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Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented class 2) to support international interconnection; Part 3: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification

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Contents

Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is part 3 of a multi-part ETS covering the Signalling System No.7 Signalling Connection Control Part (SCCP) to support international interconnection as described below:

Part 1: "Protocol specification [ITU-T Recommendations Q.711 to Q.716 (1996), modified]";

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

Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

Transposition dates	
Date of adoption of this ETS:	31 December 1999
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Date of withdrawal of any conflicting National Standard (dow):	30 September 2000

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1 Scope

This third part of ETS 300 009 specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the Signalling Connection Control Part (SCCP) for implementations conforming to ITU-T Recommendations Q.711 to Q.714 and Q.716 as modified by ETS 300 009-1 [1]. The Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification are specified in annex B and C of the present document.

The test cases validate Classes 0, 1 and 2 SCCP procedures by monitoring and analysing SCCP messages and their contents.

Testing of SCCP connection-oriented protocol Class 3 is out of the scope of this ETS.

ISO/IEC 9646-1 [4], ISO/IEC 9646-2 [5], ISO/IEC 9646-3 [6], ISO/IEC 9646-4 [7] and ISO/IEC 9646-5 [8] and ETS 300 406 [3] are used as the basis for the test methodology.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 009-1 (1996): "Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented class 2) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.711 to Q.714 and Q.716 (1993), modified]".

[2] EN 300 009-2 (1996): "Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented class 2) to support international interconnection; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3] ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

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

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

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

[7] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".

[8] 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".

[9] ITU-T Recommendation Q.786 (1993): "SCCP test specification".

[10] ETS 300 008-1 (1996): "Integrated Services Digital Network (ISDN); Signalling System No.7; Message Transfer Part (MTP) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.701 (1993), Q.702 (1988), Q.703 to Q.706 (1993), modified]".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

Abstract (N-)Service Primitive ((N-)ASP): see ISO/IEC 9646-1 [4].

Abstract Test Suite (ATS): see ISO/IEC 9646-1 [4].

Implementation Under Test (IUT): see ISO/IEC 9646-1 [4].

Means Of Testing (MOT): see ISO/IEC 9646-1 [4].

Protocol Conformance Test Report (PCTR): see ISO/IEC 9646-1 [4].

Protocol Implementation Conformance Statement (PICS): see ISO/IEC 9646-1 [4].

PICS proforma: see ISO/IEC 9646-1 [4].

Protocol Implementation eXtra Information for Testing (PIXIT): see ISO/IEC 9646-1 [4].

PIXIT proforma: see ISO/IEC 9646-1 [4].

System Under Test (SUT): see ISO/IEC 9646-1 [4].

3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

AL	ALlowed
ATM	Abstract Test Method
ATS	Abstract Test Suite
BC	BroadCast
CAP	CAPability test
CC	Connection Confirm
Cda	Called address
Cga	Calling address
CL	ConnectionLess
CL0	Protocol Class 0
CL1	Protocol Class 1
CR	Connection Request
CSE	Co-ordinated State change
DCR	Dynamic Conformance Requirement
DP	DPC included
DPC	Destination Point Code
DT	Data Transfer
GT	Global Title
IB	Inopportune Behaviour
IC	Implementation Class
IUT	Implementation Under Test
LTs	Lower Testers
MA	MAnagement
MFM	Message From MTP
MFS	Message From SCCP
MML	Man Machine Language
MOT	Means Of Testing

MTC	Main Test Component
MTP	Message Transfer Part
ND	DPC not included
NG	Not route on GT
OG	route On GT
OPC	Originating Point Code
PCO	Point of Control and Observation
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PR	PRohibited
PTC	Parallel Test Component
REL	RELease
RS	Remote Single layer
RT	RouTeing
SB	Syntactically invalid Behaviour
SCCP	Signalling Connection Control Part
SCR	Static Conformance Requirement
SCS	System Conformance Statement
SLS	Signalling Link Selection
SOG	Subsystem Out of service Grant
SOR	Subsystem Out of service Request
SP	Signalling Point
SR	Segmentation and Reassembly
SS	SubSystem
SSA	SubSystem Allowed
SSN	SubSystem Number
SSP	SubSystem Prohibited
SST	Subsystem Status Test
ST	Setup
ST	Status Test
SUT	System Under Test
TSS&TP	Test Suite Structure and Test Purposes
UDT	UnitDaTa
UDTS	UnitDaTa Service
VB	Valid Behaviour
XUDT	eXtended UnitDaTa
XUDTS	eXtended UnitDaTa Service
YT	Relay Transverse

4 Abstract test method

4.1 Description of ATMs used

Within this ATS, two ATMs are used. These are the RS and the YT test methods. Their applicability depends on the IUT's functionality and capabilities.

Some of the described tests may not be required to be executed since the respective functionality is not included in the IUT (the implemented functionalities should be described in the completed PICS proforma, see EN 300 009-2 [2]). In such a case, the non-execution of these specific tests should not be regarded as a non-conformance statement.

IUTs which are to be tested using this ATS are required to have previously been tested for conformity against and passed the test suites for ETS 300 008-1 [10].

4.2 Conventions for test components and PCOs

SCCP communication is required between the SPs used in the test configurations. Two configurations are required to perform all these tests. It should be possible that a SP can be a primary/backup node for another SP. Furthermore, it should be possible that the SPs contain concerned SSs. All SPs should be in the same MTP network. There should be one SPC for the IUT (SP A), containing two different SSNs, and two SPCs, with one SSN each, for each test component (SP B, SP C).

SP_B and SP_C contain LTs B and C, respectively. An operator above the IUT is required in some cases to answer to implicit send requesting the emission of messages or to apply MA command on the configuration of the SUT. The MA procedures are requested with message including MML commands. The contents of those message have to be fulfilled in this PIXIT and depends of the IUT. The lower interface of the IUT is reached via the LTs and the service provider. LT_B, LT_C, SUT_MML are all PCOs.

The ATS is based on multi party test method. Thus the test system is made up one Main Test Component (MTC) and eventually a Parallel Test Component (PTC) in test configuration for relay node.

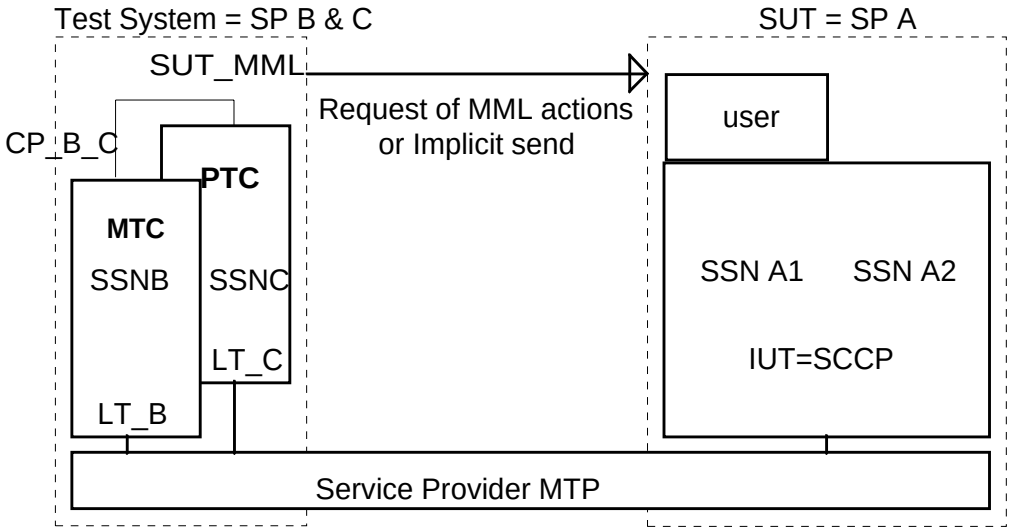

Figure 1: General test configuration with its PCOs

4.3 The remote single layer test method

SP A is the SUT and requires in case of the RS method needs no additional requirements from the SUT. However, sometimes a SCCP operator should be available to trigger the IUT and to apply requested command (MML). The arrows in figure 2 indicate an SCCP relation.

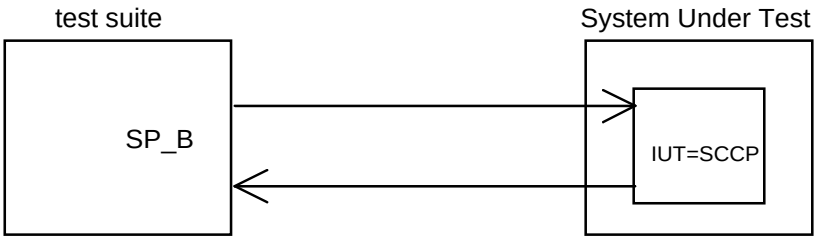

Figure 2: Configuration for the RS

4.4 The relay transverse ATM

SP A is the SUT and is used as a relay point (see figure 3). The arrows indicate an SCCP relation. All SPs are in the same MTP network. MTC and PTC synchronized themselves by exchanging message at co-ordination point CP_B_C. The test case is stopped and the final verdict is set by the MTC.

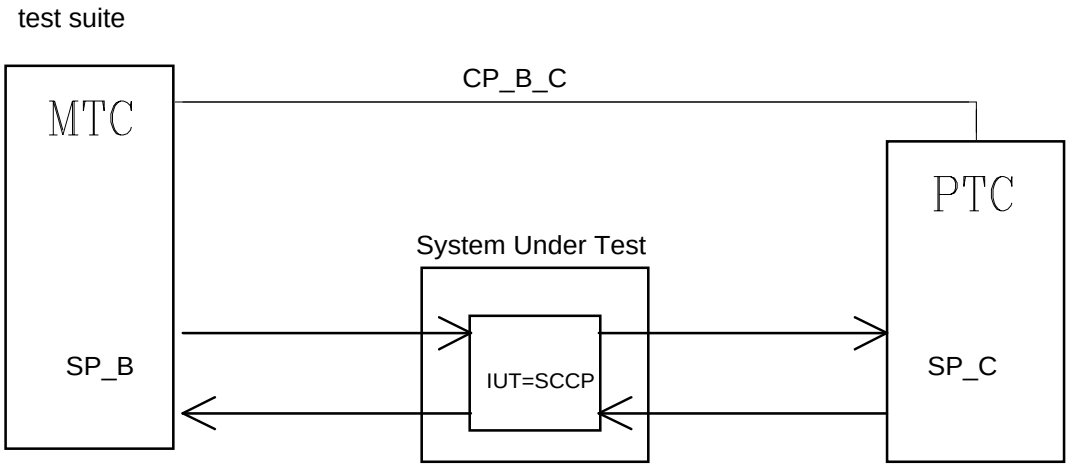

Figure 3: Configuration for the YT method

5 Untestable Test purposes

No upper tester has been defined in the standard protocol. Consequently, test purposes that cannot be tested without upper tester have been considered as untestable. This concerns mainly test purpose that check local procedure or the behaviour of the IUT concerning the use SCCP's ASP.

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

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:	ETS 300 009-1
PICS:	
Previous PCTRs (if any)	

A.1.3 Testing environment

PIXIT Reference number:	
ATS Specification:	ETS 300 009-3
ATM:	Multi-party test method (see ISO/IEC 9646-2)
MOT 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.

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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 SCRs (as specified in clause A.3 of this report) and there are no "FAIL" verdicts to be recorded (in clause A.6) strike the words "has or", otherwise strike the words "or has not".

A.3 Static conformance summary

The PICS for this IUT is / is not consistent with the *SCR*s 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 this report) strike the word "did", otherwise strike the words "did not".

Summary of the results of groups of tests:

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A.5 Static conformance review report

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

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A.6 Test campaign report

This table will be filled when test cases will be renumbered

ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations

A.7 Observations

Additional information relevant to the technical content of the PCTR are given here.

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Annex B (normative): Partial PIXIT proforma

B.1 Identification summary

PIXIT number:

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Test laboratory name:

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Date of issue:

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Issued to:

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The test laboratory may include client or contract references in the identification summary.

B.2 Abstract test suite summary

Protocol specification: ETS 300 009-1

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ATS specification: ETS 300 009-3

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

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B.3 Test laboratory

Test laboratory identification:

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Accreditation status of the test service:

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Accreditation reference:

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Test laboratory manager:

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Test laboratory contact:

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Means of testing:

MOT may include any particular facilities such as: executable test suite, and upper/lower tester realizations.

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Instructions for completion:

The laboratory should include any special instructions necessary for the completion and return of the proforma by the client.

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B.4 Client

Client identification:

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Client test manager:

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Client contact:

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Test facilities required:

The client should record any particular facilities required for testing, if a range of facilities is provided by the test laboratory.

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B.5 System under test

B.5.1 SUT identification

Name:

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Version:

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SCS reference:

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Machine configuration:

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Operating system identification:

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IUT identification:

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PICS (all layers):

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Limitations of the SUT:

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Environmental conditions:

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B.6 Protocol information

B.6.1 Protocol identification

Specification reference: ETS 300 009-1

Protocol version:

PICS references:

NOTE: The PICS references should reference a completed PICS which is conformant with the PICS proforma contained in EN 300 009-2.

B.6.2 Configuration to be tested

Table B.1: Configuration to be tested

Item	Configuration	Supported Y/N
1.1	Is the IUT configured as end node?	
1.2	Is the IUT configured as relay node?	

B.6.3 Configuration options

Table B.2: Configuration options

Item	Configuration	Supported Y/N
2.1	Does the IUT supports class 0? (CLASS0_SUP)	
2.2	Does the IUT supports class 1? (CLASS1_SUP)	
2.3	Does the IUT supports class 2? (CLASS2_SUP)	

Table B.3: Configuration's parameter

Item	Parameter	Type	Value
3.1	Subsystem multiplicity indicator (SMI)	Bitstring[8]	
3.2	Maximum number of segment supported (NB_MAX_SEG)	Integer	

B.6.4 Routing information

Ideally, for a complete configuration, there should be one SPC for the IUT, containing two different SSNs, and two SPCs (with one SSN each) for the test system (testing the aspects of network border crossing is for further study). PC A is assumed to be the IUT and PC B and PC C are assumed to be part of the test system as described in the configuration scheme (see clause 5, figures 1 to 3). When only end node configuration is tested, RT information concerning SP C has not to be valued. SSN A1 and SSN A2 in the ATS are supposed to answer automatically to a CR with a CC.

B.6.4.1 Signalling point code

Table B.4: SP code

Item	SP Code	Value (octestring[2])	Value without filler (bitstring[14])
4.1	SP A (IUT)		
4.2	SP B		
4.3	SP C		

B.6.4.2 Signalling link selection

The SLS is not normally fixed but is assigned at random between (0..15) by MTP-users. However, for the purposes of performing tests, the supplier of the SUT and/or the test laboratory may wish to specify the SLS codes used by the tester. If these fields are left blank by the client then the test laboratory will determine the SLS codes used by the tester.

Table B.5: Signalling link selection

Item	SLS	Value (Hexastring[1])
5.1	Between B and A	
5.2	Between C and A	

B.6.4.3 Subsystem number

Table B.6: Subsystem number

Item	SSN	Value (bitstring [8])
6.1	SSN A1 in IUT	
6.2	SSN A2 in IUT	
6.3	SSN in B	
6.4	SSN in C	
SSN A1 and SSN A2 shall answer to a CR automatically with a CC.		

B.6.4.4 GT translation

The supplier of the IUT is requested to describe in table B.7, the capability to generate GT translation (numbering plan, encoding scheme, etc.), if appropriate.

Table B.7: GT coding

Item	Parameter values give for..	Type	Value
7.1	GT translation giving PC_A+SSN1 of PC A		
7.1.1	Translation type (GTA1_TT)	Octetstring[1]	
7.1.2	Numbering plan (GTA_NP)	Hexstring[1]	
7.1.3	Encoding schem (GTA1_CD)	Hexstring[1]	
7.1.4	Nature of address (GTA1_NAI)	Bitstring[7]	
7.1.5	Address Information (GT_A_SSN1)	Octetstring[0..20]	
7.2	GT translation giving PC_B+SSNB of PC B		
7.2.1	Translation type (GTBS_TT)	Octetstring[1]	
7.2.2	Numbering plan (GTBS_NP)	Hexstring[1]	
7.2.3	Encoding schem (GTBS_CD)	Hexstring[1]	
7.2.4	Nature of address (GTBS_NAI)	Bitstring[7]	
7.2.5	Address Information (GT_B_SSN)	Octetstring[0..20]	
7.3	GT translation giving PC_C+SSNC of PC C		
7.3.1	Translation type (GTCS_TT)	Octetstring[1]	
7.3.2	Numbering plan (GTCS_NP)	Hexstring[1]	
7.3.3	Encoding schem (GTCS_CD)	Hexstring[1]	
7.3.4	Nature of address (GTCS_NAI)	Bitstring[7]	
7.3.5	Address Information (GT_C_SSN)	Octetstring[0..20]	
7.4	GT translation giving PC_B only		
7.4.1	Translation type (GTB_TT)	Octetstring[1]	
7.4.2	Numbering plan (GTB_NP)	Hexstring[1]	
7.4.3	Encoding schem (GTB_CD)	Hexstring[1]	
7.4.4	Nature of address (GTB_NAI)	Bitstring[7]	
7.4.5	Address Information (GT_B)	Octetstring[0..20]	
7.5	GT translation giving PC_C only		
7.5.1	Translation type (GTC_TT)	Octetstring[1]	
7.5.2	Numbering plan (GTC_NP)	Hexstring[1]	
7.5.3	Encoding schem (GTC_CD)	Hexstring[1]	
7.5.4	Nature of address (GTC_NAI)	Bitstring[7]	

Item	Parameter values give for..	Type	Value
7.5.5	Address Information (GT_C)	Octetstring[0..20]	
7.6	GT translation giving PC_C + a new GT value of PC_C		
7.6.1	Translation type (GTCG_TT)	Octetstring[1]	
7.6.2	Numbering plan (GTCG_NP)	Hexstring[1]	
7.6.3	Encoding schem (GTCG_CD)	Hexstring[1]	
7.6.4	Nature of address (GTCG_NAI)	Bitstring[7]	
7.6.5	Address Information (GT_C_GT)	Octetstring[0..20]	
7.7	GT translation giving PC C/PC B (in case of backup nodes)		
7.7.1	Translation type (GTCB_TT)	Octetstring[1]	
7.7.2	Numbering plan (GTCB_NP)	Hexstring[1]	
7.7.3	Encoding schem (GTCB_CD)	Hexstring[1]	
7.7.4	Nature of address (GTCB_NAI)	Bitstring[7]	
7.7.5	Address Information (GT_C_B)	Octetstring[0..20]	
7.8	GT translation giving a GT value that is not translatable (because there is no translation for an address of such nature)		
7.8.1	Translation type (GTNE1_TT)	Octetstring[1]	
7.8.2	Numbering plan (GTNE1_NP)	Hexstring[1]	
7.8.3	Encoding schem (GTNE1_CD)	Hexstring[1]	
7.8.4	Nature of address (GTNE1_NAI)	Bitstring[7]	
7.8.5	Address Information (GT1_NE)	Octetstring[0..20]	

B.6.5 Sending of messages by the IUT

Table B.8: Actions required to stimulate IUT to send messages

Item	Action: What actions, if possible, have to be taken to cause the IUT to send …	Supported? (Y/N)	Stimulus (action taken)
8.1	a CR message to establish a call with SP_B when IUT acts as an end node role (IS_CR1)		
8.2	a SCMG message to request SS to go Out of service (IS_TX_Crd)		
8.3	Two successive UDT messages including DPC and SSN (IS_TX_TWO_UD3)		
8.4	an UDT message including DPC and SSN when the DPC is not the node itself (IS_TX_UD3_DPC_SSN)		
8.5	an UDT message including DPC and GT when the DPC is not the node itself (IS_TX_UD3_DPC_GT)		
8.6	an UDT message including DPC, GT and SSN when the DPC is not the node itself (IS_TX_UD3_DPC_GT_SSN)		
8.7	an UDT message including GT for a remote DPC (IS_TX_UD3_RDPC_GT)		
8.8	an UDT message including GT and SSN for a remote DPC (IS_TX_UD3_RDPC_GT_SSN)		
8.9	an UDT message with class 0 role (IS_TX_UD_CL0)		
8.10	a RLSD message to reach state 6 (IS_CK_Goto_State6)		
8.11	an DT1 message (IS_TX_DATA)		
8.12	XUDT segmented (IS_TX_XUDT_Segt)		

B.6.6 User data PDU field parameters

For correct operation during testing, some IUTs may require the user data field of specific SCCP PDUs to have particular values. A list of the user data field parameters for the relevant PDUs is given in table A.5.

Table B.9: User data PDU field parameters

Item	Parameter values: Give ...	Type	Requested value
9.1	Userdata for CR message(DATA_CR)	Octetstring[1..128]	
9.2	Userdata for CC message(DATA_CC)	Octetstring[1..128]	
9.3	Userdata for CREF message(DATA_CREF)	Octetstring[1..128]	
9.4	Userdata for RLSD message(DATA_RLSD)	Octetstring[1..128]	
9.5	Userdata for DT1 message(DATA_DT1_NMD)	Octetstring[1..255]	
9.6	Userdata for UDT message(DATA_UDT_1)	Octetstring[1..254]	
9.7	Userdata for XUDT message non segmented(DATA_XUDT_ SEG_0)	Octetstring[1..254]	
9.8	Userdata for XUDT segmented message with F-bit set to one (DATA_XUDT_SEG_1)	Octetstring[1..254]	
9.9	Userdata for XUDT segmented message with F-bit set to zero (DATA_XUDT_SEG_2)	Octetstring[1..254]	

Table B.10: User data exchanges with IUT's User application

Item	Parameter values:	Type	Answer
10.1	Does the IUT contain a user application that will answer to an XUDT message containing the following query? (TX_UDT_Query)	Boolean	
10.1.1	Userdata for XUDT query message (DATA_XUDT_QUERY)	Octetstring[1.. 254]	
10.2	Does the IUT contain a user application that will answer with the following response to a segmented XUDT message containing the following Query? (TX_XUDT_Query_Rsp_Segmt)	Boolean	
10.2.1	First segment's Userdata of the UDT query message (F-Bit = 1) (DATA_XUDT_SEG_Q1)	Octetstring[1.. 254]	
10.2.2	Last segment's userdata of the UDT query message (F-Bit = 0) (DATA_XUDT_SEG_Q2)	Octetstring[1.. 254]	
10.3	Does the IUT contain a user application that will answer to the following DATA Query message ? (TX_DATA_Query)	Boolean	
10.3.1	First segment's userdata of DATA query message (DATA_QUERY_MD)	Octetstring[1.. 255]	
10.3.2	Last segment's userdata of DATA query message (DATA_QUERY_NMD)	Octetstring[1.. 255]	
10.4	Does the IUT contain a user application that will answer with the following response to an UDT message containing the following Query? (TX_UDT_Query_AND_Rsp)	Boolean	
10.4.1	Userdata for the UDT query message (DATA_UDT_QUERY)	Octetstring[1.. 254]	
10.4.2	Userdata for the UDT response message (DATA_UDT_RESPONSE)	Octetstring[1.. 254]	

B.6.7 SCCP management

In this subclause, the client shall provide information about SCCP MA facilities, especially concerning backup node/SS and condition for granting a SS to be unavailable. For each MA command, the associated undo command shall be specified to restore the IUT in its initial state.

Table B.11: SCCP MA actions

Item	Action	AL? (Y/N)	Command	Undo Command
11.1	To record in the IUT that SP B is a backup node for SP C (TX_B_BACKUP_C, M_B_BACKUP_C, M_UNDO_B_BACKUP_C)			
11.2	To record in the IUT that SSN B is a backup SS for SSN1 (IUT) (TX_SSB_BACKUP_SS1,M_SSB_BACKUP_ SS1,M_UNDO_SSB_BACKUP_SS1)			
11.3	To record in the IUT that SSN B is a backup SS for SSN C (TX_SSB_BACKUP_SSC,M_SSB_BACKUP_ SSC,M_UNDO_SSB_BACKUP_SSC)			
11.4	To record in the IUT that SP B is a concerned node for SP A (IUT) (TX_B_CONCERN_A, M_B_ CONCERN _A, M_UNDO_B_ CONCERN _A)			
11.5	To record in the IUT that SP B is a concerned node for SP C (TX_B_CONCERN_C, M_B_ CONCERN _C, M_UNDO_B_ CONCERN _C)			
11.6	To record in the IUT that SS SSN1 (IUT) and SSN2 (IUT) are concerned SS for each other (TX_SSA1_ SSA2_CONCERN, M_ SSA1 _ SSA2_CONCERN, M_UNDO_ SSA1_ SSA2_CONCERN)			
11.7	To record in the IUT that SS SSN1 (IUT) is unavailable (TX_SSN1_ UNAV_AV, M_ SSN1 _ UNAV, M_SSN1_AV)			
11.8	To record in the IUT that Point Code C is unavailable (TX_PC_C_ UNAV_AV, M_ PC_C _ UNAV, M_PC_C_AV)			
11.9	To make the IUT Point Code A failed and then recovered (TX_PC_A_ FAIL_RECOVER, M_ PC_A _ FAIL, M_PC_A_RECOVER)			

Table B.12: SCCP MA actions

Item	Action	AL? (Y/N)	Command
12.1	To restart the SCCP in PC A (IUT) (TX_RESTART_SCCP_A, M_RESTART_SCCP_A)		
12.2	To restart the MTP in PC A (IUT) (TX_RESTART_MTP_A, M_RESTART_MTP_A)		

B.6.8 Timer values

B.6.8.1 Timers used in the SCCP test suite

If required, and after consultation with the test laboratory, the default values for the timers may be changed by entering the required values in table B.13. The timers are related to SCCP timers with similar names. However, the default values often differ from the maximum SCCP timer values to take into account various effects (e.g. clock inaccuracies, message delays, etc.).

For any table entry not completed the default value stated below will be used.

Table B.13: Timers - SCCP test suite

Item	Timer	Default value	Requested value
13.1	Tconnect	130 s	
13.2	Tias	2 min	
13.3	Tiar	4 min	
13.4	Trel	25 s	
13.5	Tguard	25 min	
13.6	Treass	25 s	
13.7	Tinterval	70 s	
13.8	Trepeat	25 s	
13.9	Tsst	20 s	
13.10	Tstart	60 s	

B.6.8.2 Additional timers used in the SCCP test suite

Some additional timers, not directly related to SCCP timers, are also required in the SCCP test suite. If required, and after consultation with the test laboratory, the default values for these timers may be changed by entering the required values in table B.14.

For any table entry not completed the default value stated below will be used.

Table B.14: Additional timers - SCCP test suite

Item	Timer	Default value	Requested value	Comment
14.1	Tdis	45 s		Specifies the maximum time to wait in order to check that a message has been discarded (<< Tias)
14.2	Tresp	3 s		Specifies the maximum response time from the IUT when no timer value is defined in the protocol
14.3	Tmgm	10 s		Specifies the execution time of MA procedures
14.4	Tmml	60 s		Specifies the time needed for the test suite operator to perform a requested MML command
14.5	TlongC	120 s		Extra long timer, governing test execution on SP C
14.6	TlongB	180 s		Extra long timer, governing test execution on SP B
14.7	Tshort	180 s		Short timer to check that a connection is stable after its activation
14.8	TIS	120 s		Long timer used to wait the answer of an implicit send

Annex C (normative): Test suite structure and test purposes

C.1 General

C.1.1 Structure

The structure of the test purposes is the same as used in the ATS (see annex C). The test suite structure can be split up into groups, subgroups, functions and subfunctions as shown in the following example.

EXAMPLE: SCCP/RT/VB/MFM/NG/DTC001

That means: "SCCP" test suite, "RT"-group, "VB"-subgroup, "MFM"-function, "NG"-Subfunction, number for dynamic conformance test.

The first identifier (the test suite identifier) is often omitted.

It is however possible that a test purpose belonging to a particular subgroup also exists in another subgroup. This has been done to make test case selection easier.

C.1.2 Number of test purposes

The test purposes can be divided into purposes to check on static - and dynamic conformance requirements. As mentioned before, it has been decided that no SCCP connection-oriented test purposes will be developed for protocol class 3.

The static conformance test purposes are related to the SCCP PICS proforma specified in EN 300 009-2 [2]. For every major capability a simple test purpose has been defined. The amount of static conformance test purposes for SCCP is 61. They are grouped in the same way as subclauses A.5.2 to A.5.4 of EN 300 009-2 [2].

The dynamic conformance test purposes can be divided into the three major capabilities:

- SCCP MA;
- SCCP CL (CL0 and CL1);
- SCCP connection-oriented (Protocol Class 2).

They all use the RT functionality of SCCP. Therefore this version of the SCCP test purposes specifies the tests for SCCP RT, MA, CL and connection oriented. The purposes can be grouped on behaviour and on functionality. The present document has grouped the test purposes on functional aspects. The number of dynamic conformance test purposes for SCCP is 271.

The number of test cases grouped on behaviour are:

- 17 test purposes for CAP;
- 145 test purposes for VB;
- 45 test purposes for IB;
- 64 test purposes for SB.

The number of test cases grouped on functionality are:

- 102 test purposes for RT functionality;
- 44 test purposes for CL functionality;
- 25 test purposes for MA functionality;
- 100 test purposes for Connection oriented functionality.

C.1.3 TSS&TP compliance clause

This subclause describes the compliance clause concerning the development for the SCCP test suite as described in ISO/IEC 9646-2 [5].

- the set of test cases should be a set or a subset of the test purposes specified in the present document;

- the structure of the test suite should be a set or a subset of the structure specified in the present document;

- the naming conventions used in the present document should also be used in the ATS specification;

- the relationship between the test purposes and the PICS described here should be maintained in the ATS;

- the ATS should conform to ISO/IEC 9646-3 [6].

C.2 SCCP test purposes

C.2.1 Static conformance requirements

The PICS reference column in subclause B.6.1 refers to a PICS proforma which conforms to EN 300 009-2 [2].

Table C.1

Test purpose identifier	Test group reference	Test purpose description	PICS reference
Capabilities			**A.5**
General requirements			**A.5.1**
Implemented Class			**A.5.5.1**
Service Class			**table A.1**
Class 0			A.1/1
STC001	SCR/IC/	Check that a message sent by the IUT with protocol class 0 is received with the same protocol class (ITU-T Recommendation Q.714 subclause 1.1.2.1)	
Class 1			A.1/2
STC002	SCR/IC/	Check that the same SLS value is assigned to the messages for which the test system requests transfer by issuing a UDT request primitive with the same sequence control parameter for protocol class set to 1 (ITU-T Recommendation Q.714 subclause 1.1.2.2)	
Class 2			A.1/3
STC003	SCR/IC/	Check that the IUT returns a CC message on receipt of a CR message with protocol class 2 (ITU-T Recommendation Q.714 subclause 1.1.2.3)	
Class 3			A.1/4
STC004	SCR/IC/	(not supported in the SCCP test suite)	
SCCP RT capabilities			**A.5.1.2**
RT functionality			**table A.2**
Outgoing RT to end point (input: DPC + SSN + [GT])			A.2/1
STC005	SCR/RT/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including DPC and SSN, the DPC is not the node itself and both the DPC and SSN are available.	
Outgoing RT to translator after GT translation in own node (input: GT + [SSN])			A.2/2
STC006	SCR/RT/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including only the GT, the translation of the GT produces a remote DPC and a SSN, and both the DPC and SSN are available.	
Outgoing RT to translator identified by user (input: DPC + GT + [SSN])			A.2/3
STC007	SCR/RT/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including DPC and GT, the DPC is not the node itself and is available.	
Incoming RT to end user (received: DPC + SSN + [GT])			A.2/4
STC008	SCR/RT/	If the "called party address" of the received UDT message includes only the SSN and the SSN is available, check that a N-UNITDATAind is invoked.	
Incoming RT with translation to own SP (received: GT + [SSN] ==> own SPC + SSN')			A.2/5
STC009	SCR/RT/	If the "called party address" of the received UDT message includes only the GT the translation of the GT produces a local DPC and a SSN', and the SSN' is available, check that a N-UNITDATAind is invoked.	
Incoming RT with translation to end node (received: GT + [SSN] ==> DPC + SSN' + [GT'])			A.2/6
STC010	SCR/RT/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a SSN', and both the DPC and SSN' are available, check that a UDT message is sent to the DPC.	
Incoming RT with translation to new translation point (received: GT + [SSN] ==> DPC + GT' + [SSN'])			A.2/7

Test purpose identifier	Test group reference	Test purpose description	PICS reference
STC011	SCR/RT/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a new GT, and the DPC is available, check that a UDT message is sent to the DPC.	
Internal RT to own SP (input: own SPC + SSN + [GT])			A.2/8
STC012	SCR/RT/	If the "Cda" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is the node itself and the SSN is available, check that the N-UNITDATAind. primitive is invoked.	
Internal RT with translation to GT Translation in own node (input: GT + [SSN] ==> own SPC + SSN'+ [GT'])			A.2/9
STC013	SCR/RT/	If the "Cda" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a local DPC and a SSN, and the SSN is available, check that the N-UNITDATAind. primitive is invoked.	
Hop counter protection			A.2/10
STC014	SCR/RT/	Check that when the hop counter decrements to value zero in case of a CL message, the message return procedure is initiated.	
Translation with selection of backup if the GT translation leads to an unavailable SCCP SS			A.2/11
STC015	SCR/RT/	Check that a received message requesting a GT translation is sent to the backup SS if the primary SS is unavailable	
Translation with selection of backup if the GT translation leads to an unavailable point code or SCCP			A.2/12
STC016	SCR/RT/	Check that a received message requesting a GT translation is sent to the backup node if the primary node is unavailable	
Capabilities to generate a new GT'			A.2/13
STC017	SCR/RT/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a new GT, and the DPC is available, check that a UDT message is sent to the DPC, and includes the net GT'.	
Major capabilities- SCCP MA			**A.5.2**
SCCP MA			**table A.6**
SP status MA for solitary node			A.6/1
STC024	SCR/MA/	Check that when a link (not the last link) goes out of service the IUT sends out an N-PCSTATE primitive to the local AL concerned IUT users with "SP or remote SCCP inaccessible" information (ITU-T Recommendation Q.714 subclause 5.2.2)	
SS MA for solitary SS			A.6/2
STC025	SCR/MA/	Check that a received SSP message by the IUT causes an N-STATE primitive to the local AL concerned IUT users with "user out-of-service" information (ITU-T Recommendation Q.714 subclause 5.3.6)	
Local BC of N_STATE/N_PCSTATE			A.6/3
STC026	SCR/MA/	Check that an MTP-STATUS indication message relating to SP congestion results in a local BC for the SP with "SP congested" information (ITU-T Recommendation Q.714 subclause 5.2.4)	
Local MTP availability			A.6/4
STC027	SCR/MA/	Check that at the end of an MTP restart the IUT initiates a local BC of "SP and remote SCCP accessible" for the SP becoming accessible (ITU-T Recommendation Q.714 subclause 5.2.5)	
SP status MA for replicated node (dominant mode)			A.6/5
STC028	SCR/MA/	Check that a received message requesting a GT translation is sent the backup node if the primary node is unavailable.	

Test purpose identifier	Test group reference	Test purpose description	PICS reference
SS MA for replicated SSs (dominant mode)			A.6/6
STC029	SCR/MA/	Check that a received message requesting a GT translation is sent the backup SS if the primary SS is unavailable.	
Co-ordinated state change between replicas			A.6/7
STC030	SCR/MA/	Check that the co-ordinated state change procedure is correctly executed when a local SS requests to go out of service.	
Remote BC from local SS			A.6/8
STC031	SCR/MA/	Check that a remote BC is initiated when a local SS is taken out of service by initiating a N-STATErequest.	
Secondary remote BC for remote SS			A.6/9
STC032	SCR/MA/	Check that a remote BC is initiated by sending a SSP to the IUT. The IUT informs all its concerned SSs.	
SCCP restart (reaction on UPU procedure of MTP)			A.6/10
STC033	SCR/MA/	Check that when the IUT goes out of service and after the SCCP restart procedure the IUT initiates SSA messages to all concerned nodes.	
SP restart			A.6/11
STC034	SCR/MA/	Check that a SP restart procedure is initiated when the SUT has lost power.	
Major capabilities - CL SCCP			**A.5.3**
Data transfer			**table A.7**
Data transfer - non sequenced (Class 0), no return option using UDT or non segmented XUDT			A.7/1
STC035	SCR/CL/	Check that a message sent by the IUT with protocol class 0 is received with the same protocol class (ITU-T Recommendation Q.714 subclause 1.1.2.1)	
Data transfer, sequenced (CL-1)			A.7/2
STC036	SCR/CL/	Check that the same SLS value is assigned to the message for which the test system requests transfer by issuing by the IUT multiple UNITDATArequest messages for class 1 (ITU-T Recommendation Q.714 subclause 4.1)	
Segmentation/Reassembly			A.7/3
STC037	SCR/CL/	Check that the IUT reassembles XUDT messages with F-bit set to 1 in the segmentation parameter of the first segment (ITU-T Recommendation Q.714 subclause 4.1.1)	
Message return			A.7/4
STC038	SCR/CL/	In case the return option is set, check that the IUT returns the message if it cannot be delivered to its final destination in case of UDT messages (ITU-T Recommendation Q.714 subclause 4.2)	
Syntax error			A.7/5
STC039	SCR/CL/	Check that the IUT discards a message containing a syntactical error. It should be a value error. e.g. a message with an unknown message type (ITU-T Recommendation Q.714 subclause 4.3)	
Sending of XUDT for non-segmented messages			A.7/6
STC039a	SCR/CL/	Check that the IUT is able to send an XUDT for message that is not segmented (ITU-T Recommendation Q.714 subclause 4.1)	
Reception of XUDT for non-segmented messages			A.7/7
STC039b	SCR/CL/	Check that the IUT is able to receive an XUDT for a message that is not segmented (ITU-T Recommendation Q.714 subclause 4.1)	

Test purpose identifier	Test group reference	Test purpose description	PICS reference
Major capabilities - connection-oriented SCCP			**A.5.4**
Connection establishment			**table A.8**
Explicit Setup, class 2 in end node			A.8/1
STC040	SCR/CO/	Check that the IUT returns a CC message on receipt of a CR message with protocol class 2.	
Embedded Setup, class 2 in end node			A.8/2
STC041	SCR/CO/	Check that the IUT sets up a connection on receipt of a REQUEST TYPE 1 with protocol class 2.	
Explicit Setup, class 2 in relay node without coupling			A.8/3
STC042	SCR/CO/	Check that when the IUT (relay node) receives a CR message with GT, the IUT sends out a CR message with the same local reference number as in the received CR.	
Explicit Setup, class 2 in relay node with coupling			A.8/4
STC043	SCR/CO/	If the "called party address" includes the SSN and GT (RT, is based on GT), and the local SS is available, check that the IUT responds with a valid CR message.	
Embedded Setup, class 2 in relay node with coupling			A.8/5
STC044	SCR/CO/	If the "called party address" includes the SSN and GT (RT, is based on GT), and the local SS is available, check that the IUT sets up a connection on receipt of a REQUEST TYPE 2 by issuing a REPLY.	
Explicit Setup, refusal procedure			A.8/6
STC045	SCR/CO/	Check that the IUT (end node) is able to correctly react on an incoming CREF message (ITU-T Recommendation Q.714 subclause 3.2)	
STC045a	SCR/CO/	Check that the IUT (relay node) is able to correctly react on an incoming CREF message (ITU-T Recommendation Q.714 subclause 3.2)	
Embedded Setup, refusal procedure			A.8/7
STC046	SCR/CO/	Check that the IUT is able to correctly react on an incoming CREF message after receipt of a REQUEST TYPE 1 for connection Setup (ITU-T Recommendation Q.714 subclause 3.2)	
Data transfer in CR/CC/CREF messages			A.8/8
STC047	SCR/CO/	Check that the IUT returns a CC message on receipt of a CR message with protocol class 2. The CR message contains DATA. The data should be transparently transferred.	
Responding address in CREF on user refusal			A.8/9
STC048	SCR/CO/	Check that the IUT (relay node) is able to correctly react on an incoming CREF message that contains a responding address (ITU-T Recommendation Q.714 subclause 3.2)	
STC048a	SCR/CO/	Check that the IUT (end node) is able to correctly react on an incoming CREF message that contains a responding address (ITU-T Recommendation Q.714 subclause 3.2)	
Class-3 window negotiation			A.8/10
STC049	SCR/CO/	(class 3, not supported in the SCCP test suite)	
Connection REL			**table A.9**
REL procedure in end nodes			A.9/1
STC050	SCR/CO/	Check that the IUT accepts RLSD in state c4 (data transfer) and returns RLC.	
REL procedure in relay nodes with coupling			A.9/2
STC051	SCR/CO/	Check that the IUT (relay node) is able to initiate a Connection REL procedure in state c4 (data transfer) on the reception of RLSD message.	
Data transfer in RLSD messages			A.9/3

Test purpose identifier	Test group reference	Test purpose description	PICS reference
STC052	SCR/CO/	Check that the IUT (relay node) is able to initiate a Connection REL procedure in state c4 (data transfer). The RLSD message contains DATA that should be transferred transparently	
Inactivity control			**table A.10**
Inactivity control			A.10/1
STC053	SCR/CO/	Check that the IUT recovers from an non signalled termination of a connection section during data transfer.(ITU-T Recommendation Q.714 subclause 3.4)	
Inactivity control with flow control checks for class 3			A.10/2
STC054	SCR/CO/	(class 3, not supported in the SCCP test suite)	
Data transfer			**table A.11**
Data transfer class 2 in end node			A.11/1
STC055	SCR/CO/	Check that the IUT (end node) is able to send DT1 messages in state c4 (data transfer).	
Data transfer in relay node with coupling			A.11/2
STC056	SCR/CO/	Check that the IUT is able to transfer DT1 messages in state c4 (data transfer).	
Data transfer class 3 with flow control			A.11/3
STC057	SCR/CO/	(class 3, not supported in the SCCP test suite)	
Data transfer, segmenting/Reassembly			A.11/4
STC058	SCR/CO/	Check that the IUT reassembles segmented NSDUs (total length longer than 255 octets) messages with M-bit set to 1 in the segmenting/Reassembly parameter (ITU-T Recommendation Q.714 subclause 3.5.3)	
Expedited data transfer			A.11/5
STC059	SCR/CO/	(class 3, not supported in the SCCP test suite)	
Data acknowledgement			A.11/6
STC060	SCR/CO/	(class 3, not supported in the SCCP test suite)	
Data transfer; segmenting/Reassembly			**table A.12**
Number of segments supported			A.12/1
STC061	SCR/CO/	Check that the IUT supports messages with a size of at most the number of segments given in the PIXIT. Such messages shall be reassembled and the N-SDU delivered to the user.	
Total N-SDU length supported			A.12/2
STC062	SCR/CO/	Check that the IUT accepts segmented messages with length of at most the supported N-SDU length given in the PIXIT. It shall be able to reassemble messages to a N-SDU of equal size a transmitted at the other end.	
Reset			**table A.13**
Reset			A.13/1
STC063	SCR/CO/	(class 3, not supported in the SCCP test suite)	
Restart			**table A.14**
Restart			A.14/1
STC064	SCR/CO/	Check that the restart procedure provides a recovery mechanism for signalling connection sections in the event of a node failure. After at most T(guard) expires normal procedures are resumed (ITU-T Recommendation Q.714 subclause 3.8)	
Abnormalities			**table A.15**
Abnormalities			A.15/1
STC065	SCR/CO/	Check that the IUT responds correctly when it receives a message that contains a syntactical error (see ISO/IEC 9646-2 [5]), e.g. when a CC is received that contains an unassigned destination local reference number the IUT should respond with an Error PDU (ITU-T Recommendation Q.714 subclause 3.10)	

C.2.2 Dynamic conformance requirements

The Q.786 reference column in tables C.2 to C.5 refers to subclauses in ITU-T Recommendation Q.786 [9].

C.2.2.1 SCCP connectionless

C.2.2.1.1 Routing

Table C.2

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
SCCP CL			**1**
RT			**1.1**
VB			
MFM			**1.1.2**
NG			**1.1.2.2**
DTC001	RT/VB/MFM/NG/	If the "called party address" of the received UDT message includes only the SSN and the local SS is available, check that the N-UNITDATAind primitive is invoked.	1.1.2.2.1.2
DTC002	RT/VB/MFM/NG/	If the "called party address" of the received UDT message includes only the SSN, the local SS is unavailable and the return option is requested, check that a UDTS message is sent to the "calling party address".	1.1.2.2.2
DTC003	RT/VB/MFM/NG/	If the "called party address" of the received UDT message includes SSN and GT, and the local SS is available, check that the N-UNITDATAind primitive is invoked.	1.1.2.2.1.1
DTC004	RT/VB/MFM/NG/	If the "called party address" of the received UDT message includes SSN and GT, the local SS is unavailable and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC005	RT/VB/MFM/NG/	If the "called party address" of the received UDT message includes only the SSN=00000000 and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC006	RT/VB/MFM/NG/	If the "called party address" of the received UDT message includes only the SSN, the local SS is not available and the return option is not requested, check that the message is discarded.	1.1.2.2.3
DTC007	RT/VB/MFM/NG/	If the "called party address" of the received UDT message includes SSN and GT, the local SS is unavailable and the return option is not requested, check that the message is discarded.	
DTC008	RT/VB/MFM/NG/	If the "called party address" of the received UDTS message includes only the SSN and the local SS is available, check that the N-NOTICEind primitive is invoked.	
DTC009	RT/VB/MFM/NG/	If the "called party address" of the received UDTS message includes only the SSN and the local SS is unavailable, check that the message is discarded.	
DTC010	RT/VB/MFM/NG/	If the "called party address" of the received UDTS message includes SSN and GT, and the local SS is available, check that the N-NOTICEind primitive is invoked.	
DTC011	RT/VB/MFM/NG/	If the "called party address" of the received UDTS message includes SSN and GT, and the local SS is unavailable, check that the message is discarded.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
OG			**1.1.2.1**
DTC012	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a SSN, and both the DPC and SSN are available, check that a UDT message is sent to the DPC.	1.1.2.1.4
DTC013	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, and both the DPC and the new SSN are available, check that a UDT message is sent to the DPC.	
DTC014	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a SSN, the DPC is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	1.1.2.1.5
DTC015	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, the DPC is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC016	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a SSN, the SSN is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	1.1.2.1.5
DTC017	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, the new SSN is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC018	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT the translation of the GT produces a local DPC and a SSN, and the SSN is available, check that a N-UNITDATAind is invoked.	1.1.2.1.1
DTC019	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a local DPC and a new SSN, and the new SSN is available, check that a N-UNITDATAind is invoked.	
DTC020	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a local DPC and a SSN, the SSN is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	1.1.2.1.2
DTC021	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a local DPC and a new SSN, the new SSN is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC022	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a new GT, and the DPC is available, check that a UDT message is sent to the DPC.	1.1.2.1.7
DTC023	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new GT, and the DPC is available, check that a UDT message is sent to the DPC.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC024	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a new GT, the DPC is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC025	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new GT, the DPC is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC026	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and this DPC is available, check that a UDT message is sent to the DPC.	
DTC027	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC, the DPC is not available and the return option is requested, check that a UDTS message is sent to the "calling party address".	
DTC028	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, no destination is found when the GTT is performed and the return option is requested, check that a UDTS message is sent to the "calling party address".	1.1.2.1.8
DTC029	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a SSN, the DPC is not available and the return option is not requested, check that the message is discarded.	1.1.2.1.6
DTC030	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, the DPC is not available and the return option is not requested, check that the message is discarded.	
DTC031	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a SSN, the SSN is not available and the return option is not requested, check that the message is discarded.	1.1.2.1.6
DTC032	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, the new SSN is not available and the return option is not requested, check that the message is discarded.	
DTC033	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a local DPC and a SSN, the SSN is not available and the return option is not requested, check that the message is discarded.	1.1.2.1.3
DTC034	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a local DPC and a new SSN, the new SSN is not available and the return option is not requested, check that the message is discarded.	
DTC035	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, the translation of the GT produces a remote DPC and a new GT, the DPC is not available and the return option is not requested, check that the message is discarded.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC036	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC and a new GT, the DPC is not available and the return option is not requested, check that the message is discarded.	
DTC037	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes GT and SSN, the translation of the GT produces a remote DPC, the DPC is not available and the return option is not requested, check that the message is discarded.	
DTC038	RT/VB/MFM/OG/	If the "called party address" of the received UDT message includes only the GT, no destination is found when GTT is performed and the return option is not requested, check that the message is discarded.	1.1.2.1.9
DT			**1.2**
Message Return/ UDTS (un)deliverable			**1.2.3**
DTC039	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, the translation of the GT produces a remote DPC and a SSN, and both the DPC and SSN are available, check that a UDTS message is sent to the DPC.	1.2.3.1.2
DTC040	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, and both the DPC and the new SSN are available, check that a UDTS message is sent to the DPC.	
DTC041	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, the translation of the GT produces a remote DPC and a SSN, and the DPC is not available, check that the message is discarded.	
DTC042	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, and the DPC is not available, check the message is discarded.	
DTC043	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, the translation of the GT produces a remote DPC and a SSN, and the SSN is not available, check that the message is discarded.	1.2.3.2.1
DTC044	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a remote DPC and a new SSN, and the new SSN is not available, check that the message is discarded.	
DTC045	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, the translation of the GT produces a local DPC and a SSN, and the SSN is available, check that the N-NOTICEind primitive is invoked.	1.2.3.1.1
DTC046	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a local DPC and a new SSN, and the new SSN is available, check that a N-NOTICEind primitive is invoked.	
DTC047	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, the translation of the GT produces a local DPC and a SSN, and the SSN is not available, check that the message is discarded.	
DTC048	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a local DPC and a new SSN, and the new SSN is not available, check that the message is discarded.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC049	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, the translation of the GT produces a remote DPC and a new GT, and the DPC is available, check that a UDTS message is sent to the DPC.	
DTC050	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a remote DPC and a new GT, and the DPC is available, check that a UDTS message is sent to the DPC.	
DTC051	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, the translation of the GT produces a remote DPC and a new GT, and the DPC is not available, check that the message is discarded.	
DTC052	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a remote DPC and a new GT, and the DPC is not available, check that the message is discarded.	
DTC053	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a remote DPC and this DPC is available, check that a UDTS message is sent to the DPC.	
DTC054	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes GT and SSN, the translation of the GT produces a remote DPC, and the DPC is not available, check that the message is discarded.	
DTC055	RT/VB/MFM/OG/	If the "called party address" of the received UDTS message includes only the GT, no destination is found when the GTT is performed, check that the message is discarded.	
Messages from SCCP users			**1.1.1**
DP (Route not on GT)			**1.1.1.1**
DTC056	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is the node itself and the SSN is available, check that the N-UNITDATAind. primitive is invoked.	1.1.1.1.1.2
DTC057	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is the node itself, the SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	1.1.1.1.2
DTC058	RT/VB/MFS/DP/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including DPC and SSN, the DPC is not the node itself and both the DPC and SSN are available.	1.1.1.1.4
DTC059	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is not the node itself, the SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	1.1.1.1.5
DTC060	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is not the node itself and is not available, and the return option is requested, check that the N-NOTICEind. primitive is invoked.	1.1.1.1.5
DTC061	RT/VB/MFS/DP/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including DPC and GT, the DPC is not the node itself and is available.	
DTC062	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. includes DPC and GT, the DPC is not the node itself and isn't available, and the return option is requested, check that the N-NOTICEind. primitive is invoked.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC063	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC, GT and SSN, the DPC is the node itself and the SSN is available, check that a UDT message is sent to the local SSN.	1.1.1.1.1.1
DTC064	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC, SSN and GT, the DPC is the node itself, the SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	
DTC065	RT/VB/MFS/DP/	Check that a UDT message is sent to the DPC when routed on SSN by the IUT with "called party address" including DPC, GT and SSN, the DPC is not the node itself and both DPC and SSN are available.	
DTC066	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC, GT and SSN, the DPC is not the node itself, the SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked when routed on SSN.	
DTC067	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC, GT and SSN, the DPC is not the node itself and is not available, and the return option is requested, check that the N-NOTICEind primitive is invoked.	
DTC068	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is the node itself, the SSN is not available and the return option is not requested, check that the message is discarded.	1.1.1.1.3
DTC069	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is not the node itself and is not available, and the return option is not requested, check that the message is discarded.	1.1.1.1.6
DTC070	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and SSN, the DPC is not the node itself, the SSN is not available and the return option is not requested, check that the message is discarded.	1.1.1.1.6
DTC071	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC and GT, the DPC is not the node itself and is not available, and the return option is not requested, check that the message is discarded.	
DTC072	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC, SSN and GT, the DPC is the node itself, the SSN is not available and the return option is not requested, check that the message is discarded when routed on SSN.	
DTC073	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC, GT and SSN, the DPC is not the node itself, the SSN is not available and the return option is not requested, check that the message is discarded when routed on SSN.	
DTC074	RT/VB/MFS/DP/	If the "called party address" of the received N-UNITDATA req. primitive includes DPC, GT and SSN, the DPC is not the node itself and is not available, and the return option isn't requested, check that the message is discarded.	
No DP (OG)			**1.1.1.2**
DTC075	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a local DPC and a SSN, and the SSN is available, check that the N-UNITDATAind. primitive is invoked.	1.1.1.2.1.2

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC076	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a local DPC and a new SSN, and the new SSN is available, check that the N-UNITDATAind. primitive is invoked.	1.1.1.2.1.1
DTC077	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a local DPC and a SSN, the SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	1.1.1.2.2
DTC078	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a local DPC and a new SSN, the new SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	
DTC079	RT/VB/MFS/ND/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including only the GT, the GT translation produces a remote DPC and a SSN, and both the DPC and SSN are available.	1.1.1.2.4.2
DTC080	RT/VB/MFS/ND/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including GT and SSN, the GT translation produces a remote DPC and a new SSN, and both the DPC and the new SSN are available.	1.1.1.2.4.1
DTC081	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a remote DPC and a SSN, the DPC is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	1.1.1.2.5
DTC082	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a remote DPC and a new SSN, the DPC is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	
DTC083	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a remote DPC and a SSN, the SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	1.1.1.2.5
DTC084	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a remote DPC and a new SSN, the SSN is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	
DTC085	RT/VB/MFS/ND/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including only the GT, the GT translation produces a remote DPC and a new GT, and the DPC is available.	1.1.1.2.7
DTC086	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a remote DPC and a new GT, the DPC is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	
DTC087	RT/VB/MFS/ND/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including GT and SSN, the GT translation produces a remote DPC and a new GT, and the DPC is available.	1.1.1.2.4.2

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC088	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a remote DPC and a new GT, the DPC is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	
DTC089	RT/VB/MFS/ND/	Check that a UDT message is sent to the DPC by the IUT with "called party address" including GT and SSN, the GT translation produces only a remote DPC, and this DPC is available.	
DTC090	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces only a remote DPC, this DPC is not available and the return option is requested, check that the N-NOTICEind. primitive is invoked.	
DTC091	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, no destination is found when the GTT is performed, and the return option is requested, check that the N-NOTICEind. primitive is invoked. (No Translation with Specific Address)	1.1.1.2.8
DTC091a	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, no destination is found when the GTT is performed, and the return option is requested, check that the N-NOTICEind. primitive is invoked. (No Translation with Address of Such Nature)	1.1.1.2.8
DTC092	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a local DPC and a SSN, the SSN is not available and the return option is not requested, check that the message is discarded.	1.1.1.2.3
DTC093	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a local DPC and a new SSN, the new SSN is not available and the return option is not requested, check that the message is discarded.	
DTC094	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a remote DPC and a SSN, the DPC is not available and the return option is not requested, check that the message is discarded.	1.1.1.2.6
DTC095	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a remote DPC and a new SSN, the DPC is not available and the return option is not requested, check that the message is discarded.	
DTC096	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a remote DPC and a SSN, the SSN is not available and the return option is not requested, check that the message is discarded.	1.1.1.2.6
DTC097	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a remote DPC and a new SSN, the SSN is not available and the return option is not requested, check that the message is discarded.	
DTC098	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, the GT translation produces a remote DPC and a new GT, the DPC is not available and the return option is not requested, check that the message is discarded.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC099	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces a remote DPC and a new GT, the DPC is not available and the return option is not requested, check that the message is discarded.	
DTC100	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes GT and SSN, the GT translation produces only a remote DPC, this DPC is not available and the return option is not requested, check that the message is discarded.	
DTC101	RT/VB/MFS/ND/	If the "called party address" of the received N-UNITDATA req. primitive includes only the GT, no destination is found when the GTT is performed and the return option is not requested, check that the message is discarded.	1.1.1.2.9

C.2.2.1.2 Data transfer

Table C.3

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
CL			**1**
VB			
DT			**1.2**
DTC102	CL/VB/DT/	Check that the hop counter parameter value decreases after each GT translation (ITU-T Recommendation Q.714 subclause 4.1.1, Q.712 subclause 2.19)	
Segmentation & Reassembly			**1.2.4.1**
DTC103	CL/VB/DT/SR/	Check that the IUT performs a correct segmentation numbering and setting of F-bit.	1.2.4.1.1
DTC104	CL/VB/DT/SR/	Check that the IUT reassembles XUDT messages with F-bit set to 1 in the segmentation parameter of the first segment (ITU-T Recommendation Q.714 subclause 4.1.1, Q.712 subclause 2.20)	1.2.4.1.2
DTC105	CL/VB/DT/SR/	Check that the IUT, as a relay node, uses the equal SLS codes in the messages after relaying them.	1.2.4.1.3
DTC106	CL/VB/DT/SR/	Check that an XUDTS message is returned if the XUDT message could not be delivered and the return option is set (ITU-T Recommendation Q.714 subclause 4.2)	
CL0			
DTC107	CL/VB/DT/CL0/	Check that a message sent by the IUT with protocol class 0 is received with the same protocol class (ITU-T Recommendation Q.714 subclause 1.1.2.1)	
CL1 (with sequential delivery capability)			**1.2.1**
DTC108	CL/VB/DT/CL1/	Check that the same SLS value is assigned to all the messages for which the test system requests transfer by issuing multiple UNITDATA req. messages by the IUT.	1.2.1.1
IB			
DT			
Segmentation & Reassembly			**1.2.4.2**
DTC109	CL/IB/DT/SR/	Check that a received XUDT, with duplicated segments and return option is not set, is discarded by the IUT.	1.2.4.2.2
DTC110	CL/IB/DT/SR/	Check that a received XUDT, with duplicated segments and return option is set, is replied by the IUT with an XUDTS that contains the first segment of user data.	1.2.4.2.2

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC111	CL/IB/DT/SR/	Check that a received XUDT, with segments out of sequence and return option is not set, is discarded by the IUT.	1.2.4.2.2
DTC112	CL/IB/DT/SR/	Check that a received XUDT, with segments out of sequence and return option is set, is replied by the IUT with an XUDTS that contains the first segment of user data.	1.2.4.2.2
DTC113	CL/IB/DT/SR/	Check that a received XUDT, after Reassembly timer is expired and return option is not set, is discarded by the IUT.	1.2.4.2.2
DTC114	CL/IB/DT/SR/	Check that a received XUDT, after Reassembly timer is expired and return option is set, is replied by the IUT with an XUDTS that contains a segment of user data.	1.2.4.2.2
DTC115	CL/IB/DT/SR/	Check that a received XUDT, with first segment that contains an F-bit set to zero and return option is not set, is discarded by the IUT.	1.2.4.2.2
DTC116	CL/IB/DT/SR/	Check that a received XUDT, with first segment that contains an F-bit set to zero and return option is set, is replied by the IUT with an XUDTS that contains a segment of user data.	1.2.4.2.2
DTC117	CL/IB/DT/SR/	Check that a received XUDT, with subsequent segment that contains an F-bit set to one and return option is not set, is discarded by the IUT.	1.2.4.2.2
DTC118	CL/IB/DT/SR/	Check that a received XUDT, with subsequent segment that contains an F-bit set to one and return option is set, is replied by the IUT with an XUDTS that contains a segment of user data.	1.2.4.2.2
DTC119	CL/IB/DT/SR/	Check that a received XUDT, while outgoing destination is not accessible before 1st segment arrives and return option is not set, is discarded by the IUT (relay node).	1.2.4.2.3
DTC120	CL/IB/DT/SR/	Check that a received XUDT, while outgoing destination is not accessible before 1st segment arrives and return option is set, is replied by the IUT with an XUDTS that contains the first segment of user data.	1.2.4.2.3
DTC121	CL/IB/DT/SR/	Check that a received XUDT, while outgoing destination is not accessible after 1st segment arrives and return option is not set, is discarded by the IUT (relay node).	1.2.4.2.3
DTC122	CL/IB/DT/SR/	Check that a received XUDT, while outgoing destination is not accessible after 1st segment arrives and return option is set, is replied by the IUT with an XUDTS that contains the received segment of user data.	1.2.4.2.3
SB			**1.2.2**
DT			
Segmentation & Reassembly			**1.2.4.2**
DTC123	CL/SB/DT/SR/	Check that a message that has to be segmented, with return option set and the message is too long, is returned by the IUT with an XUDTS containing a segment of user data.	1.2.4.2.1
DTC124	CL/SB/DT/SR/	Check that a message at the originating node with return option set is discarded by the IUT when no resources are available.	1.2.4.2.1
DTC125	CL/SB/DT/SR/	Check that a received XUDTS that is marked as non-first is discarded by the IUT.	1.2.4.2.1
DTC126	CL/SB/DT/SR/	Check that a received XUDT at the terminating node with return option is set is discarded by the IUT when no resources are available.	1.2.4.2.2
DTC127	CL/SB/DT/SR/	Check that a received XUDT with incorrect segment parameter length is discarded by the IUT.	1.2.4.2.2
CL0			
DTC128	CL/SB/DT/CL0/	Check that a received message, at a relay node, is discarded if the pointer to the Cga points beyond the end of the message.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC128a	CL/SB/DT/CL0/	Check that a received message, at an end node, is discarded if the pointer to the Cga points beyond the end of the message.	
DTC129	CL/SB/DT/CL0/	Check that a received message, at a relay node, is discarded if the pointer to the Cda points beyond the end of the message.	
DTC129a	CL/SB/DT/CL0/	Check that a received message, at an end node, is discarded if the pointer to the Cda points beyond the end of the message.	
DTC130	CL/SB/DT/CL0/	Check that a received message, at a relay node, is discarded if the pointer to the user data points beyond the end of the message.	
DTC130a	CL/SB/DT/CL0/	Check that a received message, at an end node, is discarded if the pointer to the user data points beyond the end of the message.	
DTC131	CL/SB/DT/CL0/	Check that a received message, at a relay node, is discarded if the message type value is different from the specified values.	
DTC131a	CL/SB/DT/CL0/	Check that a received message, at an end node, is discarded if the message type value is different from the specified values.	
DTC132	CL/SB/DT/CL0/	Check that a received message, at a relay node, is discarded if the protocol class value is 2.	
DTC132a	CL/SB/DT/CL0/	Check that a received message, at an end node, is discarded if the protocol class value is 2.	
DTC133	CL/SB/DT/CL0/	Check that a received message, at a relay node, is discarded if the protocol class value is different from the specified values.	
DTC133a	CL/SB/DT/CL0/	Check that a received message, at an end node, is discarded if the protocol class value is different from the specified values.	
DTC134	CL/SB/DT/CL0/	Check that a received message, at a relay node, is discarded if the length indicator value of the Cda parameter is incongruent with the address indicator.	
DTC134a	CL/SB/DT/CL0/	Check that a received message, at an end node, is discarded if the length indicator value of the Cda parameter is incongruent with the address indicator.	
DTC135	CL/SB/DT/CL0/	Check that a received message is discarded if the Cda parameter includes GT, RT is based on GT, but the Cda is not large enough to include the GT.	
DTC136	CL/SB/DT/CL0/	Check that a received message is discarded if the Cda parameter includes only SSN, RT is based on DPC+SSN, but the Cda is not large enough to include SSN.	
DTC137	CL/SB/DT/CL0/	Check that a received message is discarded if the address indicator of the Cda indicates RT based on SSN and the address indicator indicates SSN not present.	
DTC138	CL/SB/DT/CL0/	Check that a received message is discarded if the address indicator of the Cda indicates RT based on GT and GT is not present.	

C.2.2.2 SCCP management

Table C.4

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
MA			**2**
VB			
SP			
PR			
DTC139	MA/VB/SP/PR/	Check that a received SSP message by the IUT causes an N-PCSTATE primitive to the IUT users (ITU-T Recommendation Q.714 subclause 5.2.2)	
AL			
DTC140	MA/VB/SP/AL/	Check that in absence of network failures a message requesting a GT translation is sent to the primary node.	
DTC141	MA/VB/SP/AL/	Check that periodic 'SST' messages referring to SSN =1 received by the IUT are returned by an SSA with SSN =1. (ITU-T Recommendation Q.714 subclause 5.2.3.5, subclause 5.3.4)	
SS			
PR			
DTC142	MA/VB/SS/PR/	Check that, when a UDT message destined to a PR local SS is received, a SSP message is sent to the OPC in the MTP RT label.	
DTC143	MA/VB/SS/PR/	Check that the local BC procedure for a local concerned SS is initiated when a local SS becomes unavailable.	
DTC144	MA/VB/SS/PR/	Check that the local BC procedure for a local concerned SS is initiated when a SSP message related to an AL SS is received.	
DTC145	MA/VB/SS/PR/	Check that when a link goes out of service the IUT sends out an N-PCSTATE primitive to the IUT users (ITU-T Recommendation Q.714 subclause 5.2.3)	
DTC146	MA/VB/SS/PR/	Check that the SST procedure is initiated when an SSP message related to an AL SS is received.	
AL			
DTC147	MA/VB/SS/AL/	Check that the local BC procedure for a local concerned SS is initiated when a local SS becomes available.	
DTC148	MA/VB/SS/AL/	Check that the local BC procedure for a local concerned SS is initiated when a SSA message related to a PR SS is received.	
DTC149	MA/VB/SS/AL/	Check that in absence of SS failures a message requesting a GT translation is sent to the primary SS.	
Status Test			
DTC150	MA/VB/SS/ST/	Check that no reply is sent when a SST message relative to a local unavailable SS is received.	
DTC151	MA/VB/SS/ST/	Check that a SSA message is sent when a SST message relative to a local available SS is received.	
DTC152	MA/VB/SS/ST/	Check that no reply is sent when a SST message relative to a not existent local SS is received.	
CSE			
DTC153	MA/VB/SS/CSE/	Check that the co-ordinated state change procedure is correctly executed when a local SS requests to go out of service.	
DTC154	MA/VB/SS/CSE/	Check that a SOG message is sent in response to a SOR message.	
BC			
DTC155	MA/VB/SS/BC/	Check that the BC procedure is not initiated if a SSP message with affected point code different from the informer point code is received.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC156	MA/VB/SS/BC/	Check that a restart procedure includes the BC of 'SS AL' messages referring to SSN =1 to all 'concerned' SPs (ITU-T Recommendation Q.714 subclause 5.2.5, subclause 5.3.7.3)	
IB			
SS			
PR			
DTC157	MA/IB/SS/PR/	Check that the SS PR procedure is not initiated if a SSP message related to a PR SS is received.	
AL			
DTC158	MA/IB/SS/AL/	Check that the SS AL procedure is not initiated if a SSA message related to an AL SS is received.	
CSE			
DTC159	MA/IB/SS/CSE/	Check that a SOG message is discarded if "no waiting for grant" is associated with the SS named in the message.	
SB			
SS			
DTC160	MA/SB/SS/	Check that a received SCMG message with an undefined format identifier code is discarded by the IUT.	
DTC161	MA/SB/SS/	Check that a received SSA message is discarded by the IUT if the user data length is 4.	
DTC162	MA/SB/SS/	Check that a received SSP message is discarded by the IUT if the user data length is 4.	
DTC163	MA/SB/SS/	Check that a received SST message is discarded by the IUT, if the user data length is 4.	

C.2.2.3 SCCP connection-oriented

Table C.5

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
Connection Oriented			
Capability			
Setup			
DTC164	CO/CAP/ST/	Check that the IUT (relay node) is able to correctly react on an incoming CREF message (ITU-T Recommendation Q.714 subclause 3.2)	
DTC164a	CO/CAP/ST/	Check that the IUT (end node) is able to correctly react on an incoming CREF message (ITU-T Recommendation Q.714 subclause 3.2)	
DTC165	CO/CAP/ST/	Check that the IUT (relay node) is able to negotiate the protocol class during connection establishment (ITU-T Recommendation Q.714 subclause 3.1.3)	
DTC165a	CO/CAP/ST/	Check that the IUT (end node) is able to negotiate the protocol class during connection establishment (ITU-T Recommendation Q.714 subclause 3.1.3)	
DTC165	CO/CAP/ST/	Check that the IUT is able to negotiate the protocol class during connection establishment (ITU-T Recommendation Q.714 subclause 3.1.3)	
DTC166	CO/CAP/ST/	Check that the IUT returns a CC message on receipt of a CR message with protocol class 2.	
DTC167	CO/CAP/ST/	Check that the IUT accepts 2 subsequent CR messages with different Called Party Addresses. Check that a valid CC message is returned for each of the CR messages and that data transfer is possible on the connections.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC168	CO/CAP/ST/	If the "called party address" includes only the SSN and the local SS is available, check that the IUT responds with a valid CC message.	
DTC169	CO/CAP/ST/	If the "called party address" includes only the SSN, the local SS is not available, check that the CREF message is transmitted by the IUT.	
DTC170	CO/CAP/ST/	If the "called party address" includes the SSN and GT (RT is based on SSN), and the local SS is available, check that the IUT responds with a valid CC message.	
DTC171	CO/CAP/ST/	If the "called party address" includes the SSN and GT (RT, is based on GT), and the local SS is available, check that the IUT responds with a valid CC message.	
DTC172	CO/CAP/ST/	If the "called party address" includes the SSN and GT, the local SS is not available, check that the CREF message is transmitted by the IUT.	
DTC173	CO/CAP/ST/	If the "called party address" includes only the GT, the translation of the GT produces the local DPC and a SSN, and the SSN is available, check that the IUT responds with a valid CC message.	
REL			
DTC174	CO/CAP/REL/	Check that the IUT is able to freeze the local reference number after REL of a connection section (ITU-T Recommendation Q.714 subclause 3.3.2)	
DTC175	CO/CAP/REL/	Check that the IUT is able to correctly react on an incoming RLSD message (ITU-T Recommendation Q.714 subclause 3.3.3)	
DTC176	CO/CAP/REL/	Check that the IUT discards any connection oriented message received, with a local reference number that was in use before restart, while the node restart procedure is active (restart guard timer is running) (ITU-T Recommendation Q.714 subclause 3.8)	
DTC177	CO/CAP/REL/	Check that the IUT accepts an RLSD message with both source and unallocated destination local reference numbers and returns an RLC message with reversed local reference numbers (ITU-T Recommendation Q.714 subclause 3.8)	
DTC178	CO/CAP/REL/	Check that the IUT resumes normal procedures (acceptance of connection oriented messages) after expiration of the restart guard timer (ITU-T Recommendation Q.714 subclause 3.8)	
VB			
State c1 (Idle)			
DTC179	CO/VB/ST1/	Check that the IUT accepts in state c1 (idle) a CR and returns a CC and go too state c4 (data transfer).	
State c2 (incoming connection pending)			
DTC180	CO/VB/ST2/	Check that the IUT can return a CREF message on reception of a CR message (in state c2 (incoming connection pending)) and changes to state c1 (Idle).	
State c3 (outgoing connection pending)			
DTC181	CO/VB/ST3/	Check that an incoming CC message is accepted in state c3 (outgoing connection pending) and the IUT (relay node) changes to state c4 (data transfer).	
DTC181a	CO/VB/ST3/	Check that an incoming CC message is accepted in state c3 (outgoing connection pending) and the IUT (end node) changes to state c4 (data transfer).	
State c4 (data transfer)			
DTC182	CO/VB/ST4/	Check that the IUT accepts DT1 messages in state c4 (data transfer).	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC183	CO/VB/ST4/	Check that the IUT (relay node) is able to send DT1 messages in state c4 (data transfer).	
DTC183a	CO/VB/ST4/	Check that the IUT (end node) is able to send DT1 messages in state c4 (data transfer).	
DTC184	CO/VB/ST4/	Check that the IUT accepts RLSD in state c4 (data transfer) and returns RLC.	
DTC185	CO/VB/ST4/	Check that the IUT (relay node) is able to initiate a Connection REL procedure in state c4 (data transfer).	
DTC185a	CO/VB/ST4/	Check that the IUT (end node) is able to initiate a Connection REL procedure in state c4 (data transfer).	
DTC186	CO/VB/ST4/	Check that the IUT is able to send an RLSD on an incoming IT message, containing erroneous data, in state c4 (data transfer) (ITU-T Recommendation Q.714 subclause 3.4)	
DTC187	CO/VB/ST4/	Check that the IUT sends an IT message after expiration of the Send Inactivity Control timer in state c4 (data transfer) (ITU-T Recommendation Q.714 subclause 3.4)	
DTC188	CO/VB/ST4/	Check that the IUT reassembles segmented NSDUs (total length longer than 255 octets) messages with M-bit set to 1 in the segmentation parameter (ITU-T Recommendation Q.714 subclause 3.5.3)	
DTC189	CO/VB/ST4/	Check that the IUT initiates the connection REL procedure on a temporary connection section when the receive inactivity control timer (Tiar) expires.	
DTC190	CO/VB/ST4/	Check that the IUT RELs the connection internally when an ERR message is received with cause other than "service class mismatch" (ITU-T Recommendation Q.714 subclause 3.10.3).	
DTC191	CO/VB/ST4	Check that the IUT RELs the connection section when a ERR message is received with cause "service class mismatch" (ITU-T Recommendation Q.714 subclause 3.10.3).	
State c5 (incoming disconnect pending)			
DTC192	CO/VB/ST5/	Check that the IUT accepts an RLSD message in state c5 (incoming disconnect pending) and returns an RLC message.	
State c6 (outgoing disconnect pending)			
DTC193	CO/VB/ST6/	Check that the IUT periodically T(repeat rel) repeats the RLSD message after expiration of the Release Timer T(rel) in state c6 (outgoing disconnect pending) and stops after interval timer T(int) expires and maintenance is informed.	
IB			
State c1 (Idle)			
DTC194	CO/IB/ST1/	Check that a DT1 message received in state c1 (idle) is discarded by the IUT.	
DTC195	CO/IB/ST1/	Check that an RLC message received in state c1 (idle) is discarded by the IUT.	
DTC196	CO/IB/ST1/	Check that an ERR message received in state c1 (idle) is discarded by the IUT. (for further study)	
DTC197	CO/IB/ST1/	Check that when a CC message is received in state c1 (idle) the IUT returns an ERR message.	
DTC198	CO/IB/ST1/	Check that a CREF message received in state c1 (idle) is discarded by the IUT.	
State c2 (incoming connection pending)			
DTC199	CO/IB/ST2/	Check that a DT1 message received in state c2 (incoming connection pending) is discarded by the IUT.	
DTC200	CO/IB/ST2/	Check that an RLC message received in state c2 (incoming connection pending) is discarded by the IUT.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC201	CO/IB/ST2/	Check that an ERR message received in state c2 (incoming connection pending) is discarded by the IUT.	
DTC202	CO/IB/ST2/	Check that a CREF message received in state c2 (incoming connection pending) is discarded by the IUT.	
State c3 (outgoing connection pending)			
DTC203	CO/IB/ST3/	Check that a DT1 message received in state c3 (outgoing connection pending) is discarded by the IUT (relay node), RELs locally and returns to state c1 (idle).	
DTC203a	CO/IB/ST3/	Check that a DT1 message received in state c3 (outgoing connection pending) is discarded by the IUT (end node), RELs locally and returns to state c1 (idle).	
DTC204	CO/IB/ST3/	Check that an RLC message received in state c3 (outgoing connection pending) is discarded by the IUT (relay node), RELs locally and returns to state c1 (idle).	
DTC204a	CO/IB/ST3/	Check that an RLC message received in state c3 (outgoing connection pending) is discarded by the IUT (end node), RELs locally and returns to state c1 (idle).	
DTC205	CO/IB/ST3/	Check that an ERR message received in state c3 (outgoing connection pending) is discarded by the IUT (relay node), RELs locally and returns to state c1 (idle).	
DTC205a	CO/IB/ST3/	Check that an ERR message received in state c3 (outgoing connection pending) is discarded by the IUT (end node), RELs locally and returns to state c1 (idle).	
DTC206	CO/IB/ST3/	Check that a RLSD message received in state c3 (outgoing connection pending) at the IUT (relay node) is discarded and returns to state c1 (idle).	
DTC206a	CO/IB/ST3/	Check that a RLSD message received in state c3 (outgoing connection pending) at the IUT (end node) is discarded and returns to state c1 (idle).	
State c4 (data transfer)			
DTC207	CO/IB/ST4/	Check that a CC message received in state c4 (data transfer) is discarded by the IUT.	
DTC208	CO/IB/ST4/	Check that an RLC message received in state c4 (data transfer) is discarded by the IUT.	
DTC209	CO/IB/ST4/	Check that a CREF message received in state c4 (data transfer) is discarded by the IUT.	
State c6 (outgoing disconnect pending)			
DTC210	CO/IB/ST6/	Check that a CREF message received in state c6 (outgoing disconnect pending) is discarded by the IUT (relay node).	
DTC210a	CO/IB/ST6/	Check that a CREF message received in state c6 (outgoing disconnect pending) is discarded by the IUT.	
DTC211	CO/IB/ST6/	Check that an ERR message received in state c6 (outgoing disconnect pending) is discarded by the IUT (relay node).	
DTC211a	CO/IB/ST6/	Check that an ERR message received in state c6 (outgoing disconnect pending) is discarded by the IUT (end node).	
DTC212	CO/IB/ST6/	Check that a DT1 message received in state c6 (outgoing disconnect pending) is discarded by the IUT (relay node).	
DTC212a	CO/IB/ST6/	Check that a DT1 message received in state c6 (outgoing disconnect pending) is discarded by the IUT (end node).	
DTC213	CO/IB/ST6/	Check that a CC message received in state c6 (outgoing disconnect pending) is discarded by the IUT (relay node).	
DTC213a	CO/IB/ST6/	Check that a CC message received in state c6 (outgoing disconnect pending) is discarded by the IUT (end node).	
SB			
State c1 (Idle)			
DTC214	CO/SB/ST1/	Check that the IUT discards any message with unknown message type received in state c1 (idle).	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC215	CO/SB/ST1/	Check that the IUT discards a CR message with invalid called party address (invalid GT value) in state c1 (idle).	
DTC216	CO/SB/ST1/	Check that the IUT discards a CR message with invalid protocol class in state c1 (idle).	
DTC217	CO/SB/ST1/	Check that a received CR message is discarded if the pointer to the called party address points beyond the end of the message.	
DTC218	CO/SB/ST1/	Check that a received CR message is discarded if the address indicator of the called party address indicates GT included and GT is not present in the message (RT on GT).	
DTC219	CO/SB/ST1/	Check that a received CR message is discarded if the address indicator of the called party address indicates SSN included and SSN is not present in the message (RT not on GT).	
DTC220	CO/SB/ST1/	Check that a received CR message is discarded if the address indicator of the called party address indicates RT based on SSN and SSN is indicated as not present in the message.	
DTC221	CO/SB/ST1/	Check that a received CR message is discarded if the address indicator of the called party address indicates RT based on GT and GT is indicated as not present in the message.	
State c2 (incoming connection pending)			
DTC222	CO/SB/ST2/	Check that the IUT discards a message with unknown message type received in state c2 (incoming connection pending).	
State c3 (outgoing connection pending)			
DTC223	CO/SB/ST3/	Check that the IUT (relay node) returns an error message when a CC message with unassigned destination local reference number is received in state c3 (outgoing connection pending).	
DTC223a	CO/SB/ST3/	Check that the IUT (end node) returns an error message when a CC message with unassigned destination local reference number is received in state c3 (outgoing connection pending).	
DTC224	CO/SB/ST3/	Check that the IUT discards a CC message with invalid protocol class received in state c3 (outgoing connection pending).	
DTC224a	CO/SB/ST3/	Check that the IUT (end node) discards a CC message with invalid protocol class received in state c3 (outgoing connection pending).	
DTC225	CO/SB/ST3/	Check that the IUT (relay node) discards a CREF message received in state c3 (outgoing connection pending) with pointer to optional parameter that points beyond the end of the message.	
DTC225a	CO/SB/ST3/	Check that the IUT (end node) discards a CREF message received in state c3 (outgoing connection pending) with pointer to optional parameter that points beyond the end of the message.	
DTC226	CO/SB/ST3/	Check that the IUT (relay node) discards a received CC message in state c3 (outgoing connection pending) if the pointer to the called party address points beyond the end of the message.	
DTC226a	CO/SB/ST3/	Check that the IUT (end node) discards a received CC message in state c3 (outgoing connection pending) if the pointer to the called party address points beyond the end of the message.	

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC227	CO/SB/ST3/	Check that the IUT (relay node) discards a received CC message in state c3 (outgoing connection pending) if the address indicator of the Cda indicates GT included and GT is not present in the message (RT on GT).	
DTC227a	CO/SB/ST3/	Check that the IUT (end node) discards a received CC message in state c3 (outgoing connection pending) if the address indicator of the Cda indicates GT included and GT is not present in the message (RT on GT).	
DTC228	CO/SB/ST3/	Check that the IUT (relay node) discards a received CC message in state c3 (outgoing connection pending) if the address indicator of the called party address indicates SSN included and SSN is not present in the message (RT not on GT).	
DTC228a	CO/SB/ST3/	Check that the IUT (end node) discards a received CC message in state c3 (outgoing connection pending) if the address indicator of the called party address indicates SSN included and SSN is not present in the message (RT not on GT).	
DTC229	CO/SB/ST3/	Check that the IUT (relay node) discards a received CC message if the address indicator of the called party address indicates RT based on SSN and SSN is indicated as not present in the message.	
DTC229a	CO/SB/ST3/	Check that the IUT (end node) discards a received CC message if the address indicator of the called party address indicates RT based on SSN and SSN is indicated as not present in the message.	
DTC230	CO/SB/ST3/	Check that the IUT (relay node) discards a received CC message if the address indicator of the called party address indicates RT based on GT and GT is indicated as not present in the message.	
DTC230a	CO/SB/ST3/	Check that the IUT (end node) discards a received CC message if the address indicator of the called party address indicates RT based on GT and GT is indicated as not present in the message.	
DTC231	CO/SB/ST3/	Check that the IUT (relay node) discards any message received with unknown message type in state c3 (outgoing connection pending).	
DTC231a	CO/SB/ST3/	Check that the IUT (end node) discards any message received with unknown message type in state c3 (outgoing connection pending).	
State c4 (data transfer)			
DTC232	CO/SB/ST4/	Check that the IUT returns an ERR message on an RLSD message received in state c4 (data transfer) with the source local reference number received not equal to the one stored locally.	
DTC233	CO/SB/ST4/	Check that the IUT discards a DT1 message with wrong destination local reference number received in state c4 (data transfer).	
DTC234	CO/SB/ST4/	Check that the IUT discards a message with unknown message type received in state c4 (data transfer).	
DTC235	CO/SB/ST4/	Check that the IUT RELs the connection section if an IT messages is received with a discrepancy in the source reference number.	
DTC236	CO/SB/ST4/	Check that the IUT RELs the connection section if an IT messages is received with a discrepancy in the protocol class.	
DTC237	CO/SB/ST4/	Check that the IUT discards an IT messages with an unassigned destination local reference number.	
State c6 (outgoing disconnect pending)			

Test purpose identifier	Test group reference	Test purpose description	Q.786 [9] reference
DTC238	CO/SB/ST6/	Check that the IUT (relay node) discards an RLC message with unassigned destination local reference number received in state c6 (outgoing disconnect pending).	
DTC238a	CO/SB/ST6/	Check that the IUT (end node) discards an RLC message with unassigned destination local reference number received in state c6 (outgoing disconnect pending).	
DTC239	CO/SB/ST6/	Check that the IUT (relay node) discards a message with unknown message type received in state c6 (outgoing disconnect pending).	
DTC239a	CO/SB/ST6/	Check that the IUT (end node) discards a message with unknown message type received in state c6 (outgoing disconnect pending).	

C.3 ATS to TP map

Test purposes that have been considered as untestable have corresponding test cases. For test purposes that have identical purpose or that check same IUT's behaviour, only one test case has been written. Test purposes that check irrelevant requirement according to the PICS document like CLASS 3, no test case has been written. Because there cannot be a straightforward one to one mapping between test purposes and test cases, an independent sequential numbering has been used for test cases. The following table gives for each test purpose, the associated test case when it is has been considered as testable.

Table C.6

Test purpose identifier	Test case identifier	Comments
STC001	TC_82	same test case as STC035 and DTC107
STC002	TC_83	same test case as STC036 and DTC108
STC003	TC_140	same test case as STC040 and DTC166
STC005	TC_069	same test case as DTC058
STC006	TC_072	same test case as DTC079
STC007	TC_070	same test case as DTC061
STC008	TC_018	same test case as DTC001
STC009	TC_061	same test case as DTC018
STC010	TC_029	same test case as DTC012
STC011	TC_035	same test case as STC017 and DTC022
STC012	-	Untestable
STC013	-	Untestable
STC014	TC_001	
STC015	TC_004	same test case as STC029
STC016	TC_003	same test case as STC028
STC017	TC_035	same test case as STC011 and DTC022
STC024	-	Untestable
STC025	-	Untestable
STC026	-	Untestable
STC027	TC_002	
STC028	TC_003	same test case as STC016
STC029	TC_004	same test case as STC015
STC030	TC_125	same test case as DTC153
STC031	TC_005	
STC032	TC_006	
STC033	TC_007	same test case as STC034
STC034	TC_007	same test case as STC033
STC035	TC_082	same test case as STC001 and DTC107
STC036	TC_083	same test case as STC002 and DTC108
STC037	TC_079	same test case as DTC104
STC038	TC_031	same test case as DTC014
STC039	TC_008	
STC039a	TC_009	
STC039b	TC_010	
STC040	TC_140	same test case as STC003 and DTC166
STC041	-	Out of scope
STC043	TC_011	
STC044	-	Out of scope
STC045	TC_138	same test case as DTC164a
STC045a	TC_136	same test case as STC048 and DTC164
STC046	-	Out of scope
STC047	TC_012	
STC048	TC_136	same test case as STC045a and DTC164
STC048a	TC_013	
STC049	-	Out of scope
STC050	TC_150	same test case as DTC175 and DTC184
STC051	TC_159	same test case as DTC185
STC052	TC_014	
STC053	TC_164	same test case as DTC187
STC054	-	Out of scope
STC055	TC_161	same test case as DTC183a
STC056	TC_160	same test case as DTC183
STC057	-	Out of scope
STC058	TC_165	same test case as DTC188
STC059	-	Out of scope
STC060	-	Out of scope

Test purpose identifier	Test case identifier	Comments
STC061	TC_015	
STC062	-	Out of scope
STC063	-	Out of scope
STC064	TC_016	
STC065	TC_017	
DTC001	TC_018	same test case as STC008
DTC002	TC_019	
DTC003	TC_020	
DTC004	TC_021	
DTC005	TC_022	
DTC006	TC_023	
DTC007	TC_024	
DTC008	-	Untestable
DTC009	TC_025	
DTC010	-	Untestable
DTC011	TC_026	
DTC012	TC_029	same test case as STC010
DTC013	TC_030	
DTC014	TC_031	same test case as STC030
DTC015	TC_032	
DTC016	TC_033	
DTC017	TC_034	
DTC018	TC_061	same test case as STC009
DTC019	TC_062	
DTC020	TC_063	
DTC021	TC_064	
DTC022	TC_035	same test case as STC017 and STC011
DTC023	TC_036	
DTC024	TC_037	
DTC025	TC_038	
DTC026	TC_039	
DTC027	TC_040	
DTC028	TC_041	
DTC029	TC_042	
DTC030	TC_043	
DTC031	TC_044	
DTC032	TC_045	
DTC033	TC_065	
DTC034	TC_066	
DTC035	TC_046	
DTC036	TC_047	
DTC037	TC_048	
DTC038	TC_049	
DTC039	TC_050	
DTC041	TC_051	
DTC042	TC_052	
DTC043	TC_053	
DTC044	TC_054	
DTC045	-	Untestable
DTC046	-	Untestable
DTC047	TC_067	
DTC048	TC_068	
DTC049	TC_055	
DTC050	TC_056	
DTC051	TC_057	
DTC052	TC_058	
DTC053	TC_059	
DTC054	TC_060	

Test purpose identifier	Test case identifier	Comments
DTC055	TC_028	
DTC056	-	Untestable
DTC057	-	Untestable
DTC058	TC_069	
DTC059	-	Untestable
DTC060	-	Untestable
DTC061	TC_070	same test case as STC007
DTC062	-	Untestable
DTC063	-	Untestable
DTC064	-	Untestable
DTC065	TC_071	
DTC066	-	Untestable
DTC067	-	Untestable
DTC068	-	Untestable
DTC069	-	Untestable
DTC070	-	Untestable
DTC071	-	Untestable
DTC072	-	Untestable
DTC073	-	Untestable
DTC074	-	Untestable
DTC075	-	Untestable
DTC076	-	Untestable
DTC077	-	Untestable
DTC078	-	Untestable
DTC079	TC_072	
DTC080	TC_073	
DTC081	-	Untestable
DTC082	-	Untestable
DTC083	-	Untestable
DTC084	-	Untestable
DTC085	TC_074	
DTC086	-	Untestable
DTC087	TC_075	
DTC088	-	Untestable
DTC089	TC_076	
DTC090	-	Untestable
DTC091	-	Untestable
DTC091a	-	Untestable
DTC092	-	Untestable
DTC093	-	Untestable
DTC094	-	Untestable
DTC095	-	Untestable
DTC096	-	Untestable
DTC097	-	Untestable
DTC098	-	Untestable
DTC099	-	Untestable
DTC100	-	Untestable
DTC101	-	Untestable
DTC102	TC_077	
DTC103	TC_078	
DTC104	TC_079	same test case as STC037
DTC105	TC_080	
DTC106	TC_081	
DTC107	TC_082	
DTC108	TC_083	
DTC109	TC_084	
DTC110	TC_085	
DTC111	TC_086	

Test purpose identifier	Test case identifier	Comments
DTC112	TC_087	
DTC113	TC_088	
DTC114	TC_089	
DTC115	TC_090	
DTC116	TC_091	
DTC117	TC_092	
DTC118	TC_093	
DTC119	TC_094	
DTC120	TC_095	
DTC121	TC_096	
DTC122	TC_097	
DTC123	-	Untestable
DTC124	-	Untestable
DTC125	-	Untestable
DTC126	-	Untestable
DTC127	TC_098	
DTC128	TC_102	
DTC128a	TC_110	
DTC129	TC_103	
DTC129a	TC_111	
DTC130	TC_104	
DTC130a	TC_112	
DTC131	TC_105	
DTC131a	TC_113	
DTC132	TC_106	
DTC132a	TC_114	
DTC133	TC_107	
DTC133a	TC_115	
DTC134	TC_108	
DTC134a	TC_114	
DTC135	TC_109	
DTC136	TC_099	
DTC137	TC_100	
DTC138	TC_101	
DTC139	-	Untestable
DTC140	TC_117	
DTC141	TC_118	
DTC142	TC_119	
DTC143	-	Untestable
DTC144	-	Untestable
DTC145	-	Untestable
DTC146	TC_120	
DTC147	-	Untestable
DTC148	-	Untestable
DTC149	TC_121	
DTC150	TC_122	
DTC151	TC_123	
DTC152	TC_124	
DTC153	TC_125	same test case as STC030
DTC154	TC_126	
DTC155	TC_127	
DTC156	TC_128	
DTC157	TC_129	
DTC158	TC_130	
DTC159	TC_131	
DTC160	TC_132	
DTC161	TC_133	
DTC162	TC_134	

Test purpose identifier	Test case identifier	Comments
DTC163	TC_135	
DTC164	TC_136	same test case as STC045a and STC048
DTC164a	TC_138	same test case as STC045
DTC165	TC_137	
DTC165a	TC_139	
DTC166	TC_140	same test case as STC040 and STC003
DTC167	TC_141	
DTC168	TC_142	
DTC169	TC_143	
DTC170	TC_144	
DTC171	TC_145	
DTC172	TC_146	
DTC173	TC_147	
DTC174	TC_148	
DTC174a	TC_149	
DTC175	TC_150	same test case as STC050 and DTC184
DTC176	TC_151	
DTC177	TC_152	
DTC178	TC_153	
DTC179	TC_154	
DTC180	TC_155	
DTC181	TC_156	
DTC181a	TC_157	
DTC182	TC_160	
DTC183	TC_158	same test case as STC056
DTC183a	TC_161	same test case as STC055
DTC184	TC_150	same test case as DTC175 and STC050
DTC185	TC_159	same test case as STC051
DTC185a	TC_162	
DTC186	TC_163	
DTC187	TC_164	same test case as STC053
DTC188	TC_165	same test case as STC058
DTC189	TC_166	
DTC190	TC_167	
DTC191	TC_168	
DTC192	TC_169	
DTC193	TC_170	
DTC194	TC_171	
DTC195	TC_172	
DTC196	TC_173	
DTC197	TC_174	
DTC198	TC_175	
DTC199	TC_176	
DTC200	TC_177	
DTC201	TC_178	
DTC202	TC_179	
DTC203	TC_180	
DTC203a	TC_184	
DTC204	TC_181	
DTC204a	TC_185	
DTC205	TC_182	
DTC205a	TC_186	
DTC206	TC_183	
DTC206a	TC_187	
DTC207	TC_188	
DTC208	TC_189	
DTC209	TC_190	
DTC210	TC_191	

Test purpose identifier	Test case identifier	Comments
DTC210a	TC_195	
DTC211	TC_192	
DTC211a	TC_196	
DTC212	TC_193	
DTC212a	TC_197	
DTC213	TC_194	
DTC213a	TC_198	
DTC214	TC_199	
DTC215	TC_200	
DTC216	TC_201	
DTC217	TC_202	
DTC218	TC_203	
DTC219	TC_204	
DTC220	TC_205	
DTC221	TC_206	
DTC222	TC_207	
DTC223	TC_208	
DTC223a	TC_216	
DTC224	TC_209	
DTC224a	TC_217	
DTC225	TC_210	
DTC225a	TC_218	
DTC226	TC_211	
DTC226a	TC_219	
DTC227	TC_212	
DTC227a	TC_220	
DTC228	TC_213	
DTC228a	TC_221	
DTC229	-	For futher study in the standard
DTC229a	TC_222	
DTC230	TC_214	
DTC230a	TC_223	
DTC231	TC_215	
DTC231a	TC_224	
DTC232	TC_225	
DTC233	TC_226	
DTC234	TC_227	
DTC235	TC_228	
DTC236	TC_229	
DTC237	TC_230	
DTC238	TC_231	
DTC238a	TC_232	
DTC239	TC_233	
DTC239a	TC_234	

Annex D (normative): Abstract test suite

This ATS has been produced using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [6].

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.

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

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (SP202131.PDF contained in archive ets_30000903e01p0.ZIP) which accompanies the present document.

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

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (SP202131.MP contained in archive ets_30000903e01p0.ZIP) which accompanies the present document.

Annex E (informative): Nomenclature, guidelines and conventions

Annex E contains information on how to read, edit and use the SCCP abstract test suite. First, some nomenclature is defined. Then, some TTCN conventions are explained on how to use TTCN. Finally, SCCP specific guidelines are explained. In addition, ETSI TTCN conventions and rules can be found in ETS 300 406 [3].

E.1 SCCP nomenclature

This clause defines some general definitions used in the TTCN descriptions, they are not very restrictive and merely meant for creating a uniform writing-style. The definitions are related to identifier names used for the various TTCN types.

FreeName	Identifier may contain upper and lower case letters. The first letter however should be upper case.
Free_Name	Identifier may contain upper and lower case letters as well as underscores. The first letter however should be upper case.
freeName	Identifier may contain upper and lower case letters. The first letter however should be lower case.
free_name	Identifier may contain lower case letters and underscores. The first letter however should be lower case.
Freename	Identifier contains only lower case letters, except for the first letter, which should be upper case.
free	Identifier may contain lower case letters, upper case letters and underscores.
FREE_NAME	Identifier may contain upper case letters and underscores. The first letter however should be upper case.
FREENAME	Identifier may contain only upper case letters.
NUM	Number.

The following subclauses specify the use of these identifier types in the test suite.

E.1.1 Declarations Part

Test Suite Types
TSid::= Free_Name

Test Suite Operations
TSOp::= free_name

Test Suite Parameters
PARid::= Free_Name

Test Suite Constants
CONSTANTid::= FREE_NAME

Test Suite Variables
VARid::= FREE_NAME

PCOs
PCOid::= FREE_NAME

Timers
Timer::= "T"free

ASP Type Definitions
ASPid::= Free_Name

PDU Type Definitions
PDUid::= FREE_NAME

E.1.2 Constraints part

Structured Type Constraint Declarations
TS_CONSid::= Free_Name *Constraint Name*

ASP Constraints Declaration
ASP_CONSid::= Free_Name *Constraint Name*

FormalPAR::= Freename *Formal parameters*

PDU Constraints Declarations
PDU_CONSid::= Free_Name
FormalPAR::= FREE_NAME

E.1.3 Dynamic behaviour

Test Case Behaviour
TestCaseRef::= SuiteName"/"GroupName"/"SubGroupName"/"TestCaseId
SuiteName::= FREENAME
GroupName::= FREENAME
SubGroupName::= FREENAME | FREENAME"/"SubGroupName
TestCaseId::= FREENAME NUM *The test case name can be followed by an optional number which is attached to its name.*

Test Step Behaviour
TestStepRef::= SuiteName"/"GroupName"/"TestStepId
GroupName::= FREENAME
TestStepId::= Free_Name

Default Behaviour
DefaultRef::= SuiteName"/"GroupName"/"DefaultId
GroupName::= Freename
DefaultId::= FREENAME NUM *The default name can be followed by an optional number*

E.2 Conventions for the use of TTCN

This clause contains subclauses for programming style conventions and implementation dependent conventions.

E.2.1 Programming style conventions

These programming hints are divided in a subclause for general conventions and subclauses for the specific TTCN parts. These conventions should be applied during the writing of the test suites. They may significantly improve the quality and usefulness of the test specifications.

NOTE: There is a clear distinction between "should" and "shall" restrictions. Only the latter category implies a mandatory restriction.

E.2.1.1 General conventions

Readable and maintainable test specification

Avoid use of literal (explicit) values
The use of literal values decreases the maintainability, Test suite Constants, parameters or variables should be used instead.

Parameterization

Careful use of parameterization
Parameterization can be applied to test suite operations, constraints, test steps, defaults and local trees. The parameters should however be used with care. The use of too many parameters leads to un-readability, no parameters imply many PDU constraints.

Restricted use of parameter types
Parameters should be predefined or simple types. The only exception can be made for parameterized constraints. They may have pdu type, structured type or ASN.1 type parameters.

No use of wildcards for actual parameter values
Actual parameters of parameterized constraints shall not be wildcards.

Comments

Meaningful and frequent use of comments
Comments should be added whenever it increases the readability of the test specification. In particular, comments should be added to constraints to emphasize their distinctiveness.

E.2.1.2 Declarations Part

Use only formal description field in Test Suite Operation
In order to allow a (semi) automatic translation and a clearer operation description, no informal description shall be used. The operation description shall either be completely formal, or be defined elsewhere. In the first case the operation shall be defined as an TTCN expression in which all TTCN operators and all other defined test suite operations may be used. In the second case the operation shall be declared, but its description shall be empty, the intended description is just added as a comment. The actual implementation of the operation can then be provided separately.

Avoid usage of complex types for parameters and declarations
Parameters and declarations (TS_Pars, TS_Consts, TS_Vars and TC_Vars) may be of any complex and structured type according to the 9646. This kind of specification however is very difficult to handle in assignments and expressions and is therefore strongly discouraged. It is advised to use only simple types for these declarations.

Limited use of test suite variables
Test suite variables should be used carefully. If possible a test case variable is preferred.

No overriding timer duration by new timer value
Timers shall have an initial value. Do not override the default duration of a timer by explicitly providing a new timer value in the START operation; Declare another timer instead.

Avoid use of macros
Macro's can be used in declarations and constraints for inserting other types. They are however superfluous, use subtypes or separate fields instead.

Mandatory parameter field name in type declaration
Always give both field name and type of a parameter in a type declaration, not only its type.

No use of aliases
This facility proved to be confusing, so do not use it. Consequently the fullname field shall not be used in any declaration.

E.2.1.3 Constraints Part

No use of modified constraints
This facility is confusing, fault sensitive and superfluous. Consequently the derivation path field shall be empty in all constraints. Although modified constrains are in line with object oriented approaches, using them in complex constraints introduces severe problems.

Mandatory parameter field name in constraint declaration
Always give both field name and type of a parameter in a constraint declaration, not only its type.

E.2.1.4 Dynamic Part

Explicit preambles and postambles
Preambles and Postambles have to be specified through a single tree attachment in order to improve readability.

Avoid the use of implicit send
The implementation and execution of an implicit send event is very difficult. To facilitate automatic ATS implementation it is better to put such events in test steps that can be provided later. Or describe in the PIXIT how these events are implemented.

No use of GOTO statements and Label
The GOTO statement and Label shall not be used (use a REPEAT ... UNTIL statement instead).

Only one Boolean expression per line
In complex cases use one Boolean expression constructed of a number of simple Boolean expressions and operators to combine these simple expressions to one Boolean expression (AND, OR, NOT).

No assignment of data objects in Send events
The ASP and PDU fields of a send event can be set at execution time by using either data-objects assignments (e.g. PDU.X.Y:= 3) or parameterization (PDUconstraint(3)). Only the latter method, parameterization, should be used. The first method is confusing and difficult to implement.

Careful use of recursion
To ensure readability and avoid endless loops, recursive declarations should be avoided.

Assignment of preliminary verdicts in test case bodies
The behaviourlines where the actual test purpose is verified shall be in the test body and contain a preliminary verdict.

Assignment of final fail verdicts in defaults
All leaves in the default tree shall have a final fail verdict.

E.2.2 Implementation dependent conventions

Identifier length
The length of an identifier shall not exceed 30 characters.

Cancel timers before test case end
In order to avoid disturbance of sequential tests, all started timers shall be stopped (cancel or timeout) before ending the test case.

E.3 SCCP specific guidelines

This clause tries to extend the general rules for SCCP specific nomenclature and use of TTCN.

E.3.1 Test Suite Overview

The test suite is structured in groups that are based on static or dynamic conformance requirements. The SCR are specified in the PICS (see EN 300 009-2 [2]) and cover the major capabilities of SCCP. The DCR depend on the functionality of the protocol.

In the case of SCCP three main capabilities can be distinguished.

- SCCP MA;
- SCCP CL;
- SCCP Connection oriented (CO).

All these capabilities use the RT control functionality of SCCP (RT). Therefore, four main testgroups remain to test dynamic conformance requirements.

A testgroup can be divided into subgroups. Subgroups are defined on the type of behaviour of the testgroup. Three kinds of behaviour can be defined:

- VB;
- IB;
- SB.

Further division can be made regarding specific functionality of the main capabilities of SCCP.

A list of static and dynamic conformance requirement tests are given with their relation to its test(sub)group and testcase identifier. The SCR tests are numbered independently from the DCR tests.

E.3.2 Declarations Part

Only the tabular type declarations shall be used for structured types, ASPs and PDUs.

ASP Type Definitions

NOTE 1: No MTP ASPs are defined here. The communication between SCCP and service provider is defined in terms of SCCP PDUs.

PDU Type Definitions

NOTE 2: Only SCCP PDUs are specified here.

E.3.3 Constraints Part

Only the tabular type constraints shall be used for structured types, ASPs and PDUs.

Structured Type Constraint Declarations

How to deduce the meaning from the letter combinations of the identifier is not straightforward. There is no rigorous rule, but following are some indications:

- for the RT label, the abbreviation always begin with "Rt", followed by the OPC letter and the DPC letter;

- for the structured types "Cdpa" (Called Party address) and "Cgpa" (Calling Party Address), the following abbreviations are used:
  - the first letter of the constraint name is D for Cdpa type and G for Cgpa type;
  - g means that the address includes GT;
  - e means erroneous;
  - m means MA;
  - s means that the SSN is included in the address;
  - a, b, c mean SPs A, B, C;
  - in some cases, the two last letters refer to the type of the GT parameters;

- for "Cda" structured type:
  - the two first letters of the constraint name are: "Pd";
  - the other rules are the same than for Cdpa;

- for "Cga" structured type:
  - the two first letters of the constraint name are: "Pg";
  - the other rules are the same than for Cgpa.

EXAMPLE: Gbse: It is an erroneous (e) Calling party address (G) situated in point code B (b) with SSN included (s).

Ggas1: It is a calling party address (G) including GT (g). the GT is defined by GT structured type constraint declaration Gtas1 (as1).

Dsbgcbs: It is a called party address (D) situated in point code B (b) including the SSN (s) and the GT (g) has the GT structured type Gtcbs (cbs).

Gbm: It the calling party address (G) of the MA part (m) of the B point code (b).

Gtcs: It is a GT parameter (Gt) which translation gives a Point code C and a SSN.

ASP Constraint Declarations

The first letters are upper case letters derived from ASPid and the end of the name may be composed of free string and/or numbers, except for the erroneous ASP constraints.

PDU Constraint declarations

All MA PDU Constraint identifiers are lower case combinations, all other PDU Constraint identifiers are as described in the previous clause.

E.3.4 Dynamic Part

Test Case Behaviour

TestCaseId::=	DTCNUM	for Dynamic conformance requirement test cases
	| STCNUM	for SCR test cases
NUM::=	A three digit number	

EXAMPLE: SCCP/RT/VB/MFM/OG/DTC018: SCCP Dynamic conformance test number 18, testing the RT functionality on VB with a message coming from MTP (MFM) while a GT is used (OG).

Test Step Behaviour

All test steps reside in the groups PRE, POST and IS. They contain respectively preambles, postambles and implicit sends.

Default Behaviour

All defaults reside in the group Default.

History

Document history			
December 1995	Public Enquiry	PE 97:	1995-12-04 to 1996-03-29
June 1998	Second Public Enquiry	PE 9845:	1998-06-17 to 1998-11-13
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