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European Standard (Telecommunications series)

Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN); Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7); Call control in a separated call and bearer control environment; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification

Reference

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Foreword

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

The present document is part 3 of a multi-part EN covering the Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN); Digital Subscriber Signalling System No. 2 (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7); Call control specification in a separated call and bearer control environment, as described below:

Part 1: "Protocol specification";

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

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

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

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

1 Scope

The present document is applicable to the Call Control protocol at the Q_B, S_B, T_B and co-incident S_B/T_B reference points within, between and at the access to Broadband Private Integrated Services Networks and within, between and at the access to public Broadband Integrated Services Digital Networks.

The present document provides the Test Suite Structure and Test Purposes (TSS&TP) for the Call Control protocol as specified in EN 302 092-1 [1].

A further part of the present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma based on the present document.

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 302 092-1 (V1.1): "Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN); Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No.7 (SS7); Call control specification in a separated call and bearer control environment; Part 1: Protocol specification".

[2]   ETSI EN 302 092-2 (V1.1): "Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN); Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No.7 (SS7); Call control specification in a separated call and bearer control environment; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3]   ISO/IEC 9646-1 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts".

[4]   ISO/IEC 9646-2 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 2: Abstract Test Suite specification".

[5]   ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

3   Definitions and abbreviations

3.1   Definitions

For the purposes of the present document, the following terms and definitions apply in addition to the definitions in EN 302 092-1[1]:

Abstract test case: refer to ISO/IEC 9646-1 [3].

Abstract Test Method (ATM): refer to ISO/IEC 9646-1 [3].

Abstract Test Suite (ATS): refer to ISO/IEC 9646-1 [3].

Implementation Under Test (IUT): refer to ISO/IEC 9646-1 [3].

Lower tester: refer to ISO/IEC 9646-1 [3].

Protocol Implementation Conformance Statement (PICS): refer to ISO/IEC 9646-1 [3].

PICS proforma: refer to ISO/IEC 9646-1 [3].

Protocol Implementation eXtra Information for Testing (PIXIT): refer to ISO/IEC 9646-1 [3].

PIXIT proforma: refer to ISO/IEC 9646-1 [3].

Test Purpose (TP): refer to ISO/IEC 9646-1 [3].

3.2   Abbreviations

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

APDU	Application Protocol Data Unit
ATM	Abstract Test Method
ATS	Abstract Test Suite
DSS2	Digital Subscriber Signalling System No. two
B-ISDN	Broadband Integrated Services Digital Network
B-PISN	Broadband Private Integrated Services Network
B-QSIG	Broadband Inter-Exchange Signalling System
CC	Call Control
CC0	Call Idle state
CC1	Call Initiated state
CC2	Outgoing Call Proceeding state
CC3	Call Ready state
CC4	Call Present state
CC5	Incoming Call Proceeding state
CC6	Await Call Completion state
CC7	Call Active state
CC8	Call Release Request state
CC9	Call Release Indication state
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TP	Test Purpose
TSS	Test Suite Structure

4   Test Suite Structure (TSS)

The test suite structure is a tree. Three test group levels are defined. The TSS is depicted in figure 1. The levels are the following:

1st level: the name representing the base specification (EN 302 092-1 [1]): DSS2_CC.

2nd level: the phases of the base specification:

- Call Establishment (CE);

- Call Status Change (SC);

- Call Clearing (CL).

3rd level: initiator or responder:

- Initiator (I);

- Responder (R).

4th level: the nature of the test:

- Valid (V);

- Invalid (IV);

- Inopportune (IO).

```
DSS2_CC ──────┬── CE (1) ──────┬── I (1) ──────┬── V (1)
              │                │               ├── IV (2)
              │                │               └── IO (3)
              │                │
              │                └── R (2) ──────┬── V (1)
              │                                ├── IV (2)
              │                                └── IO (3)
              │
              ├── SC (2) ──────┬── I (1) ──────┬── V (1)
              │                │               └── IV (2)
              │                │
              │                └── R (2) ──────┬── V (1)
              │                                └── IV (2)
              │
              └── CL (3) ──────┬── I (1) ──────┬── V (1)
                               │               ├── IV (2)
                               │               └── IO (3)
                               │
                               └── R (2) ──────┬── V (1)
                                               └── IV (2)
```
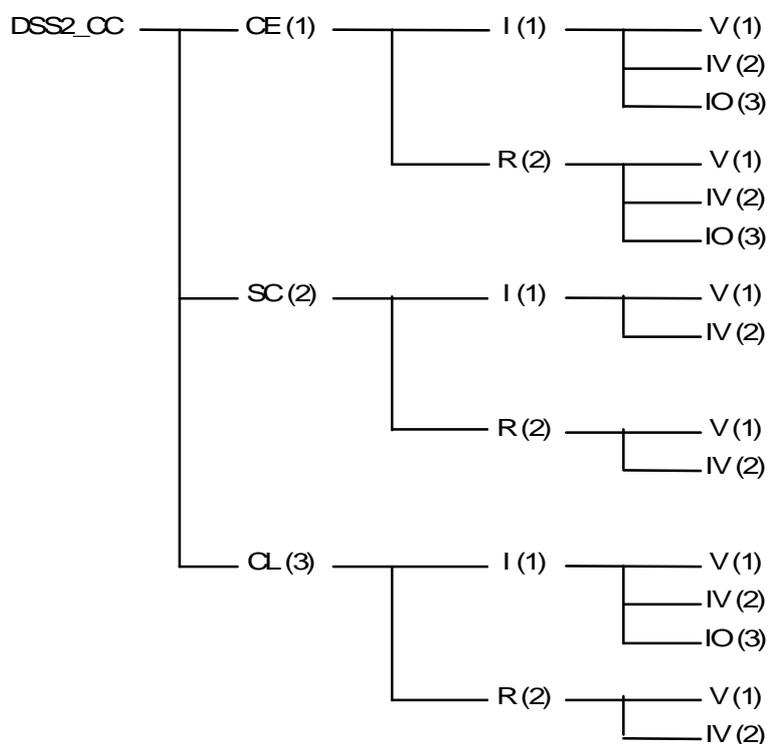
Figure 1: Test suite structure

5   Test Purposes (TP)

5.1   Introduction

For each test requirement a TP is defined.

5.1.1   TP naming convention

TPs are numbered, starting at 01, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite (see table 1).

Table 1: TP identifier naming convention scheme

Identifier:		**<suite_id>_<group>_<nn>**	
<suite_id>	=	layer + type of IUT:	"**L3CC**" for **L**ayer **3** **C**all **C**ontrol Protocol
<group>	=	group number (3 digits):	1st digit 1 Call establishment; 2 Call Status Change; 3 Call clearing
			2nd digit 1 Initiator; 2 Responder
			3rd digit 1 Valid; 2 Invalid; 3 Inopportune
<nn>	=	sequential number:	(01-99)

5.1.2   Source of TP definition

The TPs are based on EN 302 092-1 [1].

5.1.3   TP Structure

Each TP has been written in a manner which is consistent with all other TPs. The intention of this is to make the TPs more readable and checkable. A particular structure has been used and this is illustrated in table 2. This table should be read in conjunction with any TP, i.e. use a TP as an example to fully understand the table.

Table 2: Structure of a single TP

TP part	Text	Example
Header	<Identifier> *tab* <paragraph number in base EN> *tab*	see table 1 subclause 0.0.0
Stimulus	Ensure that the IUT in the <call control state> <trigger> *see below for message structure* *or* <goal>	CC1, CC2, etc. receiving a XXXX message to request a ...
Reaction	<action> <conditions> *if the action is sending* *see below for message structure* <next action>, *etc.*	sends, saves, does, etc. using ???, ...
APDU structure	<APDU type> APDU containing a <field name> encoded as *or* including <coding of field a>, <coding of field b>	callEstablish invoke, callRelease returnResult…. callSegmentId, callDescription…
NOTE:	Text in italics will not appear in TPs and text between <> is filled in for each TP and may differ from one TP to the next.	

5.1.4   Test strategy

As the base standard EN 302 092-1 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification EN 302 092-2 [2]. The criteria applied include the following:

- only the requirements from the point of view of the Q_B, S_B, T_B and co-incident S_B/T_B reference points are considered;

- whether or not a test case can be built from the TP is not considered.

The TPs are only based on conformance requirements related to the externally observable behaviour of the IUT, and are limited to conceivable situations to which a real implementation is likely to be faced (ETS 300 406 [5]).

5.1.5   Test of call states

It is not possible to test the final call states because no procedures are defined for this.

5.2   TPs for the call control (CC) entity

All PICS items referred to in this subclause are as specified in EN 302 092-2 [2] unless indicated otherwise by another numbered reference.

Unless specified:

- the APDUs indicated are valid and contain at least the mandatory fields and possibly optional ones;

- the fields indicated are valid and contain at least the mandatory contents and possibly optional ones.

5.2.1   Call Establishment

5.2.1.1   Preceding CC entity

5.2.1.1.1   Valid

CC_111_01   subclause 9.1.1

Ensure that the IUT in state CC0, is able to send a callEstablish invoke APDU towards the succeeding CC entity containing the parameter callSegmentId with the succeedingSideCallSegId set to the Null value and the bearerEstablishmentAddress containing the number of the terminal or network node connected to the preceding CC entity.

   Selection: Support signalling procedures for call establishment request when acting as a preceding CC entity, PICS: MC1.

CC_111_02   subclause 9.4.1

Ensure that the IUT in state CC3, is able to send a callComplete invoke APDU.

   Selection: Support signalling procedures for call acceptance when acting as a preceding CC entity. PICS: MC9.

5.2.1.1.2   Invalid

CC_112_01   subclause 9.8.5.3

Ensure that the IUT in state CC7, on receipt of a reject APDU that is correlated to a callComplete invoke APDU, sends a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value temporaryFailure.

   Selection: Support exceptional procedures on receipt of reject APDUs. PICS: SC9.

CC_112_02   **subclause 9.8.6**

Ensure that the IUT in state CC2, on receipt of a callEstablish return result APDU with an unrecognized parameter and parameterActionIndicator set to clearCallAndItsInformationModel, sends a callRelease invoke APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_03   **subclause 9.8.6**

Ensure that the IUT in state CC2, on receipt of a callEstablish return result APDU with an unrecognized parameter and parameterActionIndicator set to discardApduAndReject, sends a reject APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_04   **subclause 9.8.6**

Ensure that the IUT in state CC2, on receipt of a callEstablish return result APDU with an unrecognized parameter and parameterActionIndicator set to discardApduNoReject, does not send a reject APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_05   **subclause 9.8.6**

Ensure that the IUT in state CC2, on receipt of a callEstablish return result APDU with an unrecognized parameter and parameterActionIndicator set to discardParameterAndPassApduToApplication, does not respond.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_06   **subclause 9.8.6**

Ensure that the IUT in state CC2, on receipt of a callEstablish return result APDU with an unrecognized parameter and parameterActionIndicator set to ignoreParameterAndPassApduToApplication, does not respond.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_07   **subclause 9.8.6**

Ensure that the IUT in state CC1, on receipt of a callProceeding invoke APDU with an unrecognized parameter and parameterActionIndicator set to clearCallAndItsInformationModel, sends a callRelease invoke APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_08   **subclause 9.8.6**

Ensure that the IUT in state CC1, on receipt of a callProceeding invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduAndReject, sends a reject APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_09   **subclause 9.8.6**

Ensure that the IUT in state CC1, on receipt of a callProceeding invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduNoReject, does not send a reject APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_10   **subclause 9.8.6**

Ensure that the IUT in state CC1, on receipt of a callProceeding invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardParameterAndPassApduToApplication, **does not respond.**

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_11 **subclause 9.8.6**

Ensure that the IUT in state CC1, on receipt of a callProceeding invoke APDU with an unrecognized parameter and parameterActionIndicator set to ignoreParameterAndPassApduToApplication, does not respond.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_12 **subclause 9.8.6**

Ensure that the IUT in state CC7, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to clearCallAndItsInformationModel, sends a callRelease invoke APDU.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_13 **subclause 9.8.6**

Ensure that the IUT in state CC7, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduAndReject, sends a reject APDU.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_14 **subclause 9.8.6**

Ensure that the IUT in state CC7, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduNoReject, does not send a reject APDU.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_15 **subclause 9.8.6**

Ensure that the IUT in state CC7, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardParameterAndPassApduToApplication, does not respond.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_112_16 **subclause 9.8.6**

Ensure that the IUT in state CC7, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to ignoreParameterAndPassApduToApplication, does not respond.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

5.2.1.1.3 Inopportune

CC_113_01 **subclause 9.8.4**

Ensure that the IUT in CC1 on receipt of a callProceeding invoke APDU after a callEstablish return result APDU containing the same CallSegmentId, ignores this callProceeding invoke APDU.

Selection: Support exceptional procedures on receipt of APDUs out of sequence when acting as a preceding CC entity. PICS: SC8.

CC_113_02 **subclause 9.8.1.1**

Ensure that the IUT in state CC2, on expiry of timer T710, sends a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value recoveryOnTimerExpiry.

Selection: Support exceptional procedures on timer expiry when acting as a preceding CC entity. PICS: SC3.

5.2.1.2   Succeeding CC entity

5.2.1.2.1   Valid

CC_121_01   **subclause 9.2.2**

Ensure that the IUT in CC4, is able to send callProceeding invoke APDU containing a precedingSideCallSegId including the value received in the callEstablish invoke APDU.

> **Selection:** Support signalling procedures for call proceeding when acting as a succeeding CC entity, PICS: MC6.

CC_121_02   **subclause 9.3.2**

Ensure that the IUT in CC4, and the stored value of "Await complete indicator" is TRUE is able to send callEstablish return result APDU.

> **Selection:** Support signalling procedures for completion of call establishment when acting as a succeeding CC entity, PICS: MC10.

CC_121_03   **subclause 9.3.2**

Ensure that the IUT in CC5, and the stored value of "Await complete indicator" is TRUE is able to send callEstablish return result APDU.

> **Selection:** Support signalling procedures for completion of call establishment when acting as a succeeding CC entity, PICS: MC10.

CC_121_04   **subclause 9.3.2**

Ensure that the IUT in CC4, and the stored value of "Await complete indicator" is FALSE is able to send callEstablish return result APDU.

> **Selection:** Support signalling procedures for call acceptance when acting as a succeeding CC entity, PICS: MC8.

CC_121_05   **subclause 9.3.2**

Ensure that the IUT in CC5, and the stored value of "Await complete indicator" is FALSE is able to send callEstablish return result APDU.

> **Selection:** Support signalling procedures for call acceptance when acting as a succeeding CC entity, PICS: MC8.

CC_121_06   **subclause 9.6.2**

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because the received call description was not accepted by the CC signalling service user, is able to send callEstablish return error APDU containing callDescriptionNotAccepted error value, optionally containing an alternative call description.

> **Selection 1:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

> **Selection 2:** Support inclusion of an alternative callDescription in callEstablish return error, PICS: P2.

CC_121_07   **subclause 9.6.2**

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because the received call description was not accepted by the CC signalling service user, is able to send callEstablish return error APDU containing callDescriptionNotAccepted error value, optionally containing an alternative call description.

> **Selection 1:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

> **Selection 2:** Support inclusion of an alternative callDescription in callEstablish return error, PICS: P2.

CC_121_08 **subclause 9.6.2**

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because the called user is busy, is able to send callEstablish return error APDU containing userBusy error value, optionally containing an alternative call description.

> **Selection 1:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

> **Selection 2:** Support inclusion of an alternative callDescription in callEstablish return error, PICS: P2.

CC_121_9 **subclause 9.6.2**

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because the called user is busy, is able to send callEstablish return error APDU containing userBusy error value, optionally containing an alternative call description.

> **Selection 1:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

> **Selection 2:** Support inclusion of an alternative callDescription in callEstablish return error, PICS: P2.

CC_121_10 **subclause 9.6.2**

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because the received call description containing an unallocated number, is able to send callEstablish return error APDU containing unallocatedNumber error value.

> **Selection:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_11 **subclause 9.6.2**

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because the received call description containing an unallocated number, is able to send callEstablish return error APDU containing unallocatedNumber error value.

> **Selection:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_12 **subclause 9.6.2**

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because the called user did not respond, is able to send callEstablish return error APDU containing noUserResponding error value.

> **Selection:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_13 **subclause 9.6.2**

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because the called user did not respond, is able to send callEstablish return error APDU containing noUserResponding error value.

> **Selection:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_14 **subclause 9.6.2**

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call no answer from the called user, is able to send callEstablish return error APDU containing noAnswerFromUser error value.

> **Selection:** Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_15 subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call no answer from the called user, is able to send callEstablish return error APDU containing noAnswerFromUser error value.

    Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_16 subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because the called user rejected the call, is able to send callEstablish return error APDU containing callRejected error value.

    Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_17 subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because the called user rejected the call, is able to send callEstablish return error APDU containing callRejected error value.

    Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_18 subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because the called user's equipment is out of order, is able to send callEstablish return error APDU containing destinationOutOfOrder error value.

    Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_19 subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because the called user's equipment is out of order, is able to send callEstablish return error APDU containing destinationOutOfOrder error value.

    Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_20 subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because an address contained in the received call description was incomplete, is able to send callEstablish return error APDU containing addressIncomplete error value.

    Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_21 subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because an address contained in the received call description was incomplete, is able to send callEstablish return error APDU containing addressIncomplete error value.

    Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_22   subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because an equipment in the network is out of order, is able to send callEstablish return error APDU containing networkOutOfOrder error value.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_23   subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because an equipment in the network is out of order, is able to send callEstablish return error APDU containing networkOutOfOrder error value.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_24   subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because a temporary failure has occurred, is able to send callEstablish return error APDU containing temporaryFailure error value.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_25   subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because a temporary failure has occurred, is able to send callEstablish return error APDU containing temporaryFailure error value.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_26   subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call because the called user is not reachable, is able to send callEstablish return error APDU containing userNotReachable error value.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_27   subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call because the called user is not reachable, is able to send callEstablish return error APDU containing userNotReachable error value.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_28   subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call and the Error is first generated in a user's terminal, is able to send callEstablish return error APDU containing the Location parameter value coded as 'user'.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_29   subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call and the Error is first generated in a user's terminal, is able to send callEstablish return error APDU containing the Location parameter value coded as 'user'.

Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_30   subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call and the Error is first generated in a network node, is able to send callEstablish return error APDU containing the Location parameter value coded as 'networkLocalCallSegment'.

   Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_31   subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call and the Error is first generated in a network node, is able to send callEstablish return error APDU containing the Location parameter value coded as 'networkLocalCallSegment'.

   Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_32   subclause 9.6.2

Ensure that the IUT in CC4 in order to report a negative result for the establishment of the call and the Error is passed on by a CC entity to another call segment, is able to send callEstablish return error APDU containing the Location parameter value coded as 'networkNonLocalCallSegment'.

   Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

CC_121_33   subclause 9.6.2

Ensure that the IUT in CC5 in order to report a negative result for the establishment of the call and the Error is passed on by a CC entity to another call segment, is able to send callEstablish return error APDU containing the Location parameter value coded as 'networkNonLocalCallSegment'.

   Selection: Support signalling procedures for call establishment failure when acting as a succeeding CC entity, PICS: SC2.

5.2.1.2.2   Invalid

CC_122_01   subclause 9.8.2

Ensure that the IUT in CC6 on receipt of a callComplete invoke APDU containing unknown CallSegmentId, ignores this APDU.

   Selection: Support exceptional procedures on receipt of APDUs with unknown Call Segment Id when acting as a succeeding CC entity, PICS: SC6.

CC_122_02   subclause 9.8.3

Ensure that the IUT in CC4 on receipt of a callEstablish invoke APDU containing a CallSegmentId which is already in use, ignores this APDU.

   Selection: Support exceptional procedures on receipt of APDUs with duplicated Call Segment Id when acting as a succeeding CC entity, PICS: SC7.

CC_122_03   subclause 9.8.3

Ensure that the IUT in CC5 on receipt of a callEstablish invoke APDU containing a CallSegmentId which is already in use, ignores this APDU.

   Selection: Support exceptional procedures on receipt of APDUs with duplicated Call Segment Id when acting as a succeeding CC entity, PICS: SC7.

CC_122_04   subclause 9.8.3

Ensure that the IUT in CC6 on receipt of a callEstablish invoke APDU containing a CallSegmentId which is already in use, ignores this APDU.

> **Selection:** Support exceptional procedures on receipt of APDUs with duplicated Call Segment Id when acting as a succeeding CC entity, PICS: SC7.

CC_122_05   subclause 9.8.3

Ensure that the IUT in CC7 on receipt of a callEstablish invoke APDU containing a CallSegmentId which is already in use, ignores this APDU.

> **Selection:** Support exceptional procedures on receipt of APDUs with duplicated Call Segment Id when acting as a succeeding CC entity, PICS: SC7.

CC_122_06   subclause 9.8.5.7

Ensure that the IUT in CC0 on receipt of a reject APDU that is correlated to a callEstablish return error APDU, takes no action.

> **Selection:** Support exceptional procedures on receipt of reject APDUs, PICS: SC9.

CC_122_07   subclause 9.8.6

Ensure that the IUT in state CC0, on receipt of a callEstablish invoke APDU with an unrecognized parameter and parameterActionIndicator set to clearCallAndItsInformationModel, sends a callRelease invoke APDU.

> **Selection:** Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_08   subclause 9.8.6

Ensure that the IUT in state CC0, on receipt of a callEstablish invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduAndReject, sends a reject APDU.

> **Selection:** Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_09   subclause 9.8.6

Ensure that the IUT in state CC0, on receipt of a callEstablish invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduNoReject, does not send a reject APDU.

> **Selection:** Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_10   subclause 9.8.6

Ensure that the IUT in state CC0, on receipt of a callEstablish invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardParameterAndPassApduToApplication, does not respond.

> **Selection:** Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_11   subclause 9.8.6

Ensure that the IUT in state CC0, on receipt of a callEstablish invoke APDU with an unrecognized parameter and parameterActionIndicator set to ignoreParameterAndPassApduToApplication, does not respond.

> **Selection:** Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_12   subclause 9.8.6

Ensure that the IUT in state CC6, on receipt of a callComplete invoke APDU with an unrecognized parameter and parameterActionIndicator set to clearCallAndItsInformationModel, sends a callRelease invoke APDU.

> **Selection:** Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_13   **subclause 9.8.6**

Ensure that the IUT in state CC6, on receipt of a callComplete invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduAndReject, sends a reject APDU.

    Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_14   **subclause 9.8.6**

Ensure that the IUT in state CC6, on receipt of a callComplete invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduNoReject, does not send a reject APDU.

    Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_15   **subclause 9.8.6**

Ensure that the IUT in state CC6, on receipt of a callComplete invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardParameterAndPassApduToApplication, does not respond.

    Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

CC_122_16   **subclause 9.8.6**

Ensure that the IUT in state CC6, on receipt of a callComplete invoke APDU with an unrecognized parameter and parameterActionIndicator set to ignoreParameterAndPassApduToApplication, does not respond.

    Selection: Support procedures for the handling of unrecognized parameters within CC-Operations. PICS: SC10.

5.2.2   Call Status Change

5.2.2.1   Initiating CC entity

    Selection: Support signalling procedures for call status change report when acting as an initiating CC entity, PICS: MC11.

5.2.2.1.1   Valid

CC_211_01   **subclause 9.5.1**

Ensure that the IUT in state CC6, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedNetworkRelevantPart with operation set to "deleteObject", with an objectReference but not containing the modifiedArgument.

    Selection: Support three message sequence for call establishment PICS: MC4. An object specified in the original Call description is deleted.

CC_211_02   **subclause 9.5.1**

Ensure that the IUT in state CC6, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedNetworkRelevantPart with operation set to "modifyAttributes".

    Selection: Support three message sequence for call establishment PICS: MC4. An object specified in the original Call description is modified.

CC_211_03   **subclause 9.5.1**

Ensure that the IUT in state CC7, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedNetworkRelevantPart with operation set to "deleteObject", with an objectReference but not containing the modifiedArgument.

    Selection: Support signalling procedures for call acceptance when acting as a preceding CC entity. PICS: MC11. An object specified in the original Call description is deleted.

CC_211_04   **subclause 9.5.1**

Ensure that the IUT in state CC7, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedNetworkRelevantPart with operation set to "modifyAttributes".

Selection: Support signalling procedures for call acceptance when acting as a preceding CC entity. PICS: MC11. An object specified in the original Call description is deleted.

CC_211_05   **subclause 9.5.1**

Ensure that the IUT in state CC6, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedEndToEndRelevantPart with operation set to "deleteObject", with an objectReference but not containing the modifiedArgument.

Selection: Support three message sequence for call establishment PICS: MC4. Support inclusion of modified end-to-end relevant part within callChangedParameter. PICS: P4. An object specified in the original Call description is deleted.

CC_211_06   **subclause 9.5.1**

Ensure that the IUT in state CC6, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedEndToEndRelevantPart with operation set to "modifyAttributes".

Selection: Support three message sequence for call establishment PICS: MC4. Support inclusion of modified end-to-end relevant part within callChangedParameter. PICS: P4. An object specified in the original Call description is deleted.

CC_211_07   **subclause 9.5.1**

Ensure that the IUT in state CC7, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedEndToEndRelevantPart with operation set to "deleteObject", with an objectReference but not containing the modifiedArgument.

Selection: Support inclusion of modified end-to-end relevant part within callChangedParameter. PICS: P4. An object specified in the original Call description is deleted.

CC_211_08   **subclause 9.5.1**

Ensure that the IUT in state CC7, is able to send a callStatus invoke APDU with the element callChangedParameter containing the modifiedEndToEndRelevantPart with operation set to "modifyAttributes".

Selection: Support inclusion of modified end-to-end relevant part within callChangedParameter. PICS: P4. An object specified in the original Call description is deleted.

5.2.2.2   Receiving CC entity

Selection: Support signalling procedures for call status change report when acting as a receiving CC entity, PICS: MC12.

5.2.2.2.1   Invalid

CC_222_01   **subclause 9.8.6**

Ensure that the IUT in state CC3, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to clearCallAndItsInformationModel, sends a callRelease invoke APDU.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

CC_222_02   **subclause 9.8.6**

Ensure that the IUT in state CC3, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduAndReject, sends a reject APDU.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

**CC_222_03	subclause 9.8.6**

Ensure that the IUT in state CC3, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduNoReject, does not send a reject APDU.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

**CC_222_04	subclause 9.8.6**

Ensure that the IUT in state CC3, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardParameterAndPassApduToApplication, does not respond.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

**CC_222_05	subclause 9.8.6**

Ensure that the IUT in state CC3, on receipt of a callStatus invoke APDU with an unrecognized parameter and parameterActionIndicator set to ignoreParameterAndPassApduToApplication, does not respond.

Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

## 5.2.3	Call Clearing

Selection: Support signalling procedures for call clearing, PICS: MC13.

### 5.2.3.1	CC entity that initiates call clearing

#### 5.2.3.1.1	Valid

**CC_311_01	subclause 9.7.1**

Ensure that the IUT in state CC2, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "normalCallClearing".

Selection: The IUT is able to send a cause value of "normalCallClearing".

**CC_311_02	subclause 9.7.1**

Ensure that the IUT in state CC3, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "normalCallClearing".

Selection: The IUT is able to send a cause value of "normalCallClearing".

**CC_311_03	subclause 9.7.1**

Ensure that the IUT in state CC4, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "normalCallClearing".

Selection: The IUT is able to send a cause value of "normalCallClearing".

**CC_311_04	subclause 9.7.1**

Ensure that the IUT in state CC5, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "normalCallClearing".

Selection: The IUT is able to send a cause value of "normalCallClearing".

**CC_311_05	subclause 9.7.1**

Ensure that the IUT in state CC6, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "normalCallClearing".

Selection: The IUT is able to send a cause value of "normalCallClearing".

CC_311_06   **subclause 9.7.1**

Ensure that the IUT in state CC7, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "normalCallClearing".

   Selection: The IUT is able to send a cause value of "normalCallClearing".

CC_311_07   **subclause 9.7.1**

Ensure that the IUT in state CC3, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "callDescriptionNotAccepted".

   Selection: The IUT is able to send a cause value of "callDescriptionNotAccepted".

CC_311_08   **subclause 9.7.1**

Ensure that the IUT in state CC4, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "callDescriptionNotAccepted".

   Selection: The IUT is able to send a cause value of "callDescriptionNotAccepted".

CC_311_09   **subclause 9.7.1**

Ensure that the IUT in state CC5, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "callDescriptionNotAccepted".

   Selection: The IUT is able to send a cause value of "callDescriptionNotAccepted".

CC_311_10   **subclause 9.7.1**

Ensure that the IUT in state CC2, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "temporaryFailure".

   Selection: The IUT is able to send a cause value of "temporaryFailure".

CC_311_11   **subclause 9.7.1**

Ensure that the IUT in state CC3, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "temporaryFailure".

   Selection: The IUT is able to send a cause value of "temporaryFailure".

CC_311_12   **subclause 9.7.1**

Ensure that the IUT in state CC4, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "temporaryFailure".

   Selection: The IUT is able to send a cause value of "temporaryFailure".

CC_311_13   **subclause 9.7.1**

Ensure that the IUT in state CC5, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "temporaryFailure".

   Selection: The IUT is able to send a cause value of "temporaryFailure".

CC_311_14   **subclause 9.7.1**

Ensure that the IUT in state CC6, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "temporaryFailure".

   Selection: The IUT is able to send a cause value of "temporaryFailure".

CC_311_15 **subclause 9.7.1**

Ensure that the IUT in state CC7, is able to send a callRelease invoke APDU with the releaseCause containing the parameter causeValue with the value "temporaryFailure".

Selection: The IUT is able to send a cause value of "temporaryFailure".

5.2.3.1.2 Invalid

CC_312_01 **subclause 9.8.3**

Ensure that the IUT in CC8 on receipt of a callEstablish invoke APDU containing a CallSegmentId which is already in use, ignores this APDU.

Selection: Support exceptional procedures on receipt of APDUs with duplicated Call Segment Id when acting as a succeeding CC entity, PICS: SC7.

5.2.3.2 CC entity that responds to call clearing

5.2.3.2.1 Valid

Selection: Support signalling procedures for call clearing, PICS: MC13.

CC_321_01 **subclause 9.7.2**

Ensure that the IUT in CC2 on receipt of a callRelease invoke APDU, is able to send a callRelease return result APDU.

CC_321_02 **subclause 9.7.2**

Ensure that the IUT in CC3 on receipt of a callRelease invoke APDU, is able to send a callRelease return result APDU.

CC_321_03 **subclause 9.7.2**

Ensure that the IUT in CC4 on receipt of a callRelease invoke APDU, is able to send a callRelease return result APDU.

CC_321_04 **subclause 9.7.2**

Ensure that the IUT in CC5 on receipt of a callRelease invoke APDU, is able to send a callRelease return result APDU.

CC_321_05 **subclause 9.7.2**

Ensure that the IUT in CC6 on receipt of a callRelease invoke APDU, is able to send a callRelease return result APDU.

CC_321_06 **subclause 9.7.2**

Ensure that the IUT in CC7 on receipt of a callRelease invoke APDU, is able to send a callRelease return result APDU.

5.2.3.2.2 Invalid

CC_322_01 **subclause 9.8.2**

Ensure that the IUT in CC7 on receipt of a callRelease invoke APDU containing unknown CallSegmentId, ignores this APDU.

Selection: Support exceptional procedures on receipt of APDUs with unknown Call Segment Id when acting as a succeeding CC entity, PICS: SC6.

CC_322_02 **subclause 9.8.3**

Ensure that the IUT in CC9 on receipt of a callEstablish invoke APDU containing a CallSegmentId which is already in use, ignores this APDU.

Selection: Support exceptional procedures on receipt of APDUs with duplicated Call Segment Id when acting as a succeeding CC entity, PICS: SC7.

CC_322_03   subclause 9.8.5.8

Ensure that the IUT in CC0 on receipt of a reject APDU that is correlated to a callRelease return result APDU, takes no action.

   Selection: Support exceptional procedures on receipt of reject APDUs, PICS: SC9.

CC_322_04   subclause 9.8.6

Ensure that the IUT in state CC7, on receipt of a callRelease invoke APDU with an unrecognized parameter and parameterActionIndicator set to clearCallAndItsInformationModel, sends a callRelease invoke APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

CC_322_05   subclause 9.8.61

Ensure that the IUT in state CC7, on receipt of a callRelease invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduAndReject, sends a reject APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

CC_322_06   subclause 9.8.6

Ensure that the IUT in state CC7, on receipt of a callRelease invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardApduNoReject, does not send a reject APDU.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

CC_322_07   subclause 9.8.6

Ensure that the IUT in state CC7, on receipt of a callRelease invoke APDU with an unrecognized parameter and parameterActionIndicator set to discardParameterAndPassApduToApplication, does not respond.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

CC_322_08   subclause 9.8.6

Ensure that the IUT in state CC7, on receipt of a callRelease invoke APDU with an unrecognized parameter and parameterActionIndicator set to ignoreParameterAndPassApduToApplication, does not respond.

   Selection: Support procedures for the handling of unrecognized parameters within CC-Operations, PICS: SC10.

6   Compliance

An ATS which complies with this TSS&TP specification shall:

   a)   consist of a set of test cases corresponding to the set or to a subset of the TPs specified in clause 5;

   b)   use a TSS which is an appropriate subset of the whole of the TSS specified in clause 4;

   c)   use the same naming conventions for the test groups and test cases;

   d)   maintain the relationship specified in clause 5 between the test groups and TPs and the entries in the PICS proforma to be used for test case deselection;

   e)   comply with ISO/IEC 9646-2 [4].

In the case of a) or b) above, a subset shall be used only where a particular Abstract Test Method (ATM) makes some TPs untestable. All testable TPs from clause 6 shall be included in a compliant ATS.

7   Requirements for a comprehensive testing service

As a minimum the Remote test method, as specified in ISO/IEC 9646-2 [4], shall be used by any organization claiming to provide a comprehensive testing service for network equipment claiming conformance to EN 302 092-1 [1].

Bibliography

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

- ISO/IEC 9646-3 (1998): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".

- ITU-T Recommendation I.413 (1993): "B-ISDN user-network interface".

- ETSI ETS 300 796-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. 2 (DSS2) protocol; Generic functional protocol; Core aspects; Part 1: Protocol specification [ITU-T Recommendation Q.2932.1 (1996), modified]".

- ETSI ETS 300 239: "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Generic functional protocol for the support of supplementary services [ISO/IEC 11582 (1995), modified]".

History

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V1.1.1	July 1999	Public Enquiry	PE 9949: 1999-07-07 to 1999-11-05
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