

**Integrated Services Digital Network (ISDN);
Digital Subscriber Signalling System No. one (DSS1) protocol;
Completion of Calls on No Reply (CCNR)
supplementary service;
Part 6: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)
proforma specification for the network**



Reference

REN/SPAN-130269-6

Keywords

ATS, CCNR, DSS1, ISDN, network, PIXIT,
supplementary service

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Contents

Intellectual Property Rights	5
Foreword.....	5
1 Scope	6
2 References	6
3 Definitions and abbreviations.....	7
3.1 Definitions	7
3.2 Abbreviations	7
4 Abstract Test Method (ATM).....	7
4.1 Description of ATM used	7
4.2 Served user test cases	8
4.3 Remote user test cases	8
5 Untestable test purposes	8
6 ATS conventions	8
6.1 Version of TTCN used	8
6.2 Use of ASN.1	9
6.2.1 Situations where ASN.1 is used.....	9
6.2.2 Specification of encoding rules.....	9
6.3 Conventions for variables and parameters.....	10
7 ATS to TP map.....	10
8 PCTR conformance	10
9 PIXIT conformance	10
10 ATS conformance	11
Annex A (normative): Protocol Conformance Test Report (PCTR) proforma.....	12
A.1 Identification summary.....	12
A.1.1 Protocol conformance test report.....	12
A.1.2 IUT identification	12
A.1.3 Testing environment.....	13
A.1.4 Limits and reservations	13
A.1.5 Comments.....	13
A.2 IUT Conformance status	13
A.3 Static conformance summary	13
A.4 Dynamic conformance summary.....	14
A.5 Static conformance review report.....	14
A.6 Test campaign report.....	15
A.7 Observations.....	16
Annex B (normative): Partial PIXIT proforma	17
B.1 Identification summary.....	17
B.2 Abstract test suite summary	17
B.3 Test laboratory.....	17
B.4 Client (of the test laboratory)	18
B.5 System Under Test (SUT)	18

B.6	Protocol information.....	19
B.6.1	Protocol identification	19
B.6.2	IUT information	19
B.6.2.1	Parameter values.....	19
B.6.2.2	Configuration of IUT.....	19
B.6.2.3	Timer values	20
B.7	Basic call PIXIT items	21
B.7.1	Parameter values - information element codings.....	21
Annex C (normative):	Abstract Test Suite (ATS)	22
C.1	The TTCN Graphical form (TTCN.GR)	22
C.2	The TTCN Machine Processable form (TTCN.MP).....	22
Annex D (informative):	Changes with respect to the previous EN 301 065-6 V1.2.4	23
Annex E (informative):	Bibliography	32
History		33

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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 ETSI standards One-step Approval Procedure.

The present document is part 6 of a multi-part deliverable covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Completion of Calls on No Reply (CCNR) supplementary service, as identified below:

- Part 1: "Protocol specification";
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";
- Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";
- Part 5: "Test Suite Structure and Test Purposes (TSS&TP) for the network";
- Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".**

Proposed national transposition dates	
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Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the Network side of the T reference point or coincident S and T reference point of implementations conforming to the stage three standard for the Completion of Calls on No Reply (CCNR) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 301 065-1 [2].

EN 301 065-5 [4] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the User side of the T reference point or coincident S and T reference point of implementations conforming to EN 301 065-1 [2].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] ETSI EN 300 196-1 (V1.2.2): "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [2] ETSI EN 301 065-1 (V1.2.2): "Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [3] ETSI EN 301 065-2 (V1.2.2): "Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [4] ETSI EN 301 065-5 (V1.1.3): "Integrated Services Digital network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Completion of Calls on No Reply (CCNR) supplementary service; Part 5: TSS & TP for the network".
- [5] ISO/IEC 8825-1: "Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)" (See also ITU-T Recommendation X.690 (1994)).
- [6] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General Concept".
- [7] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
- [8] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [9] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".
- [10] ISO/IEC 9646-5: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework- Part 5: Requirements on test laboratories and clients for the conformance assessment process".

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

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ISO/IEC 9646 [6] to [10] apply.

3.2 Abbreviations

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

ATM	Abstract Test Method
ATS	Abstract Test Suite
BER	Basic Encoding Rules
CCNR	Completion of Calls on No Reply
CM	Co-ordination Message
ETS	Executable Test Suite
IUT	Implementation Under Test
MOT	Means Of Testing
MTC	Main Test Component
PCO	Point of Control and Observation
PCTR	Protocol Conformance Test Report
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PTC	Parallel Test Component
SUT	System Under Test
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation

4 Abstract Test Method (ATM)

4.1 Description of ATM used

The requirement for testing the network IUT is to focus on the behaviour of the network IUT at the user-network interface where a T reference point or coincident S and T reference point applies. Thus the IUT is the network DSS1 protocol entity at a particular user-network interface and is not the whole network.

In practice the behaviour at a single user-network interface does not occur in isolation, but depends on the activity at other user-network interfaces. Therefore a multi-party test method is used.

The general configuration used is shown in figure 1. In this ATS the PTC acts as slaves to the MTC; all active behaviour at the PTC is initiated by CMs sent by the MTC and all verdicts are assigned by the MTC (using information sent in CMs by the PTC where appropriate). Not all components are used in every test case and the relationship between the IUT and the tester depends on the test group.

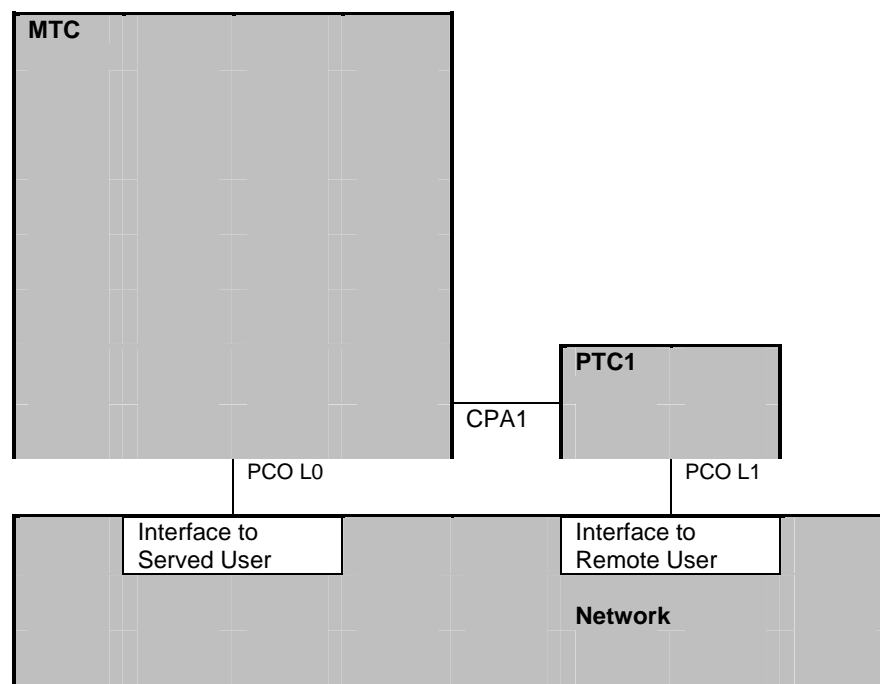


Figure 1: Multi-party test method

4.2 Served user test cases

For these test cases the IUT is connected to the MTC. Depending on the test case zero to one PTC is used. The verdict depends only on the behaviour observed at the PCO between the IUT and the MTC. The PTC is used only to provoke the IUT to send messages to the MTC or to handle behaviour at the remote user interface as a result of activity at the IUT interface.

In general the correlation of messages between the served and remote user interfaces (which is part of the functionality of the supplementary service rather than the protocol) is not tested. If a message is expected at the MTC as a result of an action at a remote user and is not received this usually leads to an inconclusive verdict.

4.3 Remote user test cases

For these test cases the IUT is the protocol entity connected either PTC1. The verdict is assigned by the MTC on the basis of behaviour reported in a CM by the PTC connected to the IUT and the behaviour of the served user attached to the MTC. A consequence of this is that incorrect behaviour by the served user can lead to a Fail verdict.

5 Untestable test purposes

There are no untestable test cases associated with this ATS.

6 ATS conventions

6.1 Version of TTCN used

The version of TTCN used is that defined in TR 101 101 [11].

6.2 Use of ASN.1

6.2.1 Situations where ASN.1 is used

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

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

6.2.2 Specification of encoding rules

There is a variation in the encoding rules applied to ASN.1 types and constraints specified in this ATS and therefore a mechanism is needed to differentiate the encoding rules. However the mechanism specified in ISO/IEC 9646-3/AM2 [8] and in TR 101 101 [11] does not facilitate definition of the encoding rules as needed for this ATS. A solution is therefore used which is broadly in the spirit of ISO/IEC 9646-3/AM2 [8] in which comment fields have been used as a means of encoding rules.

For ASN.1 used in this ATS, two variations of encoding rules are used. One is the commonly known Basic Encoding Rules (BER) as specified in ISO/IEC 8825-1 [5]. In the second case the encoding is according to ISDN, i.e. the ASN.1 data types are a representation of structures contained within the ISDN specification (basic call, Generic functional protocol or individual supplementary service). For example, if octets of an information element are specified in ASN.1 as a SEQUENCE then this should be encoded in an Executable Test Suite (ETS) as any other ISDN information element specified using tabular TTCN. This ISDN encoding variation is the default encoding rule for this ATS. This means that all ASN.1 constraint tables are encoded using ISDN (non-BER) encoding unless stated otherwise. BER encoding should never be applied to an ASN.1 constraint where BER encoding has not been specified. This encoding rule is sometimes named "Direct Encoding".

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

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

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

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

ASN.1 Type Constraint Declaration			
Constraint Name	: Beg3PTYinv		
ASN.1 Type	: Component		
Derivation Path	:		
Comments	: ASN1_Encoding: BER Receive component: Begin3PTY invoke component		
Description			
begin3PTY_Components			
begin3PTY_InvokeComp			
{ invokeID ? ,			
operation_value localValue 4 }			
Detailed comments :			

6.3 Conventions for variables and parameters

MTCA

call reference	CREF1	 (to PTC1)
B channel (basic)	bch_num1	
channel nr (primary)	CH_NUM1	
call reference	CREF2	 (to PTC1)
B channel (basic)	bch_num2	
channel nr (primary)	CH_NUM2	
PCO L0	IPN0, LIPN0	

PTC1

call reference	P1CREF
B channel (basic)	P1_bch_num
channel nr (primary)	P1_CH_NUM
PCO L1	IPN1, LIPN1

7 ATS to TP map

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

8 PCTR conformance

A test laboratory, when requested by a client to produce a PCTR, is required, as specified in ISO/IEC 9646-5 [10], to produce a PCTR conformant with the PCTR template given in annex B of ISO/IEC 9646-5 [10].

Furthermore, a test laboratory, offering testing for the ATS specification contained in annex C, when requested by a client to produce a PCTR, is required to produce a PCTR conformant with the PCTR proforma contained in annex A.

A PCTR which conforms to this PCTR proforma specification shall preserve the content and ordering of the clauses contained in annex A. Clause A.6 of the PCTR may contain additional columns. If included, these shall be placed to the right of the existing columns. Text in italics may be retained by the test laboratory.

9 PIXIT conformance

A test realizer, producing an executable test suite for the ATS specification contained in annex C, is required, as specified in ISO/IEC 9646-4 [9], to produce an augmented partial PIXIT proforma conformant with this partial PIXIT proforma specification.

An augmented partial PIXIT proforma which conforms to this partial PIXIT proforma specification shall, as a minimum, have contents which are technically equivalent to annex B. The augmented partial PIXIT proforma may contain additional questions that need to be answered in order to prepare the Means Of Testing (MOT) for a particular IUT.

A test laboratory, offering testing for the ATS specification contained in annex C, is required, as specified in ISO/IEC 9646-5 [10], to further augment the augmented partial PIXIT proforma to produce a PIXIT proforma conformant with this partial PIXIT proforma specification.

A PIXIT proforma which conforms to this partial PIXIT proforma specification shall, as a minimum, have contents which are technically equivalent to annex B. The PIXIT proforma may contain additional questions that need to be answered in order to prepare the test laboratory for a particular IUT.

10 ATS conformance

The test realizer, producing MOT and ETS for this ATS specification, shall comply with the requirements of ISO/IEC 9646-4 [9]. In particular, these concern the realization of an ETS based on each ATS. The test realizer shall provide a statement of conformance of the MOT to this ATS specification.

An ETS which conforms to this ATS specification shall contain test groups and test cases which are technically equivalent to those contained in the ATS in annex C. All sequences of test events comprising an abstract test case shall be capable of being realized in the executable test case. Any further checking which the test system might be capable of performing is outside the scope of this ATS specification and shall not contribute to the verdict assignment for each test case.

Test laboratories running conformance test services using this ATS shall comply with ISO/IEC 9646-5 [10].

A test laboratory which claims to conform to this ATS specification shall use an MOT which conforms to this ATS.

Annex A (normative): Protocol Conformance Test Report (PCTR) proforma

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the PCTR proforma in this annex so that it can be used for its intended purposes and may further publish the completed PCTR.

A.1 Identification summary

A.1.1 Protocol conformance test report

PCTR number:	
PCTR date:	
Corresponding SCTR number:	
Corresponding SCTR date:	
Test laboratory identification:	
Test laboratory manager:	
Signature:	

A.1.2 IUT identification

Name:	
Version:	
Protocol specification:	EN 301 065-1
PICS:	
Previous PCTRs (if any):	

A.1.3 Testing environment

PIXIT Reference number:	
ATS Specification:	EN 301 065-1
Abstract Test Method:	Multi-party test method (see ISO/IEC 9646-2)
Means of Testing identification:	
Dates of testing:	
Conformance log reference(s):	
Retention date for log reference(s):	

A.1.4 Limits and reservations

Additional information relevant to the technical contents or further use of the test report, or to the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

.....

.....

.....

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A.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the PCTR, for example, to note disagreement between the two parties.

.....

.....

.....

.....

A.2 IUT Conformance status

This IUT has / has not been shown by conformance assessment to be non-conforming to the specified protocol specification.

Strike the appropriate words in this sentence. If the PICS for this IUT is consistent with the static conformance requirements (as specified in clause A.3 of the present document) and there are no "FAIL" verdicts to be recorded (in clause A.6) strike the word "has", otherwise strike the words "has not".

A.3 Static conformance summary

The PICS for this IUT is / is not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in this sentence.

A.4 Dynamic conformance summary

The test campaign did / did not reveal errors in the IUT.

Strike the appropriate words in this sentence. If there are no "FAIL" verdicts to be recorded (in clause A.6 of the present document) strike the word "did", otherwise strike the words "did not".

Summary of the results of groups of tests:

.....

.....

.....

.....

.....

A.5 Static conformance review report

If clause A.3 indicates non-conformance, this clause itemizes the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

.....

.....

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.....

A.6 Test campaign report

ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
CCNR_N01_001				
CCNR_N01_002				
CCNR_N01_003				
CCNR_N01_004				
CCNR_N01_005				
CCNR_N01_006				
CCNR_N01_007				
CCNR_N01_008				
CCNR_N02_001				
CCNR_N02_002				
CCNR_N03_001				
CCNR_N03_002				
CCNR_N03_003				
CCNR_N04_001				
CCNR_N04_002				
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CCNR_N11_006				
CCNR_N11_007				
CCNR_N11_008				
CCNR_N11_009				
CCNR_N11_010				
CCNR_N11_011				
CCNR_N11_012				
CCNR_N11_013				
CCNR_N11_014				
CCNR_N12_001				
CCNR_N12_002				
CCNR_N12_003				

A.7 Observations

[illegible]

Annex B (normative): Partial PIXIT proforma

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B.1 Identification summary

PIXIT number:

.....

Test laboratory name:

.....

Date of issue:

.....

Issued to:

.....

B.2 Abstract test suite summary

Protocol specification: EN 301 065-1

ATS specification: EN 301 065-6

Abstract test method: Multi-party test method (see ISO/IEC 9646-2)

B.3 Test laboratory

Test laboratory identification:

.....

Accreditation status of the test service:

.....

Accreditation reference:

.....

Test laboratory manager:

.....

Test laboratory contact:

.....

Means of testing:

.....

Test laboratory instructions for completion:

.....

B.4 Client (of the test laboratory)

Client identification:

.....

Client test manager:

.....

Client contact:

.....

Test facilities required:

.....

B.5 System Under Test (SUT)

Name:

.....

Version:

.....

SCS reference:

.....

Machine configuration:

.....

Operating system identification:

.....

IUT identification:

.....

PICS (all layers):

.....

.....

Limitations of the SUT:

.....

Environmental conditions:

.....

B.6 Protocol information

B.6.1 Protocol identification

Specification reference: EN 301 065-1

Protocol version:

PICS reference:

NOTE: The PICS reference should reference a completed PICS which is conformant with the PICS proforma contained in EN 301 065-2.

B.6.2 IUT information

B.6.2.1 Parameter values

Table B.1: Parameter values

Item	Question	Supported? (Y/N)	Allowed values	Value
1.1	Does the IUT support basic access?		N/A	N/A
1.2	What length of Call Reference is used?		1, 2	
1.3	What user B address is used?		Numeric String [1 .. 20]	

B.6.2.2 Configuration of IUT

Table B.2: Actions required to configure the IUT

Item	Action: What actions, if possible, have to be taken to configure the IUT ...	Supported? (Y/N)	Stimulus (action taken)
2.1	for access NOT subscribed to CCNR supplementary service?		
2.2	for the invoke of call retention procedure for service other than CCNR?		
2.3	to have exceeded the user A CCNR queue limit?		
2.4	so that the network B cannot accept CCNR request due to a "longTermDenial" situation?		
2.5	so that the network B cannot accept CCNR request due to a "shortTermDenial" situation?		
2.6	to be configured in point-to-multipoint?		
2.7	to be unable to select B-channels?		
2.8	so that it has the knowledge that no other supplementary service will need the call information?		
2.9	so that the status request subscription parameter at network B indicates "status request procedures supported for existing services"?		
2.10	to send a StatusRequest invoke component upon request ?		

B.6.2.3 Timer values

Table B.3: Timer values

Item	Timer duration	Supported? (Y/N)	Allowed values	Value
3.1	T-CCBS1 duration in s?		(= 4)	
3.2	T-CCBS2 duration in min?		(60 < t < 180)	
3.3	T-CCBS3 duration in s?		(10 < t < 20)	
3.4	T-CCBS5 duration in min?		(= 195)	
3.5	T-CCBS6 duration in min?		(= 195)	
3.6	T-RETENTION duration in s?		(> 15)	
3.7	Wait for the test operator to perform an implicit send action or to wait for a PTC to react (TWAIT). Duration in s.		integer	
3.8	Wait for the IUT to respond to a stimulus sent by the tester (TAC). Duration in s.		integer	
3.9	Control that the IUT does not respond to a stimulus sent by the tester (TNOAC). Duration in s.		integer	
3.10	Wait for RESTART messages after establishment of the multiple frame operation (T_RESTART). Duration in s.		integer	
3.11	Does the IUT send RESTART messages after re-establishment of the multiple frame operation.		Boolean	N/A
3.12	Value for timer that controls test events synchronization between MTC and PTC. (Value in ms)		integer	

B.7 Basic call PIXIT items

B.7.1 Parameter values - information element codings

Table B.4: Codings of information elements

Item	Information element: provide, if possible, ...	Supported? (Y/N)	Value
N1.1	a coding of a Bearer Capability information element, which the IUT is compatible with, for the purpose of accepting received SETUP messages and which may be used in SETUP messages to be transmitted		
N1.2	a coding of a High layer compatibility information element, which the IUT is compatible with, for the purpose of accepting received SETUP messages and which may be used in SETUP messages to be transmitted		
N1.3	a coding of a Low layer compatibility information element, which the IUT is compatible with, for the purpose of accepting received SETUP messages and which may be used in SETUP messages to be transmitted		
N1.4	a Called party number information element, which the IUT is compatible with, for ...		
N1.4.1	served user access		
N1.4.2	first remote user access		
N1.5	preferred channel number to be used for the purpose of accepting received SETUP messages, for ... (note 1)		
N1.5.1	single call at served user side		
N1.5.2	second call at served user side		
NOTE 1: Items N1.5.1 to N1.5.2 are applicable for primary rate access only.			
NOTE 2: As this is a general table used for all supplementary services, all items N1.4.1 to N1.4.2, and N1.5.1 to N1.5.2 (if primary rate access is supported), are not always required, but should be supplied if possible.			

Annex C (normative): Abstract Test Suite (ATS)

This ATS has been produced using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [8].

The ATS was developed on a separate TTCN software tool and therefore the TTCN tables are not completely referenced in the table of contents. The ATS itself contains a test suite overview part which provides additional information and references.

C.1 The TTCN Graphical form (TTCN.GR)

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (CCNR_n02.PDF contained in archive en_30106506v010301o0.ZIP) which accompanies the present document.

C.2 The TTCN Machine Processable form (TTCN.MP)

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (CCNR_n02.MP contained in archive en_30106506v010301o0.ZIP) which accompanies the present document.

NOTE: Where an ETSI Abstract Test Suite (in TTCN) is published in both .GR and .MP format these two forms shall be considered equivalent. In the event that there appears to be syntactical or semantic differences between the two then the problem shall be resolved and the erroneous format (whichever it is) shall be corrected.

Annex D (informative):

Changes with respect to the previous EN 301 065-6 V1.2.4

The following comments received in document 4TD0133 (for the Plenary Meeting 11-2000) were analysed and included when needed:

Table D.1: Comments and actions for the CCNR ATS

Related ATS object(s)	Comment	Action
CA_R1	CA_R1 has assigned wildcard * for the chi field, which has a CHOICE type (basic/primary). But there is no dynamic choice (at receive time) between the basic or primary rate form of the CHI IE. The TS Operation ASSIGN_CHI has just been defined to avoid such a choice. <i>Suggested change:</i> Replace * by ASSIGN_CHI(CHI6b,CHI3p,BASIC).	Accepted
CA_R2 CCNR_N12_013	The CONNECT ACK message sent by the IUT as response to the CONNECT message sent by the tester in line 5 is not recognized by the tester. <i>Suggested change:</i> Define a new constraint CA_R2 for the CONNECT ACK message and insert a new receive statement line for CA_R2 after line 5. NOTE 1: Start of T_CCBS5 is somewhat later than defined by the protocol, but because of the long timeout value the short delay should not disturb the verification of the test purpose. NOTE 2: When performing this test with a real network, the network cleared the connection with CREF1 immediately after the connection with CREF2 was established. This test makes only sense when the network holds the connection with CREF1 for a longer period than T_CCBS5_min.	Accepted
CCNR_Activated	<i>Suggested change:</i> TIMEOUT TAC must be recognized as alternative to line 4.	<i>Rejected</i> <i>Reason: the timeout of timer TAC is already present as alternative to line 4.</i>
CCNR_check_Idle	Depending on which test cases have been executed in a test campaign, TS Variable ccbsRef can have a value of 128. The value 128 means that there is currently no active ccbsreference outstanding, but 128 is no valid value for the ccbs reference field in a component to be transmitted. CCNR_check_Idle being called in its current form can lead to transmission of value 128 in line 2. <i>Suggested change:</i> Define a new local tree CCNR_check_Idle_Local_Tree: - assigning RANDOM_INVOKE_ID to inv_ID, - assigning the value 0 to ccbsRef if its current value is not in the range between 0 and 127. Attach CCNR_check_Idle_Local_Tree in line 1 of CCNR_check_Idle. For details see the modified ATS.	Accepted
CCNR_CheckNoBusy	<i>Suggested change:</i> Remove START TAC in line 5, because CCNR_CheckNoBusy is referred to at several instances, where the timer is not cancelled.	Accepted

Related ATS object(s)	Comment	Action
CCNR_idle (INIT_RECALL_MODE)	INIT_RECALL_MODE contains alternatives [PC_GLOB_RECALL] and [PC_SPEC_RECALL], both of which TS Parameter values could be set to FALSE in a test campaign (which is of course no valid setting). But nevertheless, this can happen and there would be no matching alternative. <i>Suggested change:</i> Add an alternative [TRUE] with final verdict I or F, or replace [PC_SPEC_RECALL] by [NOT PC_GLOB_RECALL].	Accepted
CCNR_idle, CCNR_CheckNoBusy, CCNR_free, CCNR_N02_001, CCNR_N05_001, CCNR_N05_002, CCNR_N07_nnn, CCNR_N08_nnn, CCNR_N09_nnn, CCNR_N10_002	The indicated test steps and test cases contain receive statement lines: LO?PDUr [NOT (PX_MULTIPPOINT)] (a) with alternative: LO?PDUr BROADCASTTr [PX_MULTIPPOINT] (b) But even in a point-to-multipoint configuration, the PDUs expected in these lines need not be transmitted on the broadcast data link, when a dedicated data link to the IUT is established. NOTE: In addition there are specific test cases, where a message related to specific recall is definitely expected on the broadcast data link, and where line (a) is not present. <i>Suggested change:</i> Remove the qualifier [NOT (PX_MULTIPPOINT)] in lines (a).	Accepted
CCNR_N03_003	<i>Suggested change:</i> replace CCNR_check_Active by CCNR_check_Idle because CCNR is not active in this test case.	Accepted
CCNR_N04_002	The value of TS variable ccbsRef could be 128 (see also 4). <i>Suggested change:</i> In line 4 add assignment ccbsRef := 0	Accepted
CCNR_N06_004	In line 4 no invalid ccbs reference is sent, as required from the test purpose. <i>Suggested change:</i> In line 4 replace ccbsRef by (ccbsRef +1) MOD 127	Accepted
CCNR_N06_004	The condition of "no B-channel available" will not occur in normal IUT operation. The operator should have a possibility to simulate this condition by configuring the IUT appropriately during test case run. <i>Suggested change:</i> Add a wait period (using TWAIT) after line 2 (+CCNR_free).	Accepted
CCNR_N06_004, CCNR_N06_005, CCNR_N06_006, CCNR_N06_008, CCNR_N08_001, CCNR_N11_nnn, CCNR_N12_nnn, PTC1_T_N9, PTC1_T_N0_available_dest, CCNR_activated, CCNR_CheckNoBusy, CCNR_T_free_org, CCNR_T_available_dest, CCNR_T_activated_dest	The indicated test cases and test steps contain errors with respect to starting/cancelling timers. There are too many erroneous lines to be indicated individually. In CCNR_N06_004 e.g. CANCEL TAC must be removed from line 5 (but retained in line 6). For more details see the modified ATS.	Accepted
CCNR_N06_008	<i>Suggested change:</i> In line 18 replace CREF1 by CREF2.	Accepted

Related ATS object(s)	Comment	Action
CCNR_N06_008 (in TS Overview)	According to the test purpose, a multipoint configuration and the global recall option must apply. <i>Suggested change:</i> Apply selection expression GlobalRecallOptionPTMP to CCNR_N06_008.	Accepted
CCNR_N07_005	<i>Suggested change:</i> As alternative to each of lines 5 and 7 a line ?TIMEOUT TAC (+PO49901(0)) must be added.	Accepted
CCNR_N07_006	<i>Suggested change:</i> <ul style="list-style-type: none"> - In line 2 replace R_SU_busy by R_SU_noReply; - In line 3 delete the sending of the CM and retain only START TWAIT. 	Accepted
CCNR_N07_007	<i>Suggested change:</i> In line 4 replace: START T_CCBS2_max by ?TIMEOUT T_CCBS2_min NOTE: Start of T_CCBS2 is somewhat later than defined by the protocol, but because of the long timeout value the short delay should not disturb the verification of the test purpose.	Accepted
CCNR_N07_008	<i>Suggested change:</i> In line 2 replace R_SU_busy by R_SU	Accepted
CCNR_N09_002	The test purpose is not appropriate, when the StatusRequest is issued from the IUT after "remote user free" indication (Detailed comment a) in CCNR_N09_002), because the IUT will then send a message during TNOAC. This test case is only executable, when the IUT can send a StatusRequest invoke on demand, or for some reason other than 'remote user free'.	Accepted A PIXIT and a Test case selection expression have been created.
CCNR_N09_003	Similar to 19.	Accepted A PIXIT and a Test case selection expression have been created.
CCNR_N11_002	There is an indentation error in PTC1_local_tree of CCNR_N11_002. <i>Suggested change:</i> Increase the indentation of lines 14 and 15 by 1.	Accepted
CCNR_N11_004, CCNR_N11_005, CCNR_N11_006, CCNR_N11_007, CCNR_N11_009, CCNR_N12_005, CCNR_N12_008, CCNR_N12_010, CCNR_N12_014	<i>Suggested change:</i> In the following test cases delete the indicated lines containing PTC1_PS00, because the connection has been released before: CCNR_N11_004: line 16 CCNR_N11_005: line 16 CCNR_N11_006: line 16 CCNR_N11_007: line 16 CCNR_N11_009: line 20 CCNR_N12_005: line 19 CCNR_N12_008: line 19 CCNR_N12_010: line 20 CCNR_N12_014: line 14	Accepted

Related ATS object(s)	Comment	Action
CCNR_N11_010	The facility message containing T-suspend invoke sent by the MTC in line 4 is not received by the PTC (and falls into the default).	Rejected Reason: IUT shall wait about resumption of the CCBS request, it shall not take any protocol actions
CCNR_N11_011	After line 16 the receipt of T-Resume invoke (sent by the MTC as TResInv1 in line 7) is missing. <i>Suggested change:</i> Insert a line after line 16 to receive it by TResInv2.	Rejected Reason: IUT shall wait about resumption of the CCBS request, it shall not take any protocol actions
CCNR_N11_012, CCNR_N11_013	<i>Suggested change:</i> Replace CREF1 by CREF2 in SU_S10.	Accepted
CCNR_N12_002 CCNR_N12_003 CCNR_N12_004	PTC1_local_tree of CCNR_N12_00n does not recognize the STOP_PTC command in each set of receive-alternatives. <i>Suggested change:</i> Add lines CPA1?CP_M (STOP_PTC).	Accepted
CCNR_N12_004	<i>Suggested change:</i> In line 5 replace FC_R1 by FC_S1.	Accepted
CCNR_N12_005	<i>Suggested change:</i> In line 4 replace L1 by L0.	Accepted
CCNR_N12_006	<i>Suggested change:</i> In lines 20 and 22 replace PTC1_PS00(0) by PTC1_PS00_2CR(0,0)	Accepted
CCNR_N12_006	Call state 'Incoming call proceeding' must be checked by CS59902. <i>Suggested change:</i> In the test purpose replace N6 by N9, and in line 7 replace CS59902(31,6,1,1) by CS59902(31,9,1,1).	Accepted
CCNR_N12_007	<i>Suggested change:</i> In line 5 replace FC_R1(1,...) by FC_R1(0,...)	Accepted
CCNR_N12_011, CCNR_N12_012, CCNR_N12_013, CCNR_N12_014	Again a synchronization problem: When the MTC sends the FACILITY message containing 'remote user free' in CCNR_free_dest (or CCNR_activated_dest), the message is transported through the network, taking some time until it is received in the PTC in PTC1_T_N31_free_dest (or PTC1_T_N31_activated_dest). When the MTC sends the next CM immediately (S_SU or S_RL in CCNR_N12_014), it will be received by the PTC before the FACILITY message is received. <i>Suggested change:</i> Delete transmission of the next CM in the MTC as well as the reception of this CM in the PTC (local tree).	Accepted
CCNR_N12_011, CCNR_N12_012, CCNR_N12_013	<i>Suggested change:</i> In local tree RECEIVE_SETUP replace REG_PDU.fie by SETUP.fie	Accepted
CCNR_N12_012, CCNR_N12_013	<i>Suggested change:</i> In lines 30/29 replace PTC1_PS00_2CR(0,0) by PTC1_PS00(0), because the 2 nd connection is not yet established.	Accepted
CCNR_N12_013	In line 7 verdict (I) is assigned. <i>Suggested change:</i> Replace (I) by (P).	Accepted
CCNR_N12_014	<i>Suggested change:</i> In line 9 replace PTC1_T_N31_free_dest by PTC1_T_N31_activated_dest.	Accepted
CCNR_T_activated_dest	<i>Suggested change:</i> a) replace L1 by L0 in line 3; b) replace FC_R1 by FC_S1 in line 4	Accepted
CCNR_T_available_dest, CCNR_N12_001	The preamble establishing the data links is missing. <i>Suggested change:</i> Add +PR30001 after +CCNR_T_idle.	Accepted

Related ATS object(s)	Comment	Action
CCNR_T_available_org, CCNR_T_available_dest, CCNR_N11_001	For similar reasons as in 70 a delay is needed. For the 2 test steps the delay is required at the "positive exit" of the step (i.e. the next statement after the step attachment has to be delayed), for CCNR_N11_001 the delay is needed before line 7. <i>Suggested change:</i> Delay the execution by 2 additional statement lines START TDELAY, ?TIMEOUT TDELAY For details see the modified ATS.	Rejected The test case CCNR_N11_001 does not use these steps, so there is no synchronization problem.
CCNR_T_free_dest	<i>Suggested change:</i> START TWAIT must be removed from line 3, because running of TWAIT is not needed with all attachments of CCNR_T_free_dest.	Accepted
CCNR_T_free_org, CCNR_T_suspend_dest, CCNR_N11_009, CCNR_N12_008 CCNR_N12_009 CCNR_N12_010	In the indicated test cases and test steps a FACILITY PDU has been received, but in the assignment made in the receive statement line, reference is made to the REGISTER PDU. <i>Suggested change:</i> Replace REG_PDU by FAC_PDU .	Accepted
CCNR_T_idle	Same as 6.	Accepted
CCNR_T_PTC1_DEF	<i>Suggested change:</i> Same as 55. In addition: Remove START TAC in line 10 (before returning to the calling tree).	Accepted
CCNR_T_PTC1_DEF	This default is also used when a second connection is established (using P1CREF2 instead of P1CREF1). <i>Suggested change:</i> Copy lines 9 to 19 (treatment of clearing) with P1CREF1 replaced by P1CREF2.	Accepted
cCNRIInterrogate	The Object Identifier value is false. <i>Suggested change:</i> Replace { cCNROID 1 } by { cCNROID 2 }	Accepted
Component	The CHOICE construction of Component is invalid, because ASN.1 requires, that all alternative elements of a CHOICE have different tags (to enable a receiver to determine the received alternative from the tag). The alternative elements of Component are CHOICES again, all having e.g. the invoke alternative element with the same tag [1] . This is a general false construction, to be found in many ISDN supplementary services test suites (and others). There is no local solution to correct this error, because a change would imply too many (and structural) changes for ASN.1 types and ASN.1 constraints.	Nothing to do
CP_S1	This send constraint includes wildcard value *. <i>Suggested change:</i> Replace * by OMIT.	Accepted
DF_CCNR1 (RELEASE_CALL, END_PTC1_SUBTREE)	At the beginning of RELEASE_CALL, END_PTC1_SUBTREE, replace START TAC by CANCEL, START TAC because other timers than TAC could be running.	Accepted
DF69902 (RELEASE_CALL, END_PTC1_SUBTREE)	<i>Suggested change:</i> Same as 49.	Accepted

Related ATS object(s)	Comment	Action
longTermDenial_T, shortTermDenial_T, CCNR_N11_006, CCNR_N11_007	In CCNR_N11_006 and CCNR_N11_007 the error values longTermDenial and shortTermDenial are passed as parameter values to TReqErr1. But these Object Identifier values are only applicable to the combined S/T reference point. <i>Suggested change:</i> Define new Object Identifier values: - longTermDenial_T { cCBS_T_OID 20 } - shortTermDenial_T { cCBS_T_OID 21 } and use them instead.	Accepted
CCNR_N12_008, CCNR_N12_011, CCNR_N12_012, CCNR_N12_013	<i>Suggested change:</i> Removal of START_TWAIT in CCNR_T_free_dest must be taken into account. See also 40.	Accepted
PC_COMBINED_ST, PTP, CombinedSTReferencePoint, NoSTReferencePoint	The test group selection for groups ccnr_n01/STreferencePoint and ccnr_n01/TreferencePoint is not appropriate. <i>Suggested change:</i> Define a new TS Parameter PC_COMBINED_ST of BOOLEAN Type, indicating whether the IUT operates at the combined S/T reference point or not. Define new selection expressions CombinedSTReferencePoint (PC_COMBINED_ST) and NoSTReferencePoint (NOT PC_COMBINED_ST) and apply them to the referred groups. Remove selection expression PTP.	Accepted
PO49909	Formal parameter CALL_REF is not used.	Accepted
PR30001	Local tree WAIT_RESTART of PR30001 does nothing when TS Parameter PX_WAIT_RESTART is set to FALSE. This can lead to a mis-synchronization between MTC and PTC, when the MTC has completed the data link setup procedures before the PTC has completed these procedures. <i>Suggested change:</i> Replace [PX_WAIT_RESTART] by [TRUE]. (This is only a simple effective correction. Maybe a redesign of the preamble should be preferred).	Rejected The MTC and PTC initial steps (PR30001 and PTC1_PR00 respectively) make use of the same PIXIT PX_WAIT_RESTART. This means that initialization is done in the same way, this implies that there is no synchronization problem
PTC1_DEF	<i>Suggested change:</i> Add CANCEL in all lines of indentation level 0 where processing continues in the default (waiting for PDUs), because other timers than TAC could be running when entering the default. An example for a line to be changed is line 2.	Accepted
PTC1_DEF, CCNR_T_PTC1_DEF	The STOP command from the MTC must be recognized in each situation by the PTC. <i>Suggested change:</i> The receipt of STOP_PTC should be included in the defaults of the PTC. For details see the modified ATS.	Accepted
PTC1_PR00	<i>Suggested change:</i> In local tree WAIT_RESTART, after line 35, the following lines must be added: L1?OTHERWISE, GOTO LR	Rejected During the RESTART procedure, no message is allowed to arrived on PCO L1.
PTC1_PR00, PTC1_PS00, PTC1_PS00_2CR	The indicated test steps have no default assigned. But at least the STOP_PTC command issued from the MTC must be recognized. <i>Suggested change:</i> Add statement lines: CPA1?CP_M (STOP_PTC)	Accepted
PTC1_T_N0_available_dest	<i>Suggested change:</i> In lines 3, 4 and 5 replace L0 by L1 .	Accepted

Related ATS object(s)	Comment	Action
PTC1_T_N0_available_dest	<i>Suggested change:</i> TIMEOUT TAC must be recognized as alternative to lines 11 and 15.	Accepted
PTC1_T_N31_free_org	PTC1_T_N31_free_org is the counterpart of CCNR_T_free_org, but lines 4 to 7 do not fit to the counterpart. <i>Suggested change:</i> Delete lines 4 to 7 of PTC1_T_N31_free_org.	Accepted
PTC1_UserB_noReply	<i>Suggested change:</i> In line 62 replace +PTC1_PS00 (0) by +PTC1_PS00 (1).	Accepted
PTC1_UserB_noReply	When RELEASE or DISCONNECT has been received by the PTC, then the test case is not always over. The PTC should stop only after receiving the stop command from the MTC. <i>Suggested change:</i> Remove the assignment STOP_FLAG1 := TRUE from lines 60 and 61.	Accepted
PX_T_CCBS1	The comment indicates a unit of seconds, while timers T_CCBS1_min and T_CCBS1_max have a unit of milliseconds. <i>Suggested change:</i> Replace: "value in s (t=4)" by "value in ms (t=4000)"	Accepted
PX_T_CCBS3, T_CCBS3_min, T_CCBS3_max	Because the min/max values are calculated by 95/100 and 105/100 respectively, a unit of seconds is not appropriate, when the recommended value range is between 10 and 20 seconds. <i>Suggested change:</i> Replace the unit of seconds by milliseconds.	Accepted
PX_T_CCBS4	TS Parameter is not used. <i>Suggested change:</i> Remove PX_T_CCBS4 from the ATS.	Accepted
Eralnv1 (and several other ASN.1 constraints)	TC Variable recall_mode is directly referred to in the ConsValue. <i>Suggested change:</i> None.	Accepted
ST_R3, DF_CCNR1, DF69902	DF_CCNR1 and DF69902 must accept an unexpected STATUS message in local tree IGNORE_MESSAGES. <i>Suggested change:</i> Since the existing STATUS PDU constraints are not appropriate, define a new constraint: ST_R3(CALLREF:BIT7OR15), using CR32(CALLREF), CAU_R1 and CST1 as constraint values for the cr, cau and cst fields and add a receive statement line for ST_R3 in DF_CCNR1 and DF69902/IGNORE_MESSAGES.	Accepted

Related ATS object(s)	Comment	Action
SU_S2, PTC1_UserB_noReply, CCNR_ChecknoBusy, CCNR_N08_001 (ServedUserBusy), CCNR_N09_nnn	<p>In many test cases, especially in groups 5, 6, 7, 8 and 9, an activity must be shown by user B to network B to simulate the "user B free" condition.</p> <p>The simulation of an activity of user B (PTC1) has not been realized in the original ATS!</p> <p><i>Suggested change:</i> Add a line CPA1?CP_M (S_SU) at indentation level 0 in MAINTREE of PTC1_UserB_noReply.</p> <p>The resulting action after receiving this command from the MTC is sending a SETUP message (new PDU constraint SU_S2), followed by a RLC message, from PTC1 to network B.</p> <p>SU_S2 contains no called party number, so that this activity does not affect the interface at user A (MTC).</p> <p>Add line: CPA1!CP_M (S_SU) in CCNR_ChecknoBusy and the indicated test cases in order to stimulate the activity at user B from the MTC. For details see the modified ATS.</p>	<p>Rejected</p> <p>The test cases that make use of PTC1_UserB_noReply do not require a call initiated by user B</p>
TDELAY, PX_TDELAY, DELAY_S_AL, DELAY_S_CN, CCNR_N07_001, CCNR_N07_002, (CCNR_N07_003)	<p>At several instances problems related to the synchronization of MTC and PTC occur: E.g. after having sent a SETUP message, the MTC sends an S_AL command to the PTC, which is received by the PTC before having received the SETUP message from network B.</p> <p>There are 2 possibilities to establish a synchronization:</p> <ol style="list-style-type: none"> send acknowledging CMs from the PTC to the MTC and let the MTC wait for the acknowledgement, before proceeding with the next message or CM to be sent, delay the transmission of the next message or CM from the MTC to the PTC for some time. <p>a) would need a redesign of the ATS.</p> <p><i>To realize b), the following is suggested:</i></p> <ul style="list-style-type: none"> define a new timer TDELAY, define a new TS parameter PX_TDELAY as timeout value for TDELAY, because delay of S_AL and S_CN occurs several times where a synchronization is needed: define new test steps DELAY_S_AL and DELAY_S_CN to delay transmission of the indicated CMs. Insert the test steps in appropriate statement lines in CCNR_N07_001, CCNR_N07_002 and CCNR_N07_003. <p>For details see the modified ATS.</p>	<p>Accepted</p>
TReqErr2, CCNR_N11_006, CCNR_N11_007	<p>TReqErr1 is defined as receive constraint (with wildcards), but is used as send constraint in the indicated test cases (in the PTC).</p> <p><i>Suggested change:</i> Define a new send constraint TReqErr2(INV_ID) and replace TReqErr1 by TReqErr2 in lines 13 of CCNR_N11_006 and CCNR_N11_007 respectively.</p>	<p>Accepted</p>
TReqInv2	<p>This constraint is used as receive constraint. In the original form, the presentationAllowed and the originatingAddress field values are omitted. But the network may add this information when the component, originally sent from the MTC, passes through the network!</p> <p><i>Suggested change:</i> Add wildcard values * for each of the indicated fields.</p>	<p>Accepted</p>

Related ATS object(s)	Comment	Action
TReqRR2, PTC1_T_N31_activated_ dest, PTC1_T_request_org, CCNR_N11_002, CCNR_N11_003, CCNR_N12_002, CCNR_N12_003	Constraint TReqRR1 is defined as transmit constraint where the invoke id has been generated before and is passed as actual parameter. In the indicated test cases a receive constraint is needed for TReqRR. <i>Suggested change:</i> Define TReqRR2 like TReqRR1, but with invokeID value ?, and use TReqRR2 in the indicated steps and cases instead of TReqRR1 in the appropriate receive statement lines.	Rejected. The invoke Id can be checked in a received constraint.
Test group 7	The term NetworkDeactivation is not appropriate for this group. <i>Suggested change:</i> Replace /NetworkDeactivation/ by /CCNRCallEstablished/ in the TS Overview and in the Dynamic Part of the ATS.	Accepted
General	Normally the MTC clears existing connections in a check sequence, which leads to network-B-initiated clearing at the PTC. Independently the PTC (PTC1_PS00(_2CR)) tries to clear connections, which normally do not exist any more. This can lead to a confusing exchange of clearing messages at the end of many test cases, but it does not disturb the verification of the test purpose.	Nothing to do
CCNR_N07_003	The test purpose is not understandable in connection with the indicated test behaviour. It seems that what is going to be achieved by this test case is covered by CCNR_07_002. This test case should not be executed.	Accepted
N07_008	A RELEASE COMPLETE message must be sent in the MTC after receiving the RELEASE message (line 4).	Accepted
N10_002	The call must be disconnected after the receipt of the ALERTING message, since T-RETENTION is started with the clearing of the call. Proposal: !DISCONNECT ?RELEASE !RELEASE_COMPLETE, START T-RETENTION	Accepted

In addition, revisions including the update of the PIXIT were done.

Annex E (informative): Bibliography

- ETSI EN 300 403-1 (V1.2.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".
- ETSI EN 300 403-3 (V1.2.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 3: Protocol Implementation Conformance Statement (PICS) proforma specification".
- ETSI EN 300 141-2 (V1.2.4): "Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

History

Document history		
V1.2.4	November 1999	Publication
V1.3.1	December 2001	One-step Approval Procedure OAP 20020419; 2001-12-19 to 2002-04-19