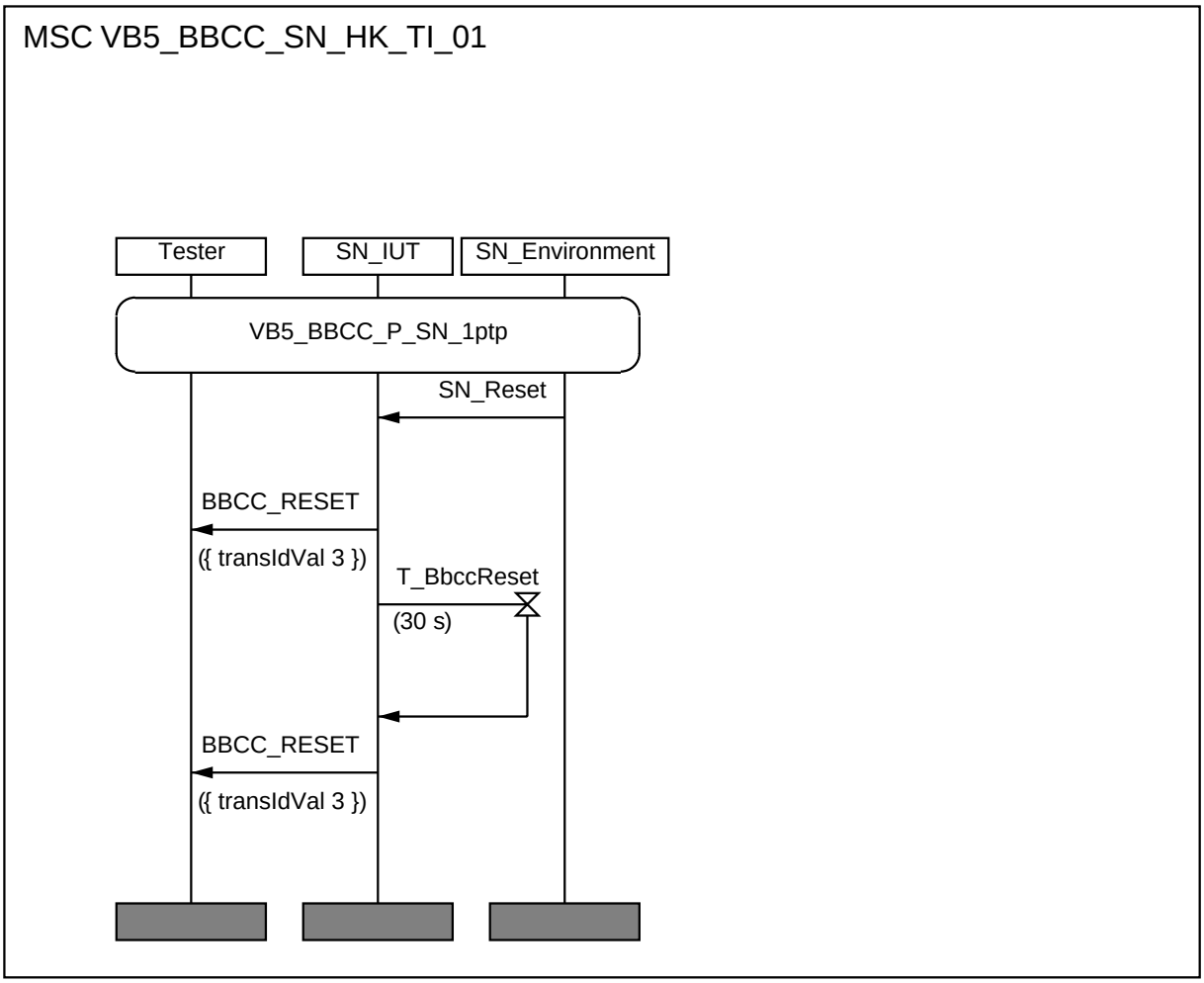

Figure 117

6.2.7.2 AN fault procedure

VB5_BBCC_SN_HK_BV_04	Reference EN 301 217-1 [3]: 13.6.4.2
Purpose	Check AN fault procedure
Test description	The tester issues an **AN fault** PDU
Pass criteria	Check that the tester is receiving **AN_FAULT_ACC** PDU containing mandatory parameters
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	CeeAnFaultInd is sent to SN environment

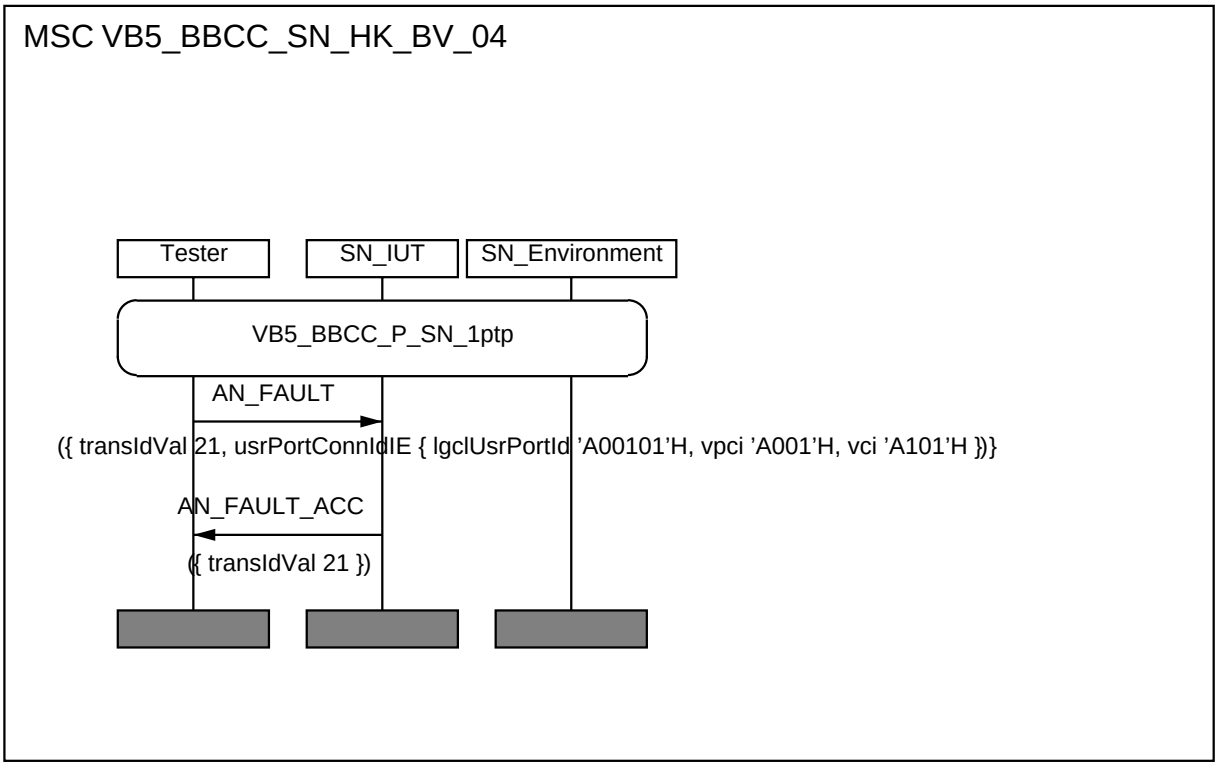

Figure 118

6.2.7.3 BBCC restart procedure

VB5_BBCC_SN_HK_BV_05	Reference EN 301 217-1 [3]: 13.6.4.6
Purpose	Check BBCC pre-sync procedure
Test description	The tester issues an implicit send to cause the IUT to initiate a **BBCC_PRESYNC** procedure
Pass criteria	Check that the tester is receiving a **BBCC_PRESYNC** PDU with mandatory parameters for a complete LSP
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	None

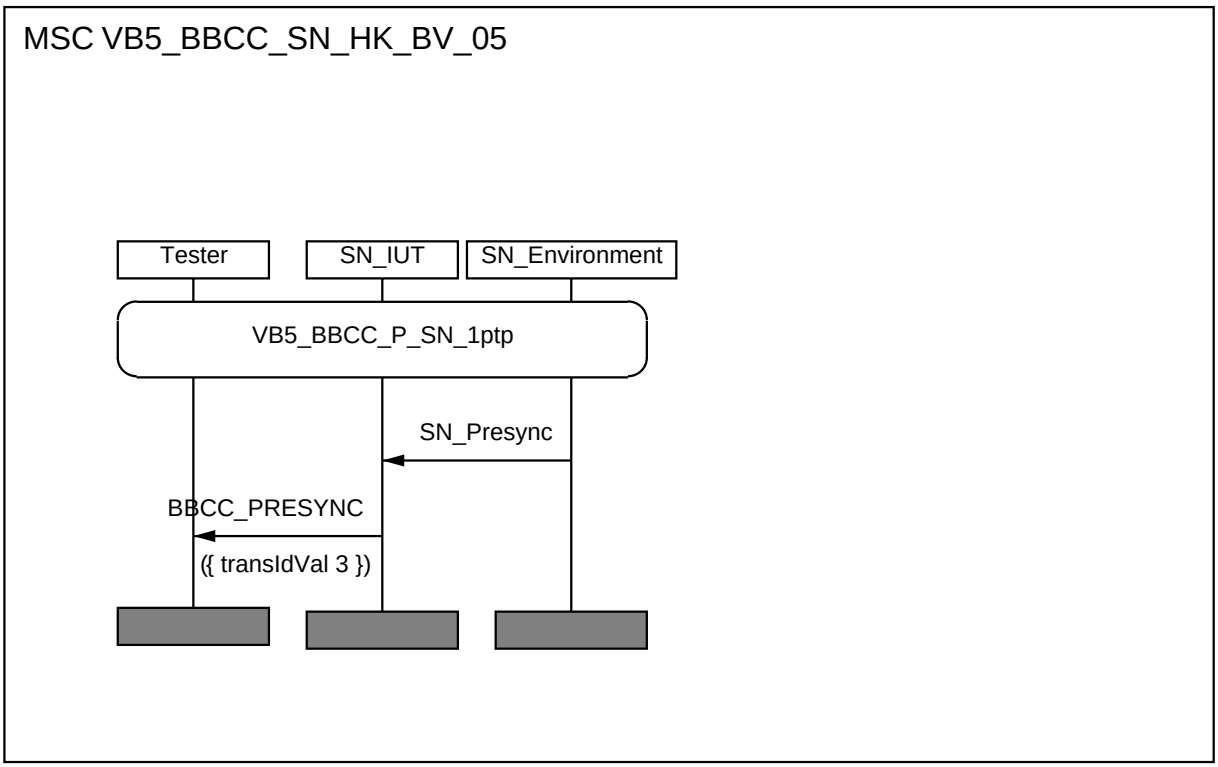

Figure 119

VB5_BBCC_SN_HK_TI_02	Reference EN 301 217-1 [3]: 13.6.4.3
Purpose	Check BBCC pre-sync timer
Test description	The tester issues an implicit send to cause the IUT to initiate a **BBCC_PRESYNC** procedure (LSP). The tester is receiving a **BBCC_PRESYNC** PDU with mandatory parameters, and it does not answer with **BBCC_PRESYNC_ACC** within T_BBCCPreSync time
Pass criteria	Check that the tester is receiving a second **BBCC_PRESYNC** PDU with mandatory parameters for one VPC at LSP within the acceptance time window, meaning that the first PDU was discarded when time out occurred
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	BBCC_RESET occurs after second BBCC_PRESYNC

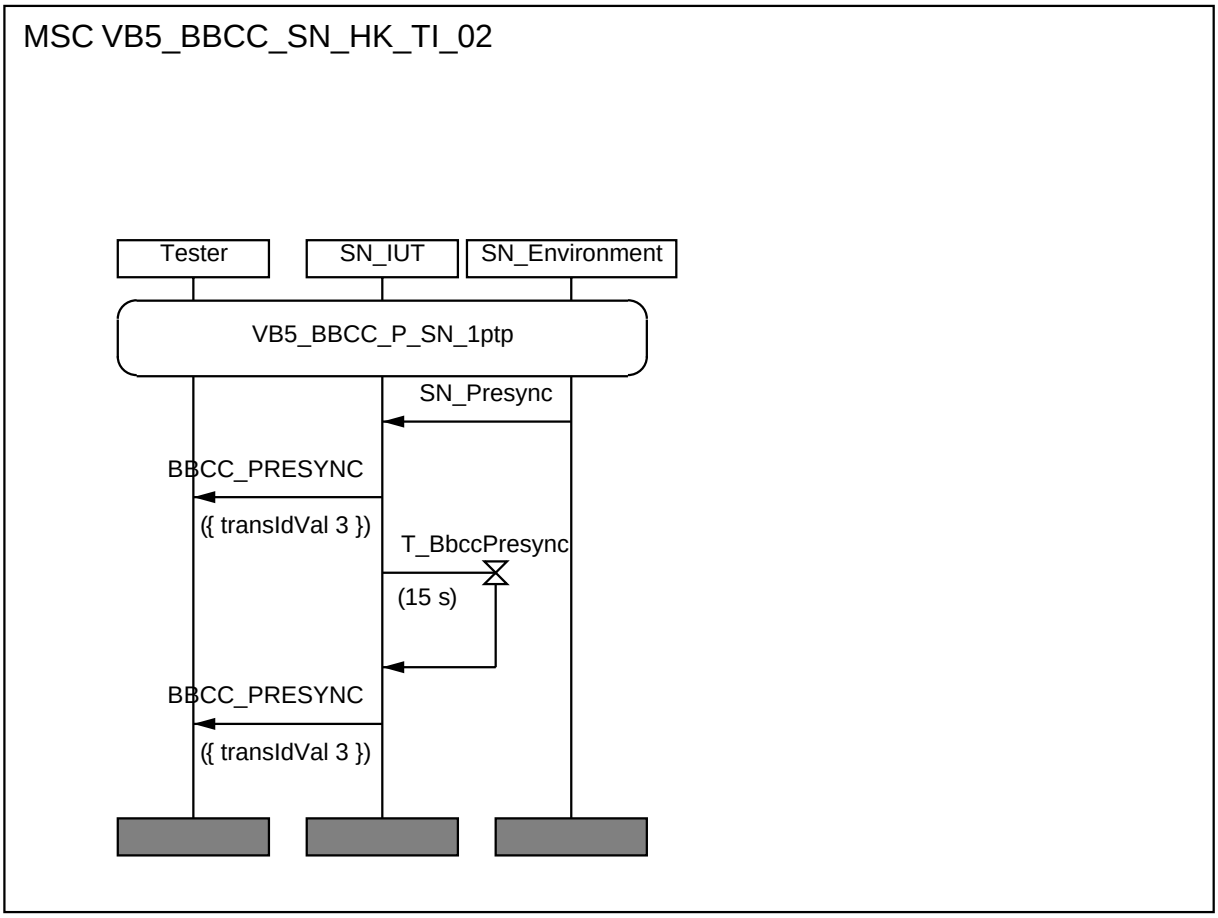

Figure 120

VB5_BBCC_SN_HK_BV_06	Reference EN 301 217-1 [3]: 13.6.4.6, 13.6.1.5.5
Purpose	Check BBCC restart procedure
Test description	The tester issues an implicit send to cause the IUT to initiate a **BBCC_PRESYNC** procedure (LSP). The tester is receiving a **BBCC_PRESYNC** PDU with mandatory parameters, and it answers with **BBCC_PRESYNC_REJ** within T_BBCCPreSync time
Pass criteria	Check that the tester is receiving a **BBCC_RESET** PDU with mandatory parameters for one VPC at LSP
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeStartBBCCResetInd is sent to SN environment

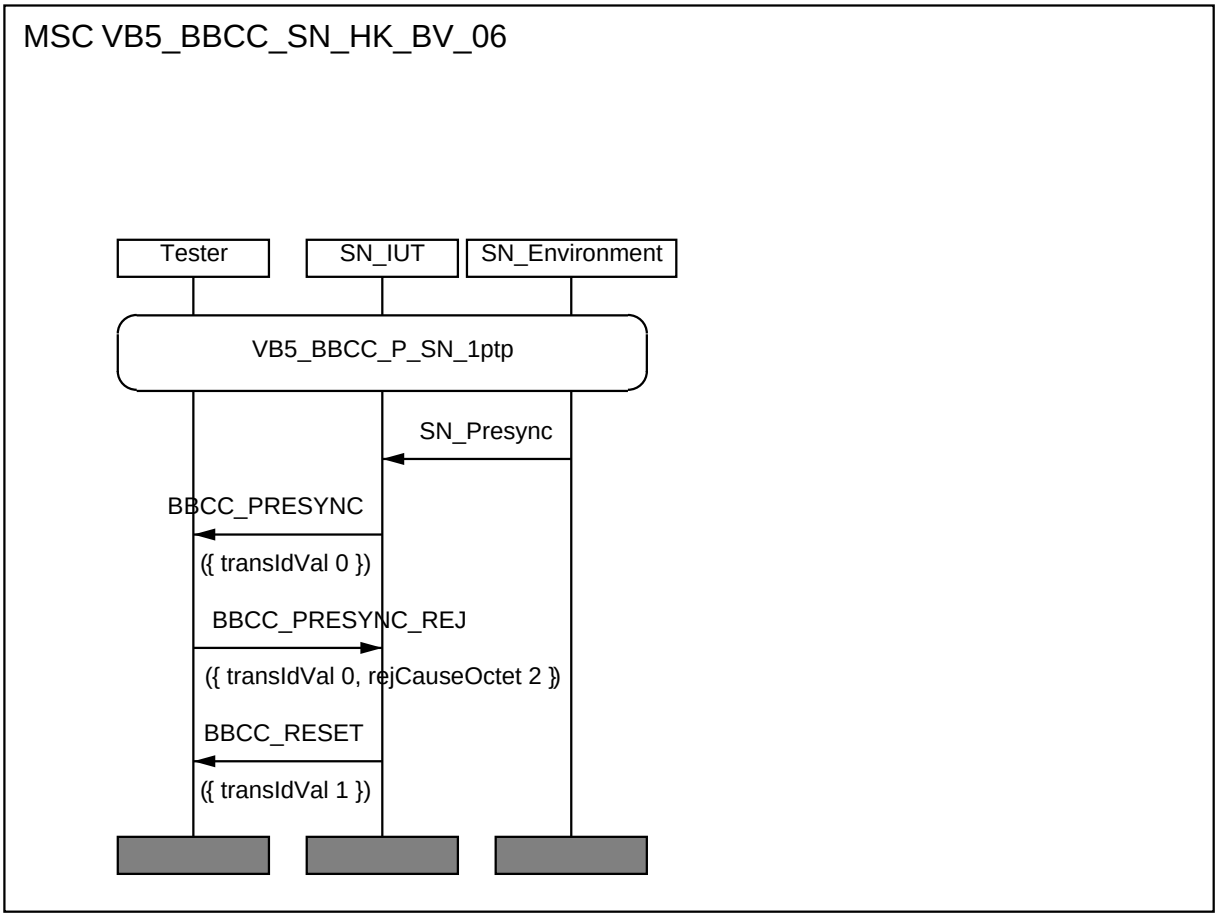

Figure 121

6.2.8 Common Error Handling (CEH) procedure

6.2.8.1 Error Handling on Message Header

This subclause includes the checking of miscellaneous protocol error detections by the IUT, the errors being provoked by the tester.

VB5_BBCC_SN_CEH_BI_01	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of wrong protocol discriminator
Test description	The tester sends **AN_FAULT** PDU to the IUT, with protocol discriminator set to invalid value (value "AA"H is used)
Pass criteria 1	Check that the tester is not receiving **AN_FAULT_ACC** PDU, meaning that the PDU is discarded
Test description	The tester now sends **AN_FAULT** PDU to the IUT, with protocol discriminator set to valid value (value "49"H)
Pass criteria 2	Check that the tester is receiving **AN_FAULT_ACC** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeErrorInd is sent to SN environment when wrong protocol discriminator is detected

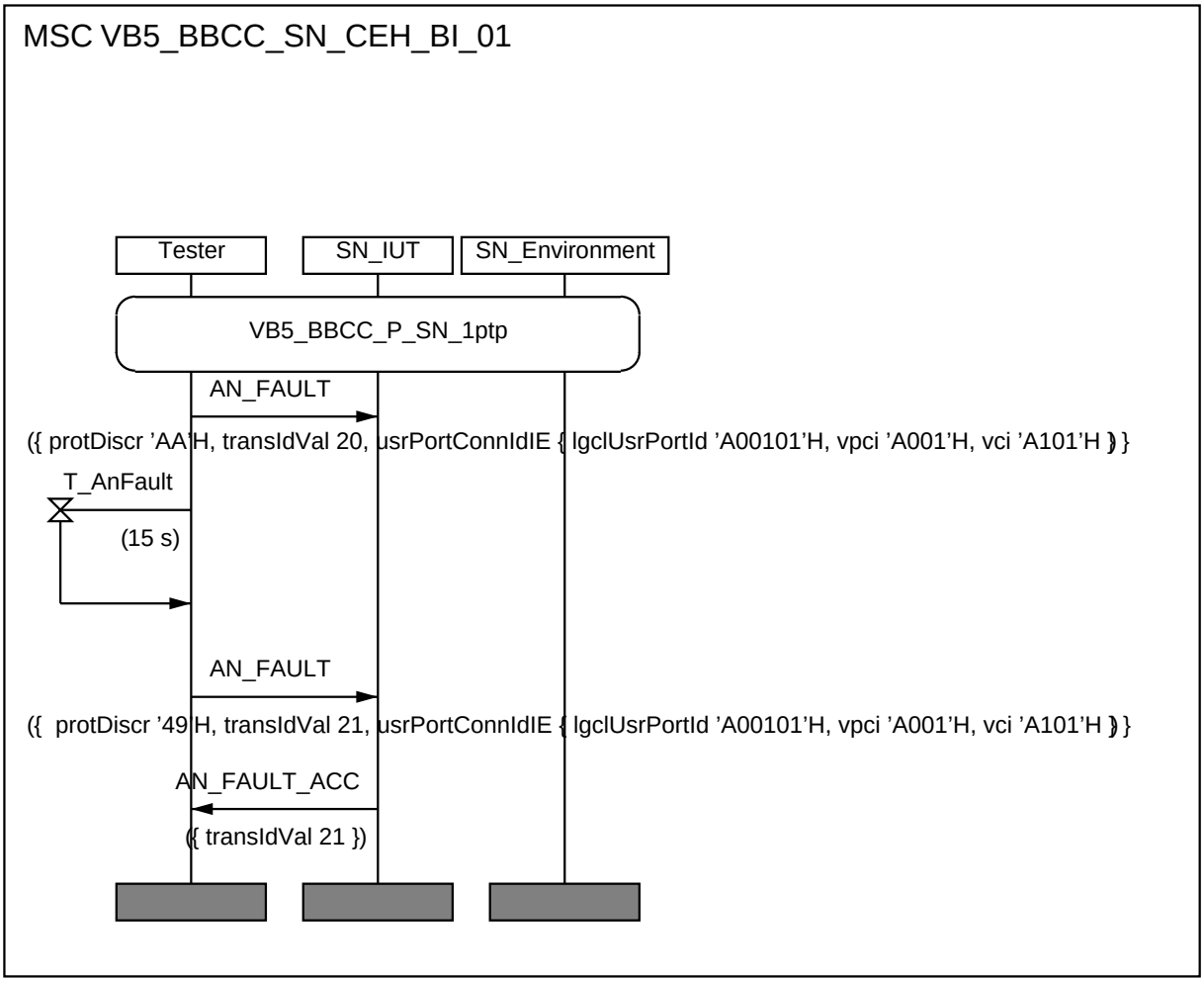

Figure 122

VB5_BBCC_SN_CEH_BI_02	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of wrong transaction identifier format
Test description	The tester sends **AN_FAULT** PDU to the IUT, with bits 5 to 8 of element octet 1 are different from 0000 (set to 1010)
Pass criteria 1	Check that the tester is not receiving **AN_FAULT_ACC** PDU, meaning that the PDU is discarded
Test description	The tester now sends **AN_FAULT** PDU to the IUT, with correct transaction identifier
Pass criteria 2	Check that the tester is receiving **AN_FAULT_ACC** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeErrorInd is sent to SN environment when wrong transaction identifier format is detected

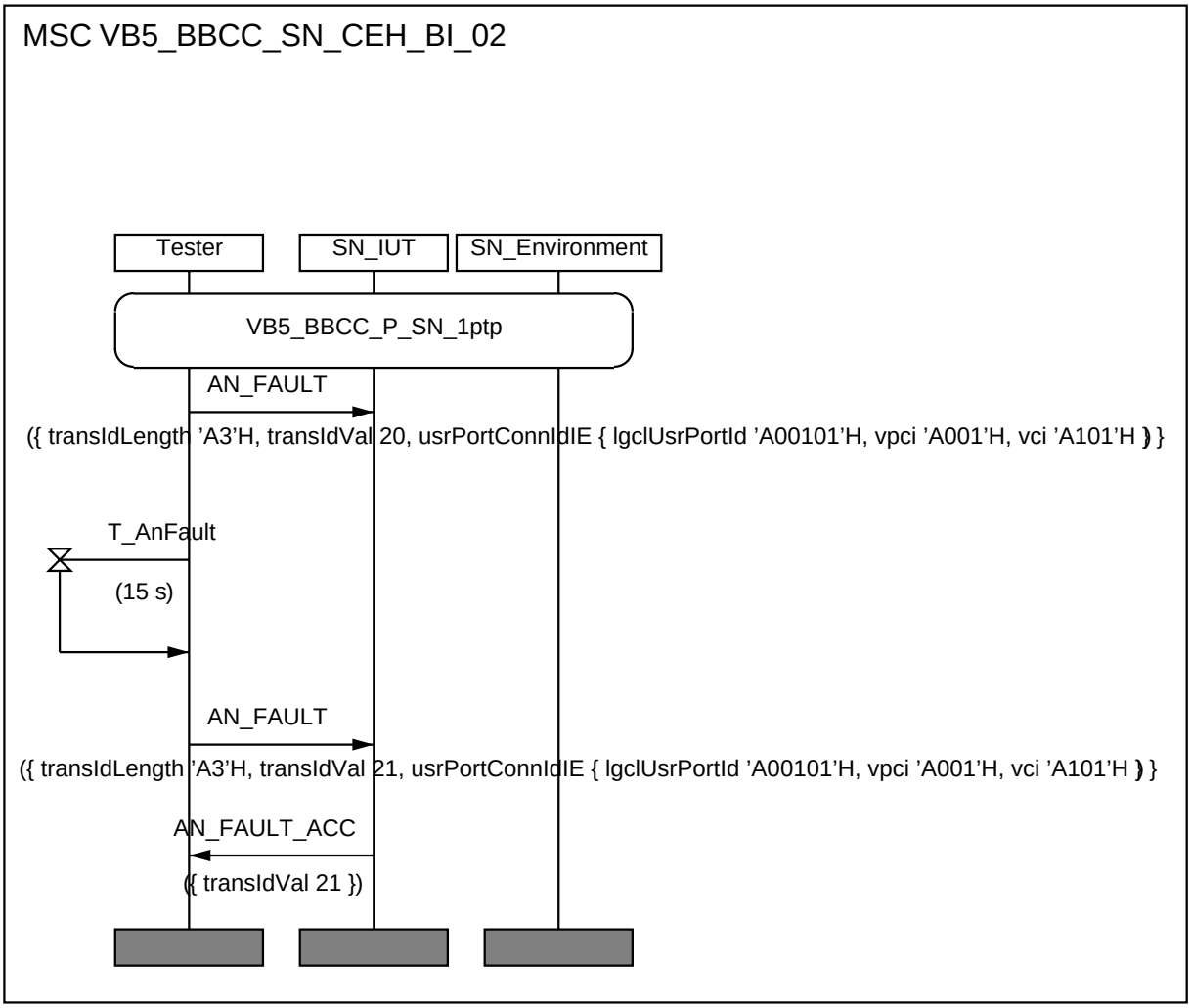

Figure 123

VB5_BBCC_SN_CEH_BI_03	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of wrong length of transaction identifier
Test description	The tester sends **AN_FAULT** PDU to the IUT, with bits 1 to 4 of element octet 1 are different from length = 3 (set to 1010)
Pass criteria 1	Check that the tester is not receiving **AN_FAULT_ACC** PDU, meaning that the PDU is discarded
Test description	The tester now sends **AN_FAULT** PDU to the IUT, with correct length of transaction identifier
Pass criteria 2	Check that the tester is receiving **AN_FAULT_ACC** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeErrorInd is sent to SN environment when wrong length off transaction identifier format is detected

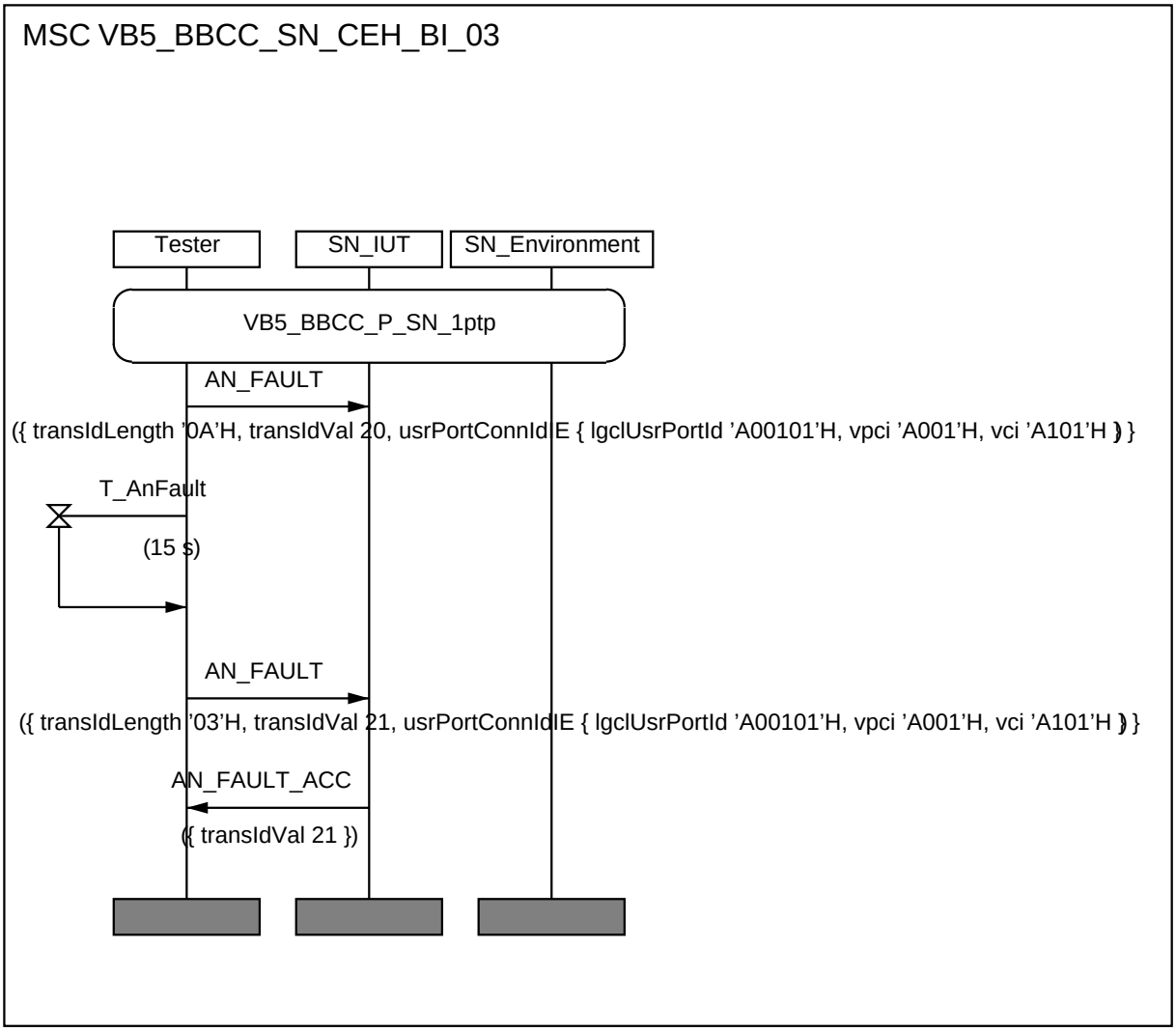

Figure 124

VB5_BBCC_SN_CEH_BI_04	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a message too short
Test description	The tester sends **AN_FAULT** PDU to the IUT, with data truncated (1 byte only for msg length instead of 2, then nothing)
Pass criteria 1	Check that the tester is not receiving **AN_FAULT_ACC** PDU, meaning that the PDU is discarded
Test description	The tester now sends **AN_FAULT** PDU to the IUT, with correct length and parameters
Pass criteria 2	Check that the tester is receiving **AN_FAULT_ACC** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeErrorInd is sent to SN environment when wrong length of message is detected

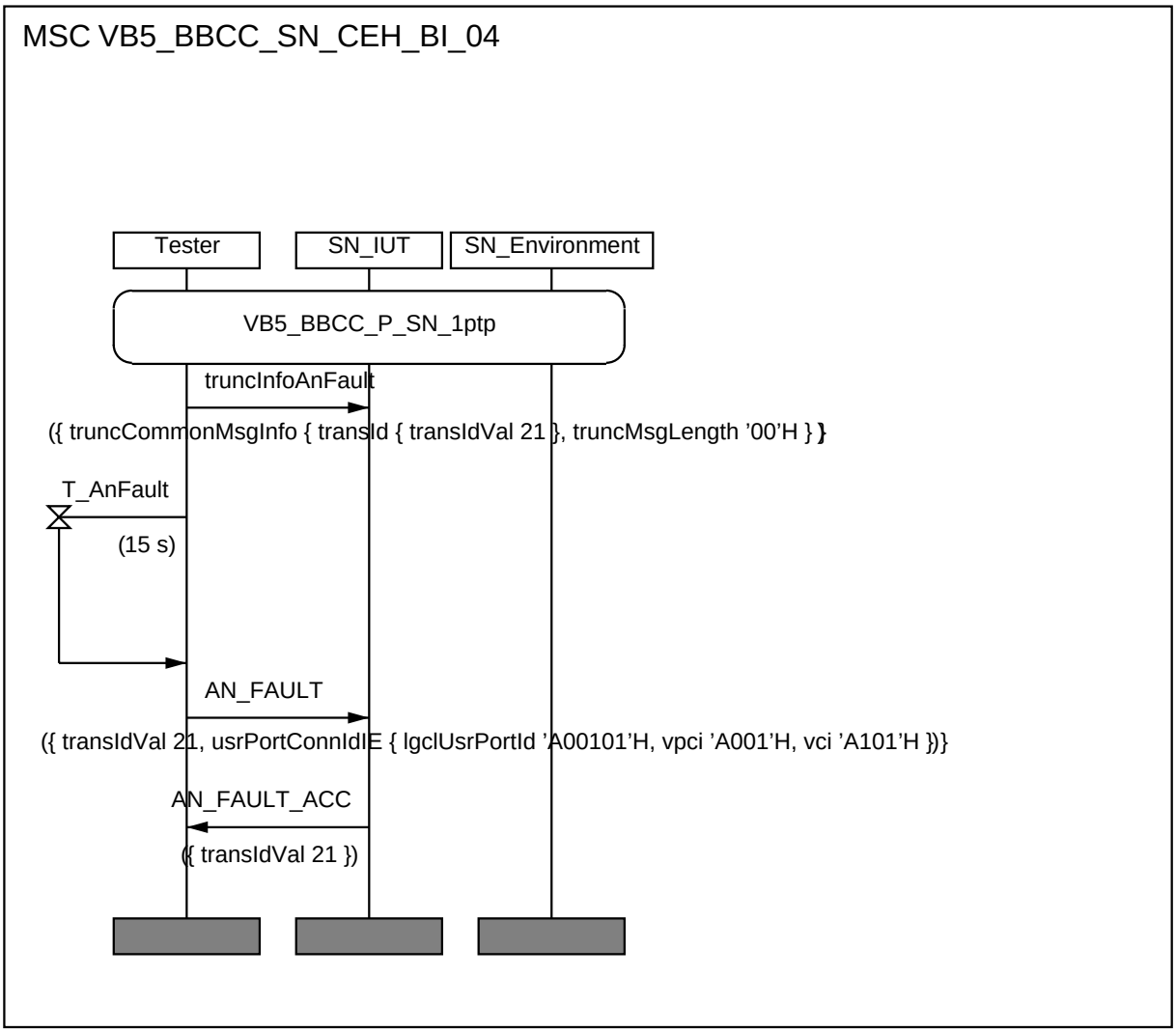

Figure 125

VB5_BBCC_SN_CEH_BI_05	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a wrong transaction identifier value
Test description	The tester issues an implicit send to cause the IUT to initiate a RESET procedure. The tester is receiving **BBCC_RESET** PDU then it answers with **BBCC_RESET_ACC** PDU including a wrong transaction identifier
Pass criteria	Check that the tester is receiving a second **BBCC_RESET** PDU, meaning that the **BBCC_RESET _ACC** PDU was discarded and a time out on **BBCC_RESET** occurred
Selection	None
Preamble	P_SN_start
Postamble	None
Additional testing	

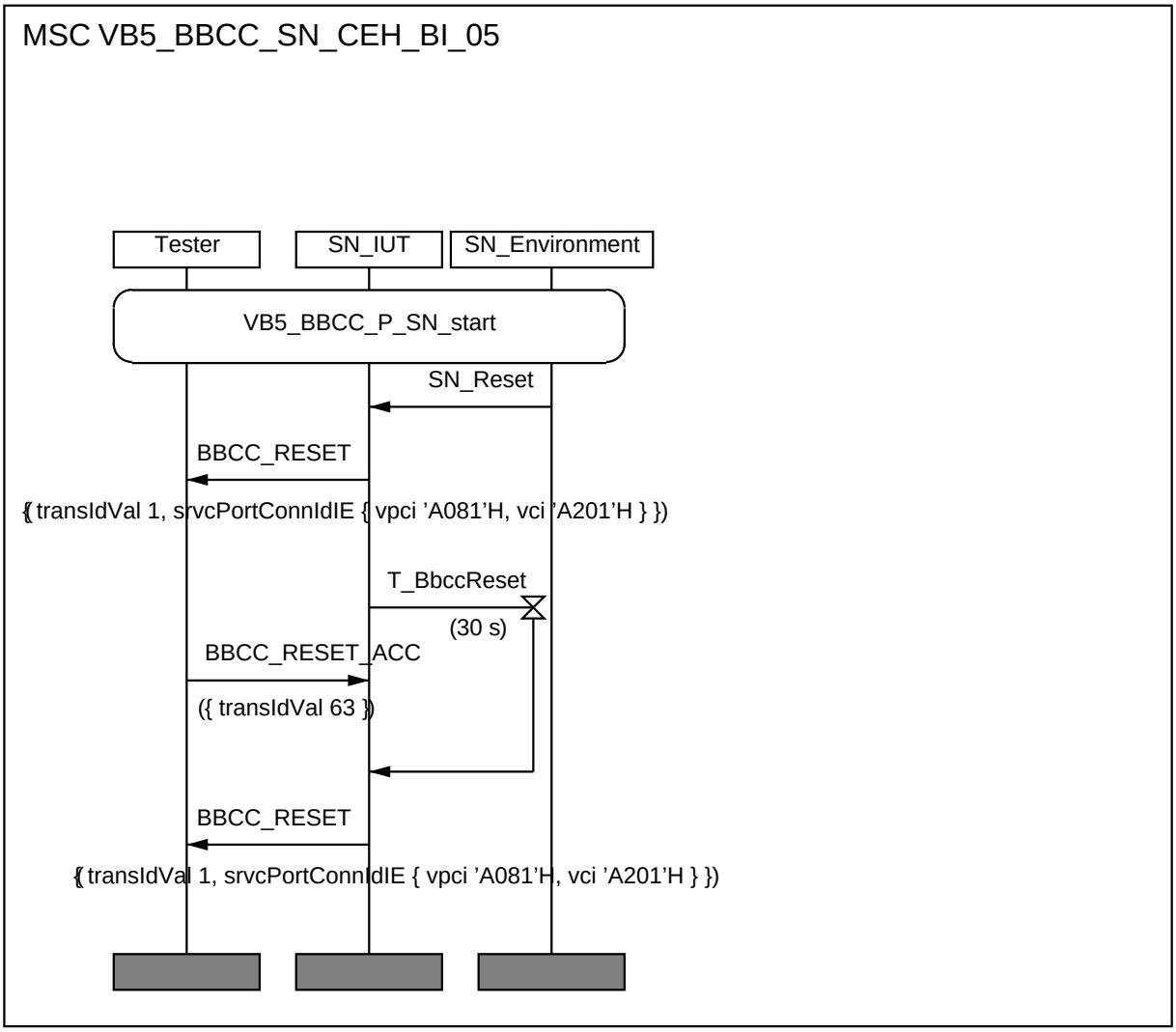

Figure 126

VB5_BBCC_SN_CEH_BI_06	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a wrong transaction identifier flag
Test description	The tester sends **AN_FAULT** PDU to the IUT, with transaction identifier flag set to 1 as for an ACK
Pass criteria 1	Check that the tester is not receiving **AN_FAULT_ACC** PDU, meaning that the PDU is discarded
Test description	The tester now sends **AN_FAULT** PDU to the IUT, with correct parameters
Pass criteria 2	Check that the tester is receiving **AN_FAULT_ACC** PDU, meaning that the previous PDU was discarded properly
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeErrorInd is sent to SN environment when wrong transaction identifier flag is detected

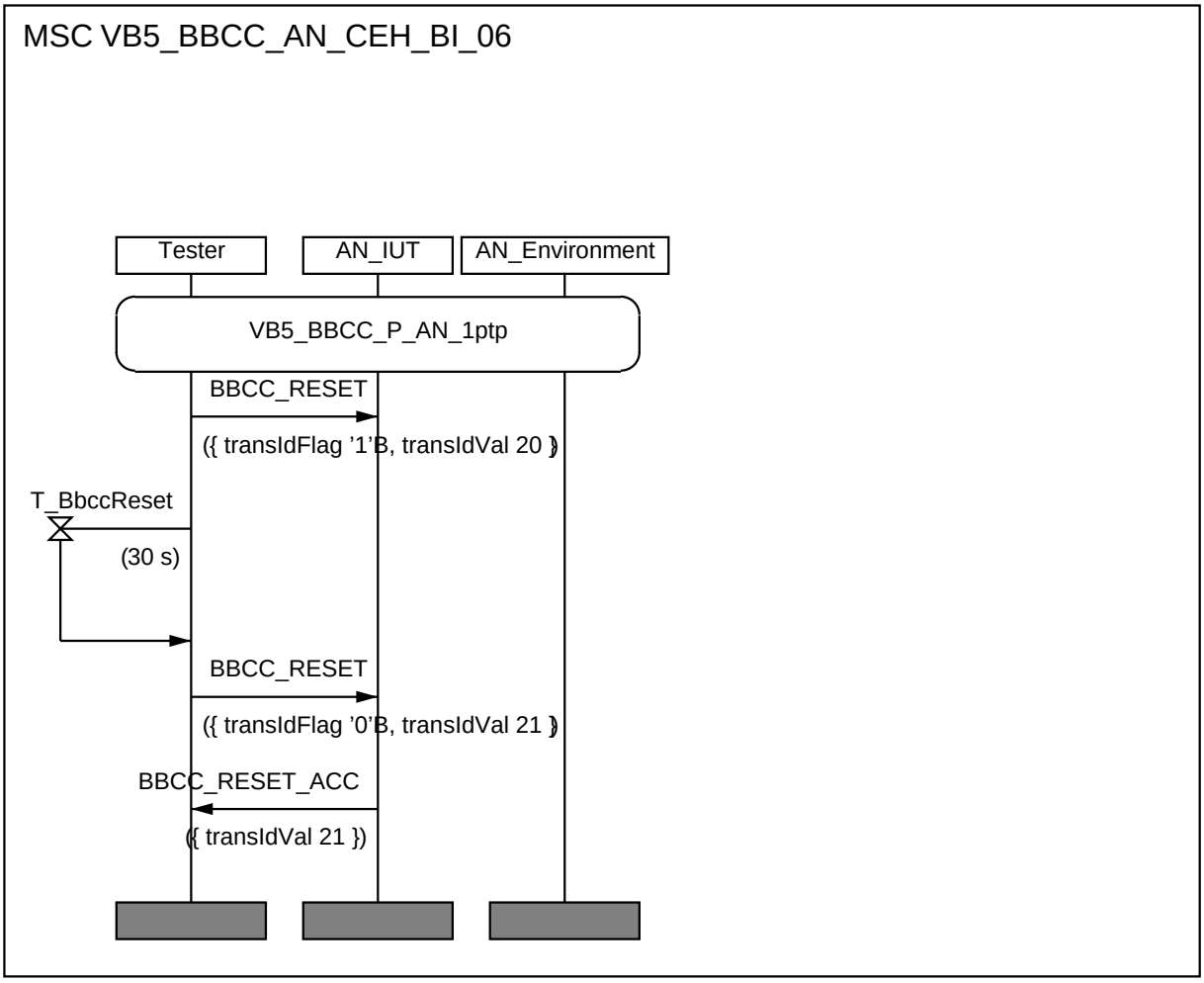

Figure 127

VB5_BBCC_SN_CEH_BI_07	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a wrong message type
Test description	The tester sends **an unknown** PDU to the IUT (msg type='AB'H)
Pass criteria	Check that the tester is receiving **BBCC_PROTOCOL_ERROR**, with Protocol error cause value = unrecognized message type, meaning that the PDU is unknown
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeErrorInd is sent to SN environment when wrong message type is detected

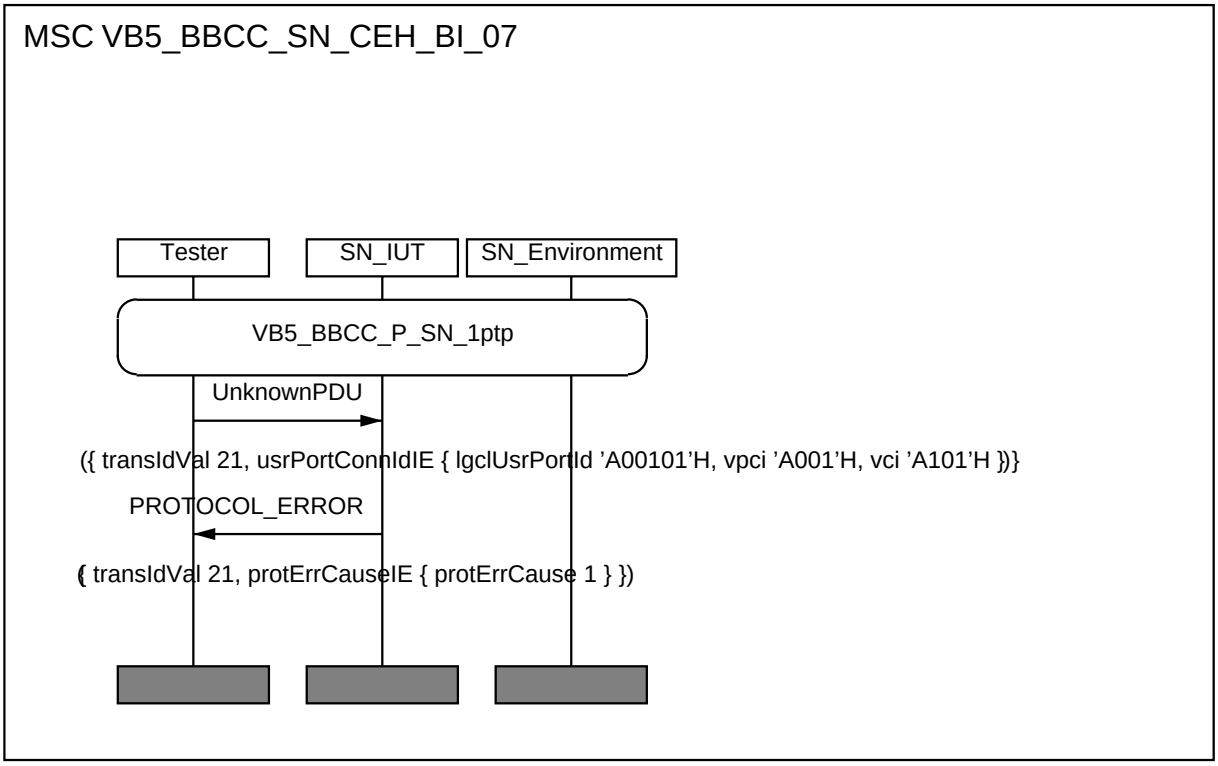

Figure 128

6.2.8.2 Error Handling on Information Element (IE)

VB5_BBCC_SN_CEH_BI_11	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check detection of a missing Information Element (IE)
Test description	The tester sends **AN_FAULT** PDU to the IUT, which has no IE, msg length null
Pass criteria	Check that the tester is receiving **BBCC_PROTOCOL_ERROR**, with Protocol error cause value = mandatory IE missing, meaning that the PDU is incomplete
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	meeErrorInd is sent to SN environment when error is detected

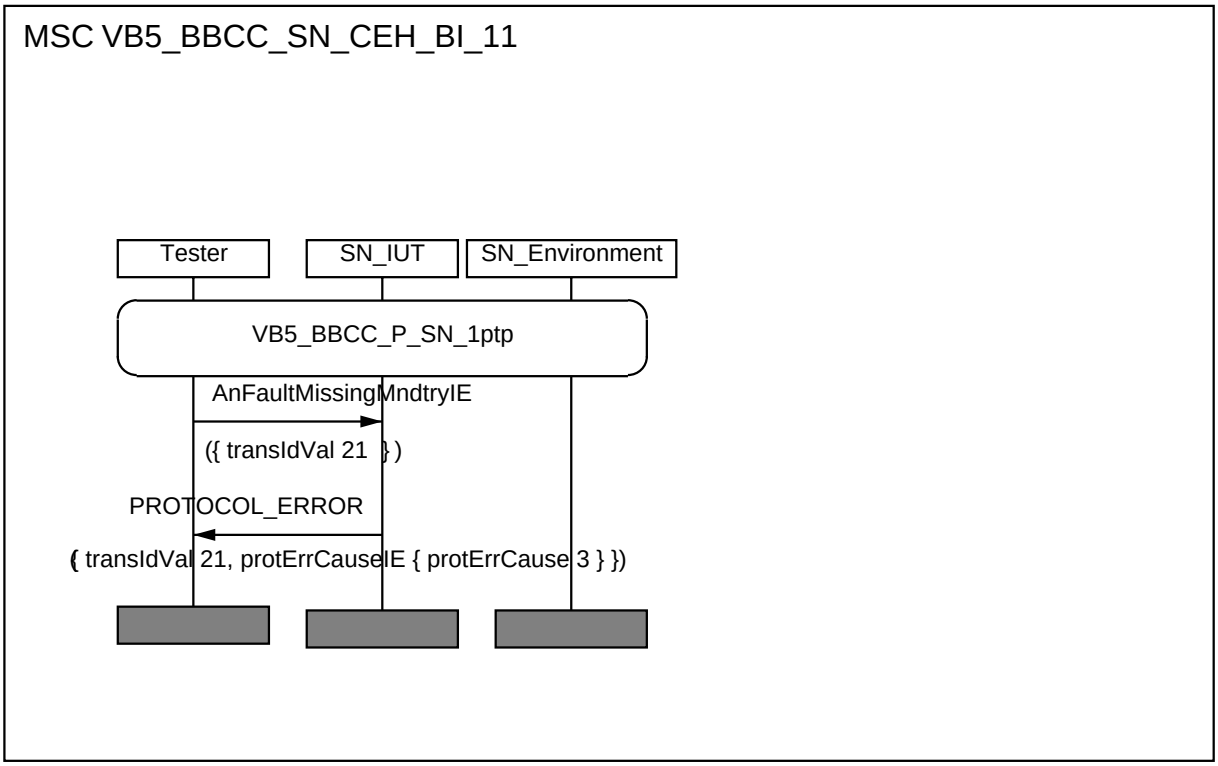

Figure 129

VB5_BBCC_SN_CEH_BI_12	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check discarding of an unknown Information Element (IE)
Test description	The tester sends **AN_FAULT** PDU to the IUT, which has an additional unknown IE
Pass criteria	Check that the tester is receiving **AN_FAULT_ACC**, meaning that the IUT has treated correctly the valid information and has discarded the unknown IE
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	ceeBBCCResetInd is sent to SN environment

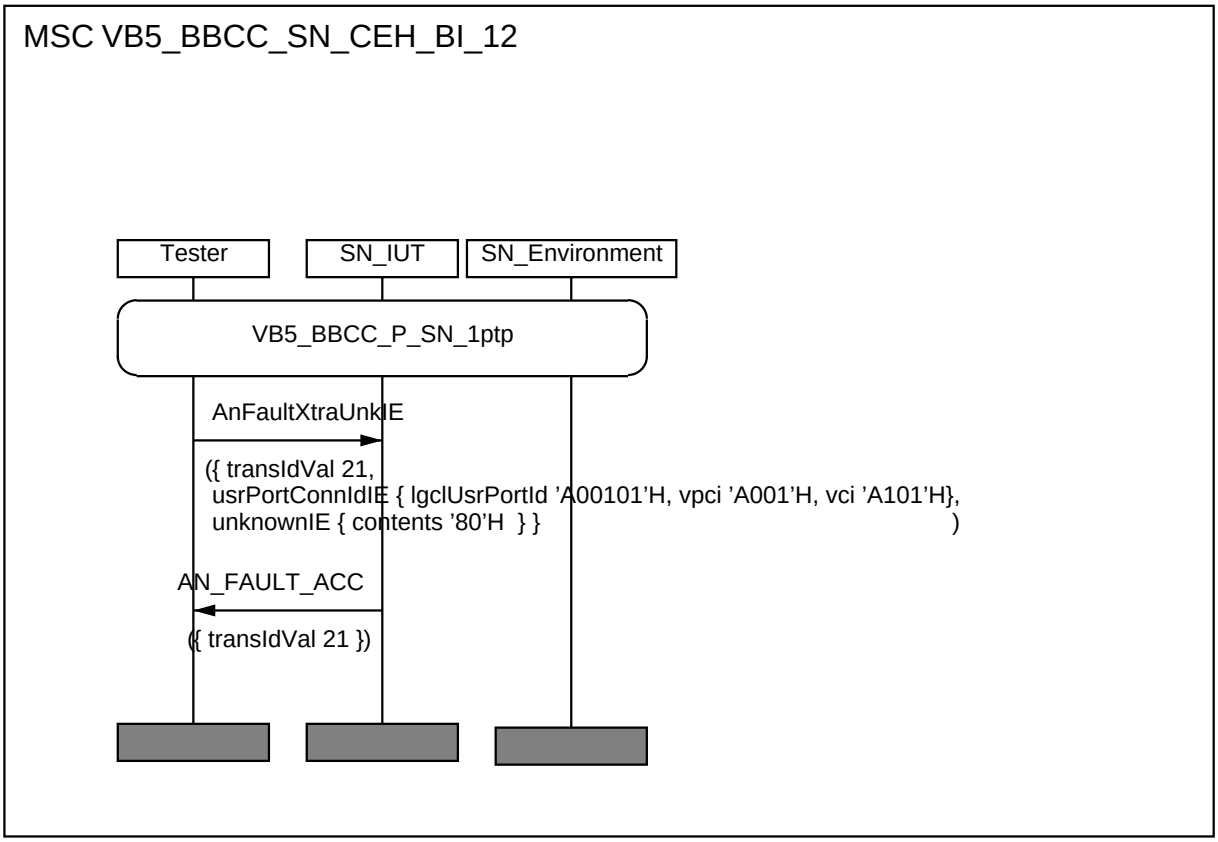

Figure 130

VB5_BBCC_SN_CEH_BI_13	Reference EN 301 217-1 [3]: 13.6.1.5.1
Purpose	Check discarding of an Information Element (IE) unexpected recognized
Test description	The tester sends **AN_FAULT** PDU to the IUT, which has an IE not allowed in this PDU type
Pass criteria	Check that the tester is receiving **AN_FAULT_ACC**, meaning that the IUT has treated correctly the valid information and has discarded the unexpected IE
Selection	None
Preamble	P_SN_1ptp
Postamble	None
Additional testing	ceeBBCCResetInd is sent to SN environment

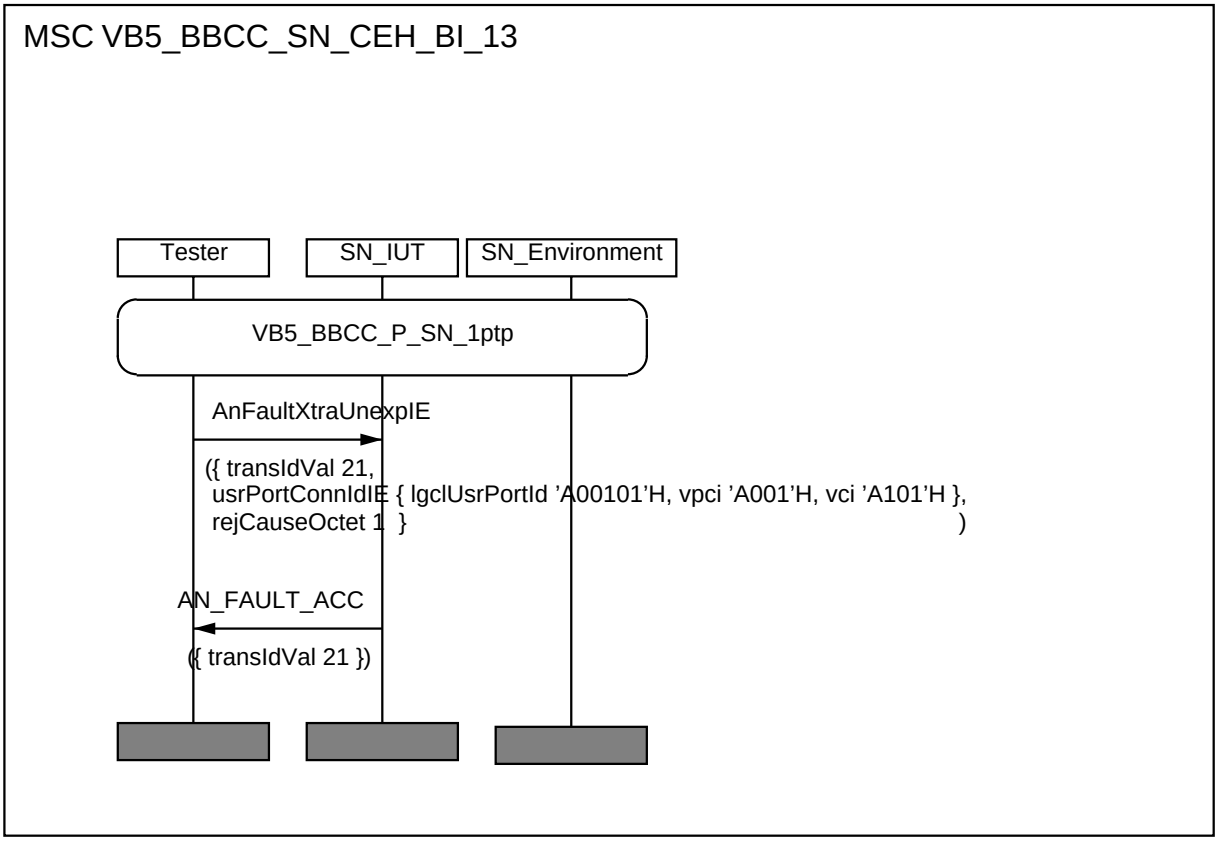

Figure 131

Annex A (informative): PIXIT parameters and the informative values used

A.1 Parameter values as used in the MSCs

A.1.1 Diagram of connections used in the test suites

Figure A.1 shows the different connection configurations, which have been defined for the tests. The numeric values reserved for the different parameters are all shown in hexadecimal coding. Unknown connections or branches are represented as dotted lines. Parameter values, which have been reserved but are not used, are shown in italics.

In the diagrams which illustrate the test purposes, these numeric values are displayed, but for connection reference numbers and branch identifiers the decimal equivalents have been displayed, since the SDL model used for simulation has defined these parameters as decimal types.

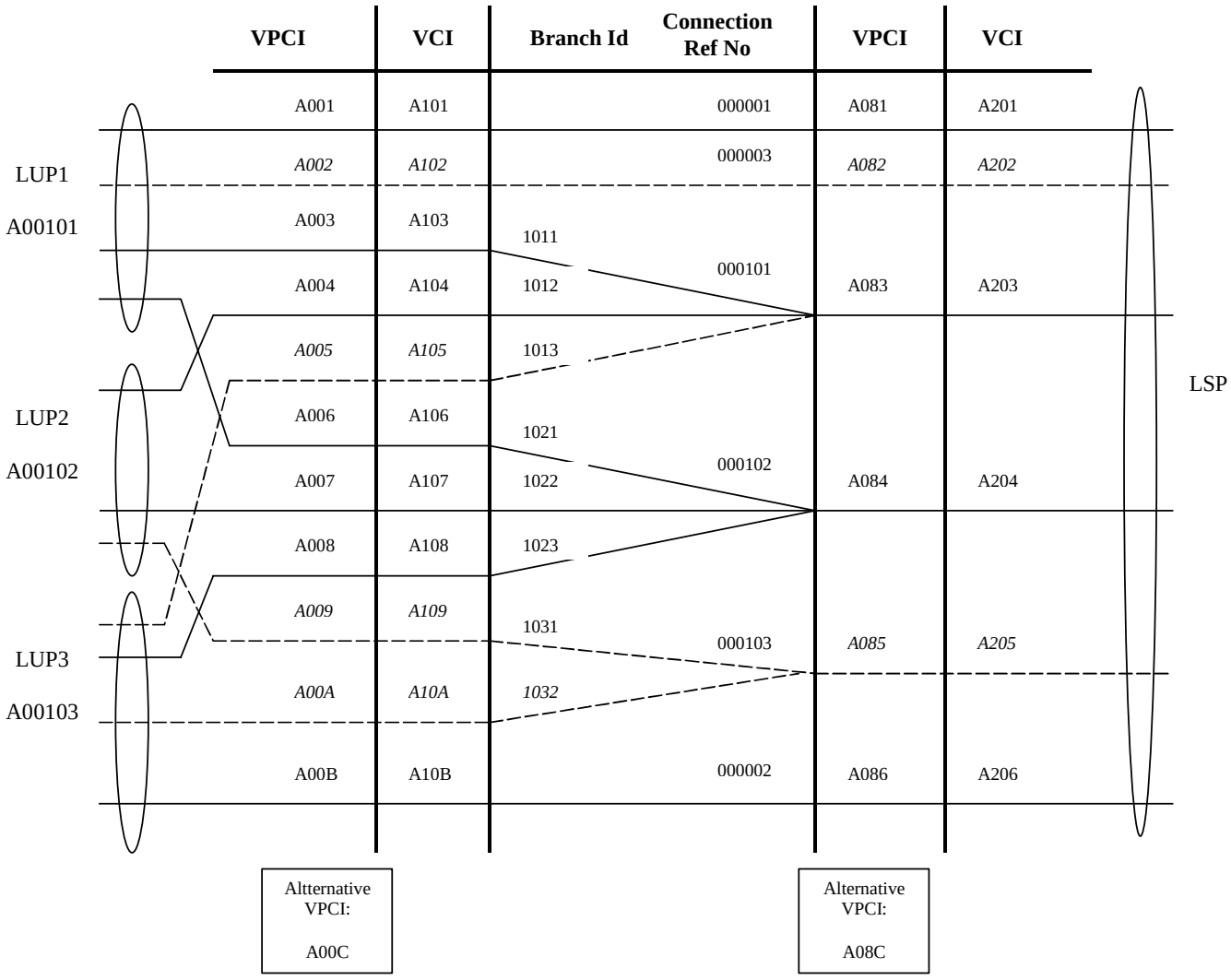

Figure A.1: Diagram of connections used in test suites

In the TTCN test suite, PIXIT parameters are used to represent all these values. The list of these parameters is part of table A.1.

A.1.2 Table of PIXIT parameters

Table A.1 is extracted from the PIXIT proforma for the test suite, and completed with the arbitrary values used to create the MSCs. Among these are the values used in figure A.1.

"Unknown" means non-allocated in the case of "Connection reference" or non-established in the case of "Branch".

Table A.1 PIXIT Parameter values

Item	Parameter name	Parameter type (ASN1)	Explanation	Value in MSCs
1	PIX_ALLOC_COMP_REJ	BOOLEAN	Guides the Connection Control Function	True/False
2	PIX_MODIFY_COMP_REJ _	BOOLEAN	Guides the Connection Control Function	True/False
3	PIX_MODIFY_ABORT_REJ	BOOLEAN	Guides the Connection Control Function	True/False
4	PIX_BBCC_PRESYNC_REJ	BOOLEAN	Guides the Connection Control Function	True/False
5	PIX_simulate_congestion	BOOLEAN	Guides the Connection Control Function	True/False
6	PIX_ConnRefNoVal_PtP1	ConnRefNoVal	Point to point connection	"000001"H or 1
7	PIX_ConnRefNoVal_PtP2	ConnRefNoVal	Point to point connection	"000002"H or 2
8	PIX_ConnRefNoVal_Unknown_PtP	ConnRefNoVal	Unknown Point to point connection	"000003"H or 3
9	PIX_ConnRefNoVal_PtM1	ConnRefNoVal	Point to Multipoint connection, two branches	"000101"H or 257
10	PIX_ConnRefNoVal_PtM2	ConnRefNoVal	Point to Multipoint connection, three branches	"000102"H or 258
11	PIX_ConnRefNoVal_Unknown_PtM	ConnRefNoVal	Unknown Point to Multipoint connection	"000103"H or 259
12	PIX_PtM1_BranchId1	BranchIdVal	Branch Id 1 of PtM1	"1011"H or 4113
13	PIX_PtM1_BranchId2	BranchIdVal	Branch Id 2 of PtM1	"1012"H or 4114
14	PIX_PtM1_Unknown_BranchId	BranchIdVal	Branch Id unknown of PtM1	"1013"H or 4115
15	PIX_PtM2_BranchId1	BranchIdVal	Branch Id 1 of PtM2	"1021"H or 4129
16	PIX_PtM2_BranchId2	BranchIdVal	Branch Id 2 of PtM2	"1022"H or 4130
17	PIX_PtM2_BranchId3	BranchIdVal	Branch Id 3 of PtM2	"1023"H or 4131
18	PIX_PtMu_BranchId1	BranchIdVal	Branch Id1 of PtMu	"1031"H or 4145
19	PIX_LUP_Id1	LogId	LUP Id	"A00101"H
20	PIX_LUP_Id2	LogId	LUP Id	"A00102"H
21	PIX_LUP_Id3	LogId	LUP Id	"A00103"H
22	PIX_LUP_VPCI1	VPCI	VPCI at LUP ptp1	"A001"H
23	PIX_LUP_VPCI2	VPCI	VPCI at LUP invalid	"A002"H
24	PIX_LUP_VPCI3	VPCI	VPCI at LUP ptm1	"A003"H
25	PIX_LUP_VPCI4	VPCI	VPCI at LUP ptm1	"A004"H
26	PIX_LUP_VPCI6	VPCI	VPCI at LUP ptm2	"A006"H
27	PIX_LUP_VPCI7	VPCI	VPCI at LUP ptm2	"A007"H
28	PIX_LUP_VPCI8	VPCI	VPCI at LUP ptm2	"A008"H
29	PIX_LUP_VPCIB	VPCI	VPCI at LUP ptp2	"A00B"H
30	PIX_LUP_VPCIC	VPCI	VPCI at LUP alternative	"A00C"H
31	PIX_LUP_VCI1	VCI	VCI at LUP ptp1	"A101"H
32	PIX_LUP_VCI2	VCI	VCI at LUP invalid	"A102"H
33	PIX_LUP_VCI3	VCI	VCI at LUP ptm1	"A103"H
34	PIX_LUP_VCI4	VCI	VCI at LUP ptm1	"A104"H
35	PIX_LUP_VCI6	VCI	VCI at LUP ptm2	"A106"H
36	PIX_LUP_VCI7	VCI	VCI at LUP ptm2	"A107"H

Item	Parameter name	Parameter type (ASN1)	Explanation	Value in MSCs
37	PIX_LUP_VCI8	VCI	VCI at LUP ptm2	"A108"H
38	PIX_LUP_VCIB	VCI	VCI at LUP ptp2	"A10B"H
39	PIX_LSP_VPCI1	VPCI	VPCI at LSP ptp1	"A081"H
40	PIX_LSP_VPCI3	VPCI	VPCI at LSP ptm1	"A083"H
41	PIX_LSP_VPCI4	VPCI	VPCI at LSP ptm2	"A084"H
42	PIX_LSP_VPCI6	VPCI	VPCI at LSP ptp2	'A086"H
43	PIX_LSP_VPCIC	VPCI	VPCI at LSP alternative	'A08C"H
44	PIX_LSP_VCI1	VCI	VCI at LSP ptp1	'A201"H
45	PIX_LSP_VCI3	VCI	VCI at LSP ptm1	'A203"H
46	PIX_LSP_VCI4	VCI	VCI at LSP ptm2	'A204"H
47	PIX_LSP_VCI6	VCI	VCI at LSP ptp2	'A206"H
48	PIX_endtoend_transit_delay	OCTET_STRING	Length is: (3-6) Default value is: 3	'010020'H
49	PIX_ATM_traffic_descriptor	OCTET_STRING	Length is: (0-50) Default value is: 2	'7100'H
50	PIX_ATM_altern_traffic_descriptor	OCTET_STRING	Length is: (0-50) Default value is: 2	'7200'H
51	PIX_minimum_ATM_traffic_descriptor	OCTET_STRING	Length is: (0-50) Default value is: 2	'7300'H
52	PIX_OAM_traffic_descriptor	OCTET_STRING	Length is: (2) Default value is: 2	'7400'H
53	PIX_Broadband_capability	OCTET_STRING	Length is: (3-4) Default value is: 3	'751000'H
54	PIX_Broadband_capability_ABR	OCTET_STRING	Length is: (3-4) Default value is: 3	'752000'H
55	PIX_ABR_setup_parameter	OCTET_STRING	Length is: (2-28) Default value is: 2	'7600'H
56	PIX_QOS_parameter	OCTET_STRING	Length is: (2) Default value is: 2	'7700'H
57	PIX_CDVT_descriptor	OCTET_STRING	Length is: (3-18) Default value is: 3	'781000'H

A.1.3 Transaction identifier values

In the MSCs and by pure convention, the values taken for the transaction identifiers in the test case body (not in the preambles) show the direction of the PDUs. It takes values starting at 01 when the IUT initiates the PDU exchange, while it takes the values starting at 20 or 21 when the tester initiates the PDU exchange. In the case of ACK PDUs, this rule does not apply as the transaction Id value is taken from the incoming PDU.

A.1.4 Timer values

Most of the sendings of PDUs by the SN are protected by timers. When the answers to such PDUs are not received by the SN within this timer limit, the originating PDUs are sent a second time within a tolerance interval.

All these timer values are part of the PIXIT definition.

Table A.2 Timer values

Item	Parameter	Parameter type	Explanation	Value in MSCs
1	PIX_T_AnFault	integer	Timer value	15 sec
2	PIX_T_Alloc	integer	Timer value	15 sec
3	PIX_T_AllocComp	integer	Timer value	15 sec
4	PIX_T_BBCCReset	integer	Timer value	30 sec
5	PIX_T_BBCCPresync	integer	Timer value	15 sec
6	PIX_T_Dealloc	integer	Timer value	30 sec
7	PIX_T_Modify	integer	Timer value	15 sec
8	PIX_T_ModifyComp	integer	Timer value	15 sec
9	PIX_T_ModifyAbort	integer	Timer value	15 sec
10	PIX_T_AddBranch	integer	Timer value	15 sec
11	PIX_T_UpdateBranch	integer	Timer value	15 sec
12	PIX_T_DropBranch	integer	Timer value	30 sec
13	PIX_T_ConnEst	integer	Timer value	180 sec
14	PIX_T_Modification	integer	Timer value	180 sec
15	PIX_T_BranchEst	integer	Timer value	180 sec
16	PIX_T_BBCCStartup	integer	Timer value	180 sec
17	PIX_T_BBCCRestart	integer	Timer value	180 sec
18	PIX_T_supervision	integer	Supervision timer	

Annex B (informative): ASN.1 data declarations for the BBCC protocol

```
DataModule DEFINITIONS AUTOMATIC TAGS::=

BEGIN

ProtDiscr::= OCTET STRING (SIZE(1))  --Always defaulted to '049'H, EN 301 005-4, Annex E

TransId::= SEQUENCE      --Transaction Identifier, EN 301 005-4, Annex E
 {  sparebits4                SpareBits4 DEFAULT '0000'B,
    lengthOfTransIdVal  [1] BIT STRING (SIZE (4)) DEFAULT '0011'B,
    transIdFlag         [2] TransIdFlag,
    transIdVal               TransIdVal
 }

MsgType::= OCTET STRING (SIZE (1))      --EN 301 005-4, Annex E

MsgCompatInd::= SEQUENCE  --EN 301 005-4, Annex E
 {  extBitLast          ExtBitLast DEFAULT '1'B,
    spareBits2          SpareBits2 DEFAULT '00'B,
    compatFlag          CompatFlag,
    spareBits21         SpareBits2 DEFAULT '00'B,
    msgActInd           MsgActInd
 }

MsgLength::= OCTET STRING (SIZE (2))    -- EN 301 005-4, Annex E

TransIdFlag::= BIT STRING (SIZE(1))     --EN 301 005-4, Annex E

TransIdVal::= BIT STRING (SIZE (23))    --EN 301 005-4, Annex E

MsgActInd::= BIT STRING (SIZE(2))   --Table 35, EN 301 005-1
  msgActIndReject           MsgActInd::= '00'B --reject by PROTO_ERROR msg
  msgActIndDiscardAndIgnore MsgActInd::= '01'B --discard  and ignore
  msgActIndDiscardAndReport MsgActInd::= '10'B --not used by this VB5.1 version
  --All other values are reserved

SpareBits4::= BIT STRING (SIZE(4))    --Always defaulted to '0000'B, EN 301 005-4, Annex E
SpareBits3::= BIT STRING (SIZE(3))    --Always defaulted to '000'B, EN 301 005-4, Annex E
SpareBits2::= BIT STRING (SIZE(2))    --Always defaulted to '00'B, EN 301 005-4, Annex E
SpareBits1::= BIT STRING (SIZE(1))    --Always defaulted to '0'B, EN 301 005-4, Annex E

ConnRefNoIE::= SEQUENCE  -- EN 301 217-1, subclause 14.3.6.2
 {  commonIEInfo    CommonIEInfo,
    connRefNoVal    ConnRefNoVal
 }

ConnRefNoVal::= OCTET STRING (SIZE (3)) -- EN 301 217-1, Figure 33

ConnRefNoListIE::= SEQUENCE -- EN 301 217-1, subclause 14.3.6.3
 {  commonIEInfo    CommonIEInfo,
    connRefNos  SET OF ConnRefNoVal
 }
    -- length of IE not to shall not exceed the maximum message length

UsrPortConnIdIE::= SEQUENCE  -- EN 301 217-1, subclause 14.3.6.4
 {  commonIEInfo                      CommonIEInfo,
    usrPortConnIdIEOctet5             UsrPortConnIdIEOctet5,
    lgclUsrPortId                     LogId,
    vpci                              [1] VPCI OPTIONAL,
    vci                               [2] VCI OPTIONAL
 }

UsrPortConnIdIEOctet5::= SEQUENCE -- EN 301 217-1, Table 54
 {  extBitLast          ExtBitLast DEFAULT '1'B,
    usrRscInd           UsrRscInd,
    dirFlg              DirFlg,
    connIdFlg           ConnIdFlg
 }

UsrRscInd::= BIT STRING (SIZE (3))  -- EN 301 217-1, Table 54
    completeLUP     UsrRscInd::= '000'B  -- Complete LUP
    vPCatLUP            UsrRscInd::= '001'B  -- VPC at the LUP
    vCCatLUP            UsrRscInd::= '010'B  -- VCC at the LUP
    -- all other values are reserved

DirFlg::= BIT STRING (SIZE (2))  -- EN 301 217-1, Table 54
    usrOrigin           DirFlg::= '00'B  -- User port is bearer connect origin
    usrTerminates       DirFlg::= '01'B  -- User port is bearer connection termination
```

```
    -- all other values are reserved

ConnIdFlg::= BIT STRING (SIZE (2)) -- EN 301 217-1, Table 54
    exclCombo   ConnIdFlg::= '00'B  -- exclusive VPCI/VCI combination
    prefCombo   ConnIdFlg::= '01'B  -- preferred VPCI/VCI combination
    -- all other values are reserved

LogId::= OCTET STRING (SIZE (3))     --logical port identifier
  --LogicalServicePortId  (0 .. 16777215)
  --LogicalUserPortId     (0 .. 16777215)

VPCI::= OCTET STRING (SIZE (2))

VCI::= OCTET STRING (SIZE (2))

SrvcPortConnIdIE::= SEQUENCE  -- EN 301 217-1, subclause 14.3.6.5
 {  commonIEInfo                        CommonIEInfo,
    srvcPortConnIdIEOctet5  SrvcPortConnIdIEOctet5,
    vpci                                [1] VPCI OPTIONAL,
    vci                                 [2] VCI OPTIONAL
 }

SrvcPortConnIdIEOctet5::= SEQUENCE -- EN 301 217-1, Table 55
 {  extBitLast      ExtBitLast DEFAULT '1'B,
    srvcRscInd      SrvcRscInd,
    spare               SpareBits2,
    connIdFlg           ConnIdFlg
 }

SrvcRscInd::= BIT STRING (SIZE (3))  -- EN 301 217-1, Table 55
    completeLSP     SrvcRscInd::= '000'B  -- Complete LSP
    vPCatLSP            SrvcRscInd::= '001'B  -- VPC at the LSP
    vCCatLSP            SrvcRscInd::= '010'B  -- VCC at the LSP
    -- all other values are reserved

AltUsrPortVPCIIE::= SEQUENCE  -- EN 301 217-1, subclause 14.3.6.6
 {  commonIEInfo        CommonIEInfo,
    vpcis                   SET OF VPCI
 }
    -- length of IE shall not exceed the maximum message length

AltSrvcPortVPCIIE::= SEQUENCE -- EN 301 217-1, subclause 14.3.6.7
 {  commonIEInfo        CommonIEInfo,
    vpcis                   SET OF VPCI
 }
    -- length of IE shall not exceed the maximum message length


AutoCongLvlIE::= SEQUENCE -- EN 301 217-1, subclause 14.3.6.8
 {  commonIEInfo    CommonIEInfo,
    congLvl             CongLvl
 }

CongLvl::= BIT STRING (SIZE (8)) -- Table 56, EN 301 217-1
    congLvl1            CongLvl::= '00000001'B
    congLvl2            CongLvl::= '00000010'B
    -- all other values are reserved


RejCauseIE::= SEQUENCE -- EN 301 217-1, subclause 14.3.6.9
 {  commonIEInfo        CommonIEInfo,
    rejCauseOctet       RejCauseOctet
 }

RejCauseOctet::= SEQUENCE  -- EN 301 217-1 [3], Figure 38
 {  extBitLast      [1]     ExtBitLast DEFAULT '1'B,
    rejCause        [2]     RejCause
 }

RejCause::= BIT STRING (SIZE (7)) -- Table 57, EN 301 217-1
    unspcfdErr              RejCause::= '0000000'B
    connStateIncmptblty     RejCause::= '0000001'B
    branchStateIncmptblty   RejCause::= '0000010'B
    branchDeallocExpctd     RejCause::= '0000011'B
    aNFault                 RejCause::= '0000100'B
    insuffANRsrces          RejCause::= '0000101'B
    insuffUsrPortRsrces     RejCause::= '0000110'B
    insuffSrvcPortRsrces    RejCause::= '0000111'B
    unsupTrfcParamsCombo    RejCause::= '0001000'B
    unsupATMTrnsfrCap       RejCause::= '0001001'B
    usedUsrPortConnID       RejCause::= '0001010'B
    usedSrvcPortConnID      RejCause::= '0001011'B
    invalLUPId              RejCause::= '0001100'B
```

```
    invalUsrPortVPCI        RejCause::= '0001101'B
    invalUsrPortVCI         RejCause::= '0001110'B
    invalSrvcPortVPCI       RejCause::= '0001111'B
    invalSrvcPortVCI        RejCause::= '0010000'B
    --all other values are reserved

BranchIdIE::= SEQUENCE  -- EN 301 217-1, subclause 14.3.6.10
 {  commonIEInfo        CommonIEInfo,
    branchIdVal         BranchIdVal
 }

BranchIdVal::= OCTET STRING (SIZE (2)) -- EN 301 217-1, Figure 39

BranchIdListIE ::= SEQUENCE  -- EN 301 217-1, subclause 14.3.6.11
 {  commonIEInfo    CommonIEInfo,
    branchIds           SET OF BranchIdVal
 }

ProtErrCauseIE::= SEQUENCE -- EN 301 217-1, subclause 14.3.7.10,  source: RTMC Protocol Error Cause
 {  commonIEInfo         CommonIEInfo,
    protErrCause         ProtErrCauseContent
 }

ProtErrCauseContent::= SEQUENCE
 {  extBitLast          ExtBitLast DEFAULT '1'B,
    protErrCauseVal     ProtErrCauseVal,
    protErrCauseDiagn   ProtErrCauseDiagn OPTIONAL
 }

ProtErrCauseVal::= BIT STRING (SIZE (7))
  unkMsgType                ProtErrCauseVal::= '0000001'B
  mandIEMiss                ProtErrCauseVal::= '0000011'B
  unrecogIE                 ProtErrCauseVal::= '0000100'B
  iEContErr                 ProtErrCauseVal::= '0000101'B
  iENotAllowed              ProtErrCauseVal::= '0000110'B
  msgNotCompatWithProtState  ProtErrCauseVal::= '0000111'B

ProtErrCauseDiagn::= OCTET STRING (SIZE (2))

QoSParamsIE ::= SEQUENCE -- EN 301 217-1, subclause 14.3.7.4
 {  commonIEInfo    CommonIEInfo,
    fwdQoSClass     FwdQoSClass,
    bkwdQoSClass        BkwdQoSClass
 }

FwdQoSClass::= BIT STRING (SIZE (8))        -- Table 4-18/Q.2931
  unspecQoSClass        FwdQoSClass::= '00000000'B
  futureReserve     FwdQoSClass::= '11111111'B
-- all other values are reserved

BkwdQoSClass::= BIT STRING (SIZE (8))   -- Table 4-18/Q.2931

ATM-Contents::= OCTET STRING(SIZE(0..50))  -- EN 300 443-1, subclause 4.5.6

ATMTrfcDscrptrIE::= CHOICE  -- EN 301 217-1, subclause 14.3.7.1
  {  send       [1]  SndATMDscrptrIE,
     receive    [2]  RcvATMDscrptrIE
  }

SndATMDscrptrIE::=  SEQUENCE
  {  commonIEInfo   CommonIEInfo,
     contents           ATM-Contents
  }

RcvATMDscrptrIE::= SEQUENCE
  { commonIEInfo        CommonIEInfo,
        contents SEQUENCE
      {  rates                          SET OF Rates,
         trafficMgmtOptions     TrafficMgmtOptions OPTIONAL
      }
  }

Rates::= SEQUENCE
  { identifier Rate-Id,
        contents   BIT STRING(SIZE(24))
  }

Rate-Id ::= -- EN 300 443-1, subclause 4.5.6, EN 301 067-1, subclause 8.2.1, EN 301 068 */
BIT STRING  ('10000010'B | -- forward peak cell rate (CLP = 0)
             '10000011'B | -- backward peak cell rate (CLP = 0)
             '10000100'B | -- forward peak cell rate (CLP = 0 + 1)
             '10000101'B | -- backward peak cell rate (CLP = 0 + 1)
             '10001000'B | -- forward sustainable cell rate (CLP = 0)
```

```
            '10001001'B | -- backward sustainable cell rate (CLP = 0)
            '10010000'B | -- forward sustainable cell rate (CLP = 0 + 1)
            '10010001'B | -- backward sustainable cell rate (CLP = 0 + 1)
            '10100000'B | -- forward maximum burst size (CLP = 0)
            '10100001'B | -- backward maximum burst size (CLP = 0)
            '10110000'B | -- forward maximum burst size (CLP = 0 + 1)
            '10110001'B | -- backward maximum burst size (CLP = 0 + 1)
            '10010010'B | -- forward ABR minimum cell rate (CLP = 0 + 1)
            '10010011'B | -- backward ABR minimum cell rate (CLP = 0 + 1)
            '11000000'B | -- forward RM peak cell rate
            '11000001'B   -- backward RM peak cell rate
          )    -- Possible identifiers for the traffic rates of the ATM traffic descriptor
information


TrafficMgmtOptions::= SEQUENCE
  { trafficManagementOptionsId      BIT STRING('10111111'B),
        spare-345678                BIT STRING(SIZE(6)), -- Spare bits, normally set to '000000'B
        tb                          BIT STRING(SIZE(1)),
        tf                          BIT STRING(SIZE(1))
  }

ATM-contents::= OCTET STRING(SIZE(0..50))  -- EN 300 443-1, subclause 4.5.6
                            -- ATM Traffic Descriptor contents

BrdbndBcapIE::= SEQUENCE    -- EN 300 443-1, subclause 4.5.7
  { commonIEInfo        CommonIEInfo,
        contents        BBC-contents
  }

BBC-contents::=     OCTET STRING(SIZE(3..4))  -- EN 300 443-1, subclause 4.5.7
    -- Broadband Bearer Capability contents

OAMTrfcDscrptrIE::= SEQUENCE    -- EN 300 443-1, subclause 4.5.24
  {commonIEInfo             CommonIEInfo,
    extension-o5            BIT STRING('1'B),    -- Extension bit, set to '1'B
    shaping-indicator       BIT STRING(SIZE(2)), -- Type of subaddress
    complete-indicator      BIT STRING(SIZE(1)),
    spare-4-o5              BIT STRING(SIZE(1)), -- Spare bit, normally set to '0'B
    fault-mngt-indicator    BIT STRING(SIZE(4)), -- (1)
    extension-o6            BIT STRING('1'B),    -- Extension bit, set to '1'B
    fwd-flow-indicator      BIT STRING(SIZE(3)), -- (2)
    spare-4-o6              BIT STRING(SIZE(1)), -- Spare bit, normally set to '0'B
    bwd-flow-indicator      BIT STRING(SIZE(4))  -- (3)
  } -- (1) User-network fault management indicator
        -- (2) Forward end-to-end OAM F5 flow indicator
        -- (3) Backward end-to-end OAM F5 flow indicator

ABRSetupParamsIE::= SEQUENCE    -- Q.2961.3, subclause 8.2.2
  { commonIEInfo    CommonIEInfo,
        contents            ABR-contents
  }

ABR-contents::= OCTET STRING (SIZE (2..28)) -- Q.2961.3, subclause 8.2.2

EndEndTrnstDlayIE::= SEQUENCE -- EN 300 443-1, subclause 4.5.17
  {commonIEInfo         CommonIEInfo,
    cumulative-td-id    BIT STRING('00000001'B), -- Cumulative transit delay identifier
    cumulative-td       BIT STRING(SIZE(16)),    -- Cumulative transit delay value
    maximum-td          Maximum-td OPTIONAL      -- Maximum transit delay
  }

Maximum-td::= SEQUENCE
  {maximum-td-id    BIT STRING('00000011'B), -- Maximum transit delay id
    maximum-td          BIT STRING(SIZE(16))     -- Maximum transit delay value
  }

CDVTDscrptrIE::= SEQUENCE  -- Q.2961.5, subclause 8.2
  {commonIEInfo CommonIEInfo,
    contents            CDVT-contents
  }

CDVT-contents::= OCTET STRING (SIZE (3..18)) -- Q.2961.5, subclause 8.2

AltATMTrfcDscrptrIE::=  CHOICE -- EN 300 443-1, subclause 4.5.6, EN 301 067-1, subclause 8.2.1, EN
301 068
  {send         [1]  SndATMDscrptrIE,
    receive     [2]  RcvATMDscrptrIE
  }

MinATMTrfcDscrptorIE::= CHOICE  -- EN 300 443-1, subclause 4.5.6, EN 301 067-1, subclause 8.2.1, EN
301 068
  {send         [1]  SndATMDscrptrIE,
```

```
    receive     [2]  RcvMinATMDscrptrIE
  }

RcvMinATMDscrptrIE::= SEQUENCE
  commonIEInfo  CommonIEInfo,
    contents        SET OF Rates
  }

CommonIEInfo::= SEQUENCE  --EN 301 005-4, Annex E
 {  iEType               IEType,
    iECompatInd          IECompatInd,
    iELength             IELength
 }

IEType::= BIT STRING (SIZE (8)) -- Table 53, EN 301 217-1
  iEConnRefNo               IEType::= '00000000'B
  iEConnRefNoList           IEType::= '00000001'B
  iEUsrPortConnId           IEType::= '00000010'B
  iESrvcPortConnId          IEType::= '00000011'B
  iEAltUsrPortVPCI          IEType::= '00000100'B
  iEAltSrvcPortVPCI         IEType::= '00000101'B
  iEAutoCongLvl             IEType::= '00000110'B
  iERejCause                IEType::= '00000111'B
  iEBranchId                IEType::= '00001000'B
  iEBranchIdList            IEType::= '00001001'B
  iEATMTrfcDscrptr          IEType::= '00001010'B
  iEBrdbndBcap              IEType::= '00001011'B
  iEOAMTrfcDscrptr          IEType::= '00001100'B
  iEQoSParams               IEType::= '00001101'B
  iEABRSetupParams          IEType::= '00001110'B
  iEEndEndTrnstDlay         IEType::= '00001111'B
  iECDVTDscrptr             IEType::= '00010000'B
  iEAltATMTrfcDscrptr       IEType::= '00010001'B
  iEMinATMTrfcDscrptor  IEType::= '00010010'B
  iEProtErrCause                IEType::= '00010011'B
  -- All other values are reserved

IECompatInd::= SEQUENCE  -- EN 301 005-4, Annex E
 {  extBitLast          ExtBitLast DEFAULT '1'B,
    spareBits2          SpareBits2 DEFAULT '00'B,
    compatFlag          CompatFlag,
    spareBits1          SpareBits1 DEFAULT '0'B,
    iEActInd            IEActInd
 }

IELength::= OCTET STRING (SIZE (2))  -- EN 301 005-4, Annex E

ExtBitLast::= BIT STRING (SIZE (1)) --Always defaulted to '1'B (last octet in group), EN 301 005-4,
Annex E

CompatFlag::= BIT STRING (SIZE(1)) --Table 35, EN 301 005-1
  compatFlagNotSignif     CompatFlag::= '0'B
  compatFlagExplicit      CompatFlag::= '1'B

IEActInd::= BIT STRING (SIZE (3)) --Table 36, EN 301 005-1
  iEActIndReject                  IEActInd::= '000'B
  iEActIndDiscardAndProceed       IEActInd::= '001'B
  iEActIndDiscardProceedAndReport IEActInd::= '010'B
  iEActIndDiscardMsgAndIgnore     IEActInd::= '101'B
  iEActIndDiscardMsgAndReport     IEActInd::= '110'B
  --All other values are reserved

 -- definition of BBCC messages

CommonMsgInfo::= SEQUENCE  --EN 301 005-4, Annex E
 {  protDiscr            ProtDiscr DEFAULT '49'H,
    transId              TransId,
    msgType              MsgType,
    msgCompatInd         MsgCompatInd,
    msgLength            MsgLength
 }

Alloc::= SEQUENCE   -- En 301 217-1, Table 23
  { commonMsgInfo       CommonMsgInfo,
    connRefNo           ConnRefNoIE,
    aTMTrfcDscrptr      ATMTrfcDscrptrIE,
    brdbndBcap          BrdbndBcapIE,
    qoSParams           QoSParamsIE,
    usrPortConnId       UsrPortConnIdIE,
    srvcPortConnId      SrvcPortConnIdIE,
    altUsrPortVPCI      [1]  AltUsrPortVPCIIE          OPTIONAL,
    altSrvcPortVPCI     [2]  AltSrvcPortVPCIIE      OPTIONAL,
    branchId            [3]  BranchIdIE                OPTIONAL,
```

```
    aBRSetupParams      [4]  ABRSetupParamsIE          OPTIONAL,
    endEndTrnstDlay     [5]  EndEndTrnstDlayIE      OPTIONAL,
    cDVTDscrptr         [6]  CDVTDscrptrIE             OPTIONAL,
    oAMTrfcDscrptr      [7]  OAMTrfcDscrptrIE          OPTIONAL,
    altATMTrfcDscrptr   [8]  AltATMTrfcDscrptrIE    OPTIONAL,
    minATMTrfcDscrptor  [8]  MinATMTrfcDscrptorIE   OPTIONAL
  }

AllocAcc::= SEQUENCE    -- En 301 217-1, Table 24
  { commonMsgInfo       CommonMsgInfo,
    aTMTrfcDscrptr      [1]  ATMTrfcDscrptrIE              OPTIONAL,
    usrPortConnId       [2]  UsrPortConnIdIE               OPTIONAL,
    srvcPortConnId      [3]  SrvcPortConnIdIE              OPTIONAL,
    branchId            [4]  BranchIdIE                    OPTIONAL,
    aBRSetupParams      [5]  ABRSetupParamsIE              OPTIONAL,
    endEndTrnstDlay     [6]  EndEndTrnstDlayIE          OPTIONAL,
    cDVTDscrptr         [7]  CDVTDscrptrIE                 OPTIONAL,
    oAMTrfcDscrptr      [8]  OAMTrfcDscrptrIE              OPTIONAL,
    altATMTrfcDscrptr   [8]  AltATMTrfcDscrptrIE        OPTIONAL,
    minATMTrfcDscrptor  [9]  MinATMTrfcDscrptorIE   OPTIONAL,
    autoCongLvl             [10]  AutoCongLvlIE             OPTIONAL
  }

AllocRej::= SEQUENCE    -- En 301 217-1, Table 25
  {commonMsgInfo    CommonMsgInfo,
    rejCause            RejCauseIE,
    autoCongLvl     AutoCongLvlIE   OPTIONAL
  }

AllocComp::= SEQUENCE   -- En 301 217-1, Table 26
  {commonMsgInfo    CommonMsgInfo,
    connRefNo           ConnRefNoIE,
    aTMTrfcDscrptr      [1]  ATMTrfcDscrptrIE       OPTIONAL,
    usrPortConnId       [2]  UsrPortConnIdIE        OPTIONAL,
    aBRSetupParams      [3]  ABRSetupParamsIE       OPTIONAL,
    cDVTDscrptr         [4]  CDVTDscrptrIE          OPTIONAL
  }

AllocCompAcc::= CommonMsgInfo   -- EN 301 217-1, subclause 14.3.2.5

AllocCompRej::= SEQUENCE    -- En 301 217-1, Table 27
  {commonMsgInfo    CommonMsgInfo,
    rejCause            RejCauseIE
  }

Dealloc::= SEQUENCE     -- En 301 217-1, Table 28
  {commonMsgInfo    CommonMsgInfo,
    connRefNoList   ConnRefNoListIE
  }

DeallocAcc::= SEQUENCE  -- En 301 217-1, Table 29
  {commonMsgInfo    CommonMsgInfo,
    autoCongLvl     AutoCongLvlIE   OPTIONAL
  }

BBCCReset::= SEQUENCE       -- En 301 217-1, Table 30
  {commonMsgInfo        CommonMsgInfo,
    usrPortConnId       [1]  UsrPortConnIdIE        OPTIONAL,
    srvcPortConnId      [2]  SrvcPortConnIdIE       OPTIONAL
  }

BBCCResetAcc::= CommonMsgInfo   -- EN 301 217-1, subclause 14.3.3.2

BBCCResetRej::= SEQUENCE    -- En 301 217-1, Table 31
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE
  }

BBCCPresync::= SEQUENCE     -- En 301 217-1, Table 32
  {commonMsgInfo        CommonMsgInfo,
    usrPortConnId       [1]  UsrPortConnIdIE        OPTIONAL,
    srvcPortConnId      [2]  SrvcPortConnIdIE       OPTIONAL
  }

BBCCPresyncAcc::= CommonMsgInfo -- EN 301 217-1, subclause 14.3.3.5

BBCCPresyncRej::= SEQUENCE  -- En 301 217-1, Table 33
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE
  }

AnFault::= SEQUENCE     -- En 301 217-1, Table 34
  {commonMsgInfo        CommonMsgInfo,
```

```
    connRefNo           [1]  ConnRefNoIE        OPTIONAL,
    branchId            [2]  BranchIdIE         OPTIONAL,
    usrPortConnId       [3]  UsrPortConnIdIE        OPTIONAL,
    srvcPortConnId      [4]  SrvcPortConnIdIE       OPTIONAL
  }

AnFaultAcc::= CommonMsgInfo -- EN 301 217-1, subclause 14.3.3.8

ProtocolError::= SEQUENCE   -- En 301 217-1, Table 35
  {commonMsgInfo        CommonMsgInfo,
    protErrCause        ProtErrCauseIE
  }

Modify::= SEQUENCE  -- En 301 217-1, Table 36
  {commonMsgInfo        CommonMsgInfo,
    connRefNo               ConnRefNoIE,
    aTMTrfcDscrptr      ATMTrfcDscrptrIE,
    altATMTrfcDscrptr   [1]  AltATMTrfcDscrptrIE    OPTIONAL,
    minATMTrfcDscrptor  [2]  MinATMTrfcDscrptorIE   OPTIONAL
  }

ModifyAcc::= SEQUENCE   -- En 301 217-1, Table 37
  {commonMsgInfo        CommonMsgInfo,
    aTMTrfcDscrptr          [1]  ATMTrfcDscrptrIE           OPTIONAL,
    altATMTrfcDscrptr   [2]  AltATMTrfcDscrptrIE    OPTIONAL,
    minATMTrfcDscrptor  [6]  MinATMTrfcDscrptorIE   OPTIONAL,
    autoCongLvl             [4]  AutoCongLvlIE              OPTIONAL
  }

ModifyRej::= SEQUENCE   -- En 301 217-1, Table 38
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE,
    autoCongLvl         AutoCongLvlIE       OPTIONAL
  }

ModifyComp::= SEQUENCE  -- En 301 217-1, Table 39
  {commonMsgInfo        CommonMsgInfo,
    aTMTrfcDscrptr      ATMTrfcDscrptrIE    OPTIONAL
  }

ModifyCompAcc::= CommonMsgInfo  -- EN 301 217-1, subclause 14.3.4.5

ModifyCompRej::= SEQUENCE   -- En 301 217-1, Table 40
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE
  }

ModifyAbort::= SEQUENCE     -- En 301 217-1, Table 41
  {commonMsgInfo        CommonMsgInfo,
    connRefNo               ConnRefNoIE
  }

ModifyAbortAcc::= CommonMsgInfo -- EN 301 217-1, subclause 14.3.4.8

ModifyAbortRej::= SEQUENCE  -- En 301 217-1, Table 41
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE
  }

AddBranch::= SEQUENCE   -- En 301 217-1, Table 43
  {commonMsgInfo        CommonMsgInfo,
    connRefNo               ConnRefNoIE,
    branchId                BranchIdIE,
    usrPortConnId       UsrPortConnIdIE,
    altUsrPortVPCI      AltUsrPortVPCIIE    OPTIONAL
  }

AddBranchAcc ::= SEQUENCE   -- En 301 217-1, Table 44
  {commonMsgInfo        CommonMsgInfo,
    usrPortConnId       [1]  UsrPortConnIdIE    OPTIONAL,
    autoCongLvl         [2]  AutoCongLvlIE  OPTIONAL
  }

AddBranchRej ::= SEQUENCE   -- En 301 217-1 [3], Table 45
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE,
    autoCongLvl         AutoCongLvlIE   OPTIONAL
  }

UpdateBranch::= SEQUENCE    -- En 301 217-1, Table 46
  {commonMsgInfo        CommonMsgInfo,
    connRefNo               ConnRefNoIE,
    branchId                BranchIdIE,
```

```
    usrPortConnId       UsrPortConnIdIE
  }

UpdateBranchAcc::= CommonMsgInfo    -- EN 301 217-1, subclause 14.3.5.5

UpdateBranchRej::= SEQUENCE     -- EN 301 217-1, Table 47
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE
  }

DropBranch::= SEQUENCE  -- EN 301 217-1, Table 48
  {commonMsgInfo        CommonMsgInfo,
    connRefNo               ConnRefNoIE,
    branchIdList        BranchIdListIE
  }

DropBranchAcc::= SEQUENCE   -- EN 301 217-1, Table 49
  {commonMsgInfo        CommonMsgInfo,
    autoCongLvl         AutoCongLvlIE   OPTIONAL
  }

DropBranchRej::= SEQUENCE   -- EN 301 217-1, Table 50
  {commonMsgInfo        CommonMsgInfo,
    rejCause                RejCauseIE,
    autoCongLvl         AutoCongLvlIE   OPTIONAL
  }

BBCCMsg::= CHOICE   -- EN 301 217-1, Table 21
  {alloc                [1]     Alloc,
    allocAcc            [2]     AllocAcc,
    allocRej            [3]     AllocRej,
    allocComp           [4]     AllocComp,
    allocCompAcc        [5]     AllocCompAcc,
    allocCompRej        [6]     AllocCompRej,
    dealloc             [7]     Dealloc,
    deallocAcc          [8]     DeallocAcc,
    BBCCReset           [8]     BBCCReset,
    BBCCResetAcc        [9]     BBCCResetAcc,
    BBCCResetRej        [10]    BBCCResetRej,
    BBCCPresync         [11]    BBCCPresync,
    BBCCPresyncAcc      [12]    BBCCPresyncAcc,
    BBCCPresyncRej      [13]    BBCCPresyncRej,
    anFault             [14]    AnFault,
    anFaultAcc          [15]    AnFaultAcc,
    protErr             [16]    ProtocolError,
    modify              [18]    Modify,
    modifyAcc           [19]    ModifyAcc,
    modifyRej           [20]    ModifyRej,
    modifyComp          [21]    ModifyComp,
    modifyCompAcc       [22]    ModifyCompAcc,
    modifyCompRej       [23]    ModifyCompRej,
    modifyAbort         [24]    ModifyAbort,
    modifyAbortAcc      [25]    ModifyAbortAcc,
    modifyAbortRej      [26]    ModifyAbortRej,
    addBranch           [27]    AddBranch,
    addBranchAcc        [28]    AddBranchAcc,
    addBranchRej        [29]    AddBranchRej,
    updateBranch        [30]    UpdateBranch,
    updateBranchAcc     [31]    UpdateBranchAcc,
    updateBranchRej     [32]    UpdateBranchRej,
    dropBranch          [33]    DropBranch,
    dropBranchAcc       [34]    DropBranchAcc,
    dropBranchRej       [35]    DropBranchRej
  }


END
```

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- ETSI EN 301 217-4: "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); Abstract Test Suites (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT)".
- ETSI ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

History

Document history			
V1.1.1	July 2000	Public Enquiry	PE 20001103: 2000-07-05 to 2000-11-03