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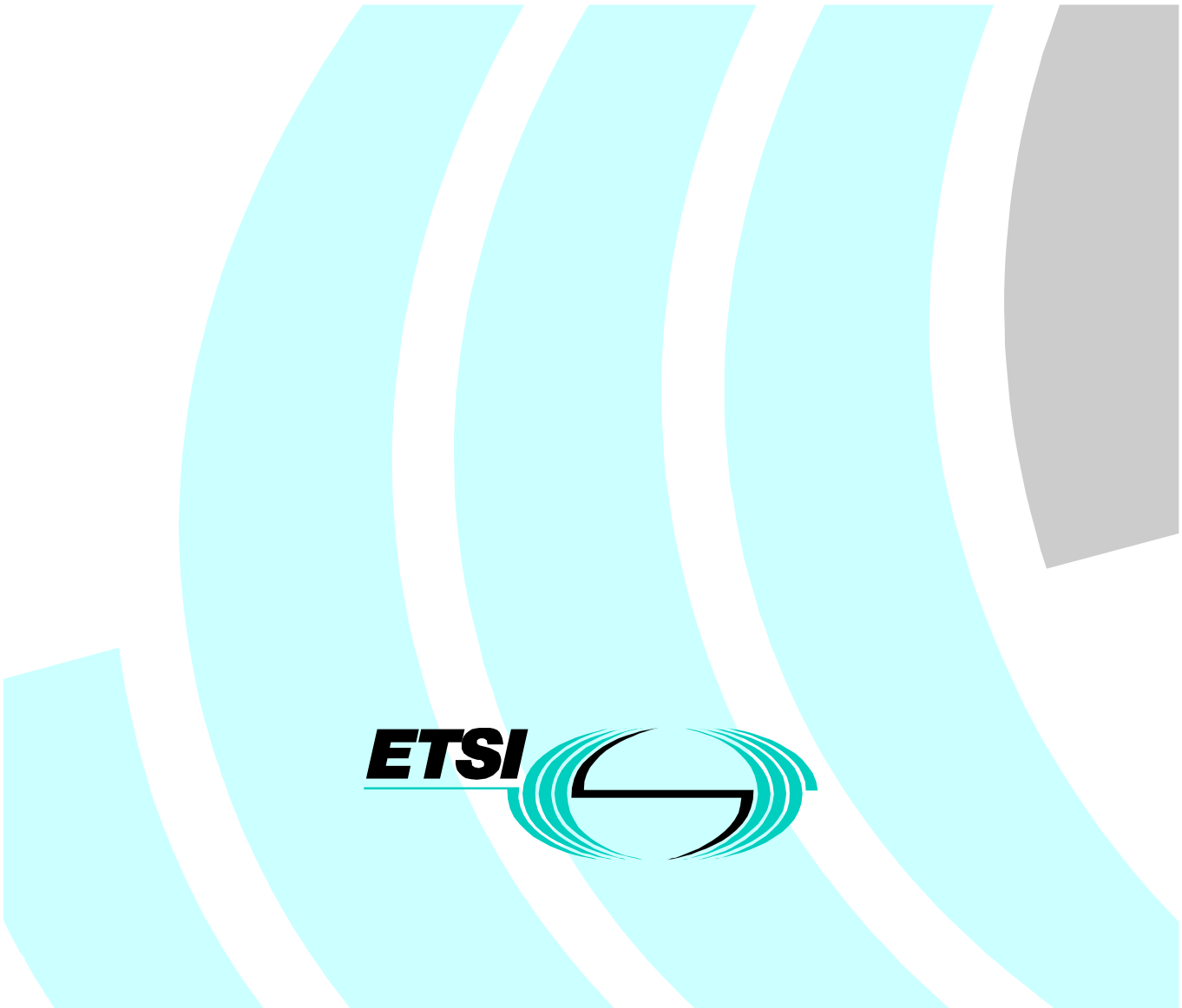
European Standard (Telecommunications series)

Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS).

The present document is part 3 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Completion of Calls on No Reply (CCNR) supplementary service, as described below:

Part 1: "Protocol specification";

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

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

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

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

National transposition dates	
Date of adoption of this EN:	9 October 1998
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1 Scope

This third part of EN 301 065 specifies the Test Suite Structure and Test Purposes (TSS&TP) for the User side of the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [7]) of implementations conforming to the stage three standard for the Completion of Calls on No Reply (CCNR) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 301 065-1 [1].

A further part of the present document specifies the Abstract Test Suite (ATS) and partial PIXIT proforma based on the present document. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the Network side of the T reference point or coincident S and T reference point of implementations conforming to EN 301 065-1 [1].

2 Normative references

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] EN 301 065-1 (V1.1): "Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[2] EN 301 065-2 (V1.1): "Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

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

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

[5] ISO/IEC 9646-3 (1992): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".

[6] EN 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[7] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces; Reference configurations".

[8] EN 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".

[9] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".

[10] CCITT Recommendation E.164 (1997): "The international public telecommunication numbering plan".

[11] ITU-T Recommendation I.210 (1993): "Principles of the telecommunication services supported by an ISDN and the means to describe them".

[12] EN 300 403-3: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 3: Protocol Implementation Conformance Statement (PICS) proforma specification".

3 Definitions and abbreviations

3.1 Definitions

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

3.1.1 Definitions related to conformance testing

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

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

active test: a test case where the IUT is required to send a particular message, but not in reaction to a received message. This would usually involve the use of PIXIT information to see how this message can be generated and quite often is specified in an ATS using an implicit send event.

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

implicit send event: refer to ISO/IEC 9646-3 [5].

Lower Tester (LT): refer to ISO/IEC 9646-1 [3].

passive test: a test case where the IUT is required to respond to a protocol event (e.g. received message) with another protocol event (e.g. send message) which normally does not require any special operator intervention as associated with the implicit send event.

Point of Control and Observation (PCO): refer to ISO/IEC 9646-1 [3].

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

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

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

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

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

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

3.1.2 Definitions related to EN 301 065-1

component: see EN 300 196-1 [6], subclause 11.2.2.1.

dummy call reference: see EN 300 403-1 [8], subclause 4.3.

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [9], definition 308.

ISDN number: a number conforming to the numbering and structure specified in CCITT Recommendation E.164 [10].

invoke component: see EN 300 196-1 [6], subclause 11.2.2.1.

return error component: see EN 300 196-1 [6], subclause 11.2.2.1.

return result component: see EN 300 196-1 [6], subclause 11.2.2.1.

service; telecommunication service: see ITU-T Recommendation I.112 [9], definition 201.

supplementary service: see ITU-T Recommendation I.210 [11], subclause 2.4.

S/T: the DSS1 protocol entity at the User side of the user-network interface where a coincident S and T reference point applies.

T: the DSS1 protocol entity at the User side of the user-network interface where a T reference point applies (User is a Private ISDN).

3.2 Abbreviations

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

ATS	Abstract Test Suite
CCNR	Completion of Calls on No Reply
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TP	Test Purpose
TSS	Test Suite Structure
U0	Null call state
U3	Outgoing Call Proceeding call state
U4	Call Delivered call state
U7	Call Received call state
U10	Active call state
U11	Disconnect Request call state
U19	Release Request call state
U31	Bearer Independent Transport call state

4 Test Suite Structure (TSS)

Signalling procedures at the coincident S and T reference point	**Group**
Activation	U01
Deactivation	U02
General interrogation	U03
Specific interrogation	U04
Recall indication	U05
CCNR call request	U06
Network initiated deactivation procedure	U07
B free but A busy procedure	U08
User A monitoring procedure	U09
Call information retention	U10
Procedures for interworking with private ISDNs	
Procedures for the originating T reference point	U11
Procedures for the destination T reference point	U12

Figure 1: Test suite structure

5 Test Purposes (TP)

5.1 Introduction

For each test requirement a TP is defined.

5.1.1 TP naming convention

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite and whether it applies to the network or the user (see table 1).

Table 1: TP identifier naming convention scheme

Identifier: **<ss>_<iut><group>_<nnn>**

<ss>	=	supplementary service:	"CCNR"	
<iut>	=	type of IUT:	U	User
			N	Network
<group>	=	group	2 digit field representing group reference according to TSS	
<nnn>	=	sequential number	(001-999)	

5.1.2 Source of TP definition

The TPs are based on EN 301 065-1 [1].

5.1.3 TP structure

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

Table 2: Structure of a single TP for CCNR

TP part	Text	Example
Header	**<Identifier>** *tab* **<paragraph number in base ETS>** *tab* **<condition>** *CR.*	see table 1 **subclause 0.0.0** **mandatory, optional (see note 1)**
Stimulus	Ensure that the IUT in the <basic call state> or <CCNR state> <trigger> *see below for message structure* *or* <goal>	 U10 etc. receiving a XXXX message to request a ...
Reaction	<action> <conditions> *if the action is sending* *see below for message structure* <next action>, *etc.* and remains in the same state *or* and enters state <state>	sends, saves, does, etc. using en bloc sending, ...
Message structure	<message type> message containing a *a)* <info element> information element with *b)* a <field name> encoded as *or* including <coding of the field> and *back to a or b,*	SETUP, FACILITY, CONNECT, ... Bearer capability, Facility, ...
NOTE 1: Mandatory test purpose are always applicable. Optional test purposes are applicable according to the configuration options of the IUT. If the configuration option is covered by a PICS item, a selection criteria is indicated, else the selection of the corresponding test cases will depend on test suite parameters (PIXIT) in the ATS. NOTE 2: Text in italics will not appear in TPs and text between <> is filled in for each TP and may differ from one TP to the next.		

5.1.4 Test strategy

As the base standard EN 301 065-1 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification EN 301 065-2 [2]. The criteria applied include the following:

- only the requirements from the point of view of the T or coincident S and T reference point are considered;
- whether or not a test case can be built from the TP is not considered.

5.2 User TPs for CCNR

All PICS items referred to in this subclause are as specified in EN 301 065-2 [2] unless indicated otherwise by another numbered reference.

Unless specified:

- The messages indicated are valid and contain at least the mandatory information elements and possibly optional information elements.
- The information elements indicated are valid and contain at least the mandatory parameters and possibly optional parameters.

5.2.1 Signalling procedures at the coincident S and T reference point

Selection: IUT supports coincident S/T reference point procedures. PICS: R 3.1.

NOTE: The signalling procedures at the coincident S and T reference point use mainly the bearer-independent connectionless transport mechanism using the dummy call reference. To augment the readability of the test purposes, basic call states are only mentioned where significant.

5.2.1.1 Activation

NOTE: The IUT may be in call state U4, U11 or U0 when requesting the activation of CCNR.

CCNR_U01_001 subclause 9.1.1 mandatory
Ensure that the IUT in the CCNR Idle state, having received an ALERTING message with a Facility information element including a CallInfoRetain invoke component with callLinkageID parameter, to activate the CCNR supplementary service,
sends a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest invoke component including the callLinkageID parameter and enters the CCNR Requested state.

CCNR_U01_002 subclause 9.1.1 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return result component including the cCBSReference parameter and the recallMode parameter indicating "specificRecall",
sends no message, retains the CCBS Reference and enters the CCNR Activated state.

CCNR_U01_003 subclause 9.1.1 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return result component including the cCBSReference parameter and the recallMode parameter indicating "globalRecall",
sends no message, retains the CCBS Reference and enters the CCNR Activated state

or
sends no message, releases the CCBS Reference and enters the CCNR Idle state.

CCNR_U01_004 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return error component indicating "notSubscribed",
sends no message and enters the CCNR Idle state.

CCNR_U01_005 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return error component indicating "invalidCallLinkageID",
sends no message and releases the callLinkageID parameter.

CCNR_U01_006 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return error component indicating "outgoingCCBSQueueFull",
sends no message and enters the CCNR Idle state.

CCNR_U01_007 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return error component indicating "cCBSIsAlreadyActivated",
sends no message and enters the CCNR Idle state.

CCNR_U01_008 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return error component indicating "supplementaryServiceInteractionNotAllowed",
sends no message and enters the CCNR Idle state.

CCNR_U01_009 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return error component indicating "longTermDenial",
sends no message and enters the CCNR Idle state.

CCNR_U01_010 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRRequest return error component indicating "shortTermDenial",
sends no message and enters the CCNR Idle state.

CCNR_U01_011 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a reject component including the invoke identifier,
sends no message and enters the CCNR Idle state.

CCNR_U01_012 subclause 9.1.2 mandatory
Ensure that the IUT in the CCNR Requested state, on the expiry of timer T-ACTIVATE,
sends no message and enters the CCNR Idle state.

5.2.1.2 Deactivation

CCNR_U02_001 subclause 9.2.1 mandatory
Ensure that the IUT in the CCNR Activated state, to deactivate the CCNR supplementary service,
sends a FACILITY message with the dummy call reference containing a Facility information element with a CCBSDeactivate invoke component including the cCBSReference parameter and enters the CCNR Deactivation Requested state.

CCNR_U02_002 subclause 9.2.1 mandatory
Ensure that the IUT in the CCNR Deactivation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSDeactivate return result component,
sends no message, releases the CCBS Reference and enters the CCNR Idle state.

CCNR_U02_003 subclause 9.2.2 mandatory
Ensure that the IUT in the CCNR Deactivation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSDeactivate return error component indicating "invalidCCBSReference",
sends no message, releases the CCBS Reference and enters the CCNR Idle state.

CCNR_U02_004 subclause 9.2.2 mandatory
Ensure that the IUT in the CCNR Deactivation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a reject component including the invoke identifier,
sends no message, retains the CCBS Reference and enters the CCNR Idle state.

5.2.1.3 Interrogation

5.2.1.3.1 General interrogation

CCNR_U03_001 subclause 9.3.1.1 mandatory
Ensure that the IUT, to perform an interrogation of all CCNR requests,
sends a FACILITY message with the dummy call reference containing a Facility information element with a CCNRInterrogate invoke component without a cCBSReference parameter and enters the CCNR Interrogation Requested state.

CCNR_U03_002 subclause 9.3.1.1 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRInterrogate return result component,
sends no message and exits the CCNR Interrogation Requested state.

CCNR_U03_003 subclause 9.3.1.2 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRInterrogate return error component indicating "notSubscribed",
sends no message, removes knowledge of all CCNR requests and exits the CCNR Interrogation Requested state.

CCNR_U03_004 subclause 9.3.1.2 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a reject component including the invoke identifier,
sends no message and exits the CCNR Interrogation Requested state.

CCNR_U03_005 subclause 9.3.1.2 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, on the expiry of timer T-ACTIVATE,
sends no message and exits the CCNR Interrogation Requested state.

5.2.1.3.2 Specific interrogation

CCNR_U04_001 subclause 9.3.2.1 mandatory
Ensure that the IUT, to perform an interrogation of a specific CCNR requests,
sends a FACILITY message with the dummy call reference containing a Facility information element with a CCNRInterrogate invoke component with the cCBSReference parameter and enters the CCNR Interrogation Requested state.

CCNR_U04_002 subclause 9.3.2.1 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRInterrogate return result component,
sends no message and exits the CCNR Interrogation Requested state.

CCNR_U04_003 subclause 9.3.2.2 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRInterrogate return error component indicating "notSubscribed",
sends no message, removes knowledge of all CCNR requests and exits the CCNR Interrogation Requested state.

CCNR_U04_004 subclause 9.3.2.2 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCNRInterrogate return error component indicating "invalidCCBS Reference",
sends no message, removes knowledge of the specific CCNR request and exits the CCNR Interrogation Requested state.

CCNR_U04_005 subclause 9.3.2.2 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a reject component including the invoke identifier,
sends no message, retains knowledge of the specific CCNR request and exits the CCNR Interrogation Requested state.

CCNR_U04_006 subclause 9.3.2.2 mandatory
Ensure that the IUT in the CCNR Interrogation Requested state, on the expiry of timer T-ACTIVATE,
sends no message and exits the CCNR Interrogation Requested state.

5.2.1.4 Invocation and operation

5.2.1.4.1 Recall indication

CCNR_U05_001 subclause 9.4.1.1, 9.7 mandatory
Ensure that the IUT in the CCNR Activated state, where the CCNR service was activated using the Recall mode subscription option set to "Specific recall", receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSRemoteUserFree invoke component including a recallMode parameter indicating "specificRecall", the cCBSReference parameter as retained by the IUT and a compatible q931InfoElement parameter,

sends no message, retains the CCBS Reference and enters the CCNR Free state.

CCNR_U05_002 subclause 9.4.1.1, 9.7 mandatory
Ensure that the IUT in the CCNR Activated state, where the CCNR service was activated using the Recall mode subscription option set to "Specific recall", receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSRemoteUserFree invoke component including a recallMode parameter indicating "specificRecall", a cCBSReference parameter not retained by the IUT and a compatible q931InfoElement parameter,

sends no message and remains in the CCNR Activated state.

CCNR_U05_003 subclause 9.4.1.1, 9.7 mandatory
Ensure that the IUT in the CCNR Activated state, where the CCNR service was activated using the Recall mode subscription option set to "Specific recall", receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSRemoteUserFree invoke component including a recallMode parameter indicating "specificRecall", the cCBSReference parameter as retained by the IUT and an incompatible q931InfoElement parameter,

sends no message and remains in the CCNR Activated state.

CCNR_U05_004 subclause 9.4.1.1, 9.7 mandatory
Ensure that the IUT in the CCNR Activated or CCNR Idle state, where the CCNR service was activated using the Recall mode subscription option set to "Global recall", receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSRemoteUserFree invoke component including a recallMode parameter indicating "globalRecall", the cCBSReference parameter and a compatible q931InfoElement parameter,

sends no message, retains the CCBS Reference and enters the CCNR Free state.

CCNR_U05_005 subclause 9.4.1.1, 9.7 mandatory
Ensure that the IUT in the CCNR Activated or CCNR Idle state, where the CCNR service was activated using the Recall mode subscription option set to "Global recall", receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSRemoteUserFree invoke component including a recallMode parameter indicating "globalRecall", the cCBSReference and an incompatible q931InfoElement parameter,

sends no message and remains in the CCNR Activated state.

5.2.1.4.2 CCNR call request

CCNR_U06_001 subclause 9.4.1.1, 9.7 mandatory
Ensure that the IUT in the CCNR Free state (subscription option set to “specific Recall"), to establish the CCNR call,

sends a SETUP message containing the same Bearer capability information as the original call and a Facility information element with a CCBSCall invoke component including the cCBSReference parameter as received in the CCBSRemoteUserFree invoke component, retains the CCBS Reference and enters the CCNR Call Init state.

CCNR_U06_002 subclause 9.4.1.1, 9.7 mandatory
Ensure that the IUT in the CCNR Free state (subscription option set to "global Recall"), to establish the CCNR call,

sends a SETUP message containing the same Bearer capability information as the original call and a Facility information element with a CCBSCall invoke component including the cCBSReference parameter as received in the CCBSRemoteUserFree invoke component and,

retains the CCBS Reference and enters the CCNR Call Init state

or

releases the CCBS Reference and enters the CCNR Idle state.

CCNR_U06_003 subclause 9.4.2 mandatory
Ensure that the IUT in the CCNR Free state (subscription option set to "global Recall"), receiving a FACILITY message delivered via the broadcast data link with the dummy call reference containing a Facility information element with a CCBSStopAlerting invoke component including the cCBSReference parameter as received in the CCBSRemoteUserFree invoke component,
sends no message, retains the CCBS Reference and enters the CCNR Activated state

or
sends no message, releases the CCBS Reference and enters the CCNR Idle state.

Selection: IUT supports point-to-multipoint configurations. PICS EN 300 403-3 [12] R 7.2.

CCNR_U06_004 subclause 9.4.2 mandatory
Ensure that the IUT in the CCNR Call Init state, receiving a RELEASE COMPLETE message containing a Facility information element with a CCBSCall return error component indicating "invalidCCBS Reference",
sends no message, releases the CCBS Reference and enters the CCNR Idle state.

CCNR_U06_005 subclause 9.4.2 mandatory
Ensure that the IUT in the CCNR Call Init state, receiving a RELEASE COMPLETE message containing a Facility information element with a CCBSCall return error component indicating "notReadyForCall",
sends no message and enters the CCNR Idle state.

CCNR_U06_006 subclause 9.4.2 mandatory
Ensure that the IUT in the CCNR Call Init state (subscription option set to "global Recall"), receiving a RELEASE COMPLETE message containing a Facility information element with a CCBSCall return error component indicating "AlreadyAccepted",
sends no message and enters the CCNR Idle state.

CCNR_U06_007 subclause 9.4.2 mandatory
Ensure that the IUT in the CCNR Call Init state (subscription option set to "global Recall"), receiving a RELEASE COMPLETE message containing a Facility information element with a CCBSCall return error component indicating "AlreadyAccepted",
sends no message and enters the CCNR Idle state.

5.2.1.4.3 Network initiated deactivation procedure

CCNR_U07_001 subclause 9.4.4 mandatory
Ensure that the IUT in the CCNR Activated state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSErase invoke component,
sends no message, releases the CCBS Reference and enters the CCNR Idle state.

5.2.1.4.4 B free but A busy procedure

CCNR_U08_001 subclause 9.4.5.1 mandatory
Ensure that the IUT in the CCNR Activated state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a CCBSFree invoke component,
sends no message, releases the CCBS Reference and enters the CCNR Idle state.

5.2.1.4.5 User A monitoring procedure

CCNR_U09_001 subclause 9.4.6.1 mandatory
Ensure that the IUT in the CCNR Activated state, receiving a FACILITY message with the dummy call reference containing a Facility information element with an incompatible CCBSStatusRequest invoke component,
sends no message and remains in the CCNR Activated state.

CCNR_U09_002 subclause 9.4.6.1 mandatory
Ensure that the IUT in the CCNR Activated state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a compatible CCBSStatusRequest invoke component,
sends a FACILITY message with the dummy call reference containing a Facility information element with a compatible CCBSStatusRequest return result component and remains in the CCNR Activated state.

CCNR_U09_003 subclause 9.4.6.2 mandatory
Ensure that the IUT in the CCNR Activated state, having sent a FACILITY message with the dummy call reference containing a Facility information element with a CCBSStatusRequest return result component, receiving a FACILITY message with the dummy call reference containing a Facility information element with a reject component including the invoke identifier,
sends no message and remains in the CCNR Activated state.

5.2.1.5 Call information retention

Selection: IUT supports the retention of the CallLinkageID. PICS: SC 1.

CCNR_U10_001 subclause 9.6.1 mandatory
Ensure that the IUT in call state U3 and the Retention Idle state, receiving an ALERTING message containing a Facility information element with a CallInfoRetain invoke component,
sends no message, retains the callLinkageID parameter and enters call state U4 and the Retention Active state.

CCNR_U10_002 subclause 9.6.1 mandatory
Ensure that the IUT in call state U3 and the Retention Active state, receiving a FACILITY message with the dummy call reference containing a Facility information element with a EraseCallLinkageID invoke component,
sends no message, releases the callLinkageID parameter and remains in call state U3 and enters the Retention Idle state.

5.2.2 Procedures for interworking with private ISDNs

Selection: IUT supports T reference point procedures. PICS: R 3.2.

NOTE: The private network procedures use the bearer independent connection-oriented transport mechanism as well as the bearer related transport mechanism. Different Call References (CRs) are used to differentiate between the two mechanisms. In the following TPs, these are identified by a CR followed by a number:

CR1 = normal (bearer related) call reference of the original call;

CR2 = call reference used for bearer independent transport mechanism;

CR3 = normal (bearer related) call reference of the CCNR call.

The values of CR1, CR2 and CR3 may vary from one TP to another, but when they are used in the same TP their values are distinct if they exist at the same interface. The single call references are only mentioned where significant.

5.2.2.1 Procedures for the originating T reference point

CCNR_U11_001 subclause 10.1.1, 10.1.2optional
Ensure that the IUT in call state U4 for CR1 and U0 for CR2, having received an ALERTING message containing a Facility information element with a CCBS-T-Available invoke component, to activate the CCNR supplementary service,
initiates basic call clearing for CR1, sends a REGISTER message with CR2 containing a Facility information element with a CCNR-T-Request invoke component including the retentionSupported parameter indicating "TRUE" and enters call state U0 for CR1 and U31 for CR2.

Selection: The IUT does support the CCNR request retention option. PICS: MC 4.

CCNR_U11_002 subclause 10.1.1, 10.1.2optional
Ensure that the IUT in call state U4 for CR1 and U0 for CR2, having received an ALERTING message containing a Facility information element with a CCBS-T-Available invoke component, to activate the CCNR supplementary service,
initiates basic call clearing for CR1, sends a REGISTER message with CR2 containing a Facility information element with a CCNR-T-Request invoke component including the retentionSupported parameter indicating "FALSE" and enters call state U0 for CR1 and U31 for CR2.

Selection: The IUT does NOT support the CCNR request retention option. PICS: NOT MC 4.

CCNR_U11_003 subclause 10.1.2.1 mandatory
Ensure that the IUT in call state U31 for CR2, receiving a FACILITY message containing a Facility information element with a CCNR-T-Request return result component,
sends no message and remains in call state U31 for CR2.

CCNR_U11_004 subclause 10.1.2.2 mandatory
Ensure that the IUT in call state U31 for CR2, receiving a RELEASE message containing a Facility information element with a CCNR-T-Request return error component indicating "notSubscribed",
sends a RELEASE COMPLETE message and enters call state U0 for CR2.

CCNR_U11_005 subclause 10.1.2.2 mandatory
Ensure that the IUT in call state U31 for CR2, receiving a RELEASE message containing a Facility information element with a CCNR-T-Request return error component indicating "longTermDenial",
sends a RELEASE COMPLETE message and enters call state U0 for CR2.

CCNR_U11_006 subclause 10.1.2.2 mandatory
Ensure that the IUT in call state U31 for CR2, receiving a RELEASE message containing a Facility information element with a CCNR-T-Request return error component indicating "shortTermDenial",
sends a RELEASE COMPLETE message and enters call state U0 for CR2.

CCNR_U11_007 subclause 10.1.2.2 mandatory
Ensure that the IUT in call state U31 for CR2, receiving a FACILITY message containing a Facility information element with a reject component,
sends a RELEASE message containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U19 for CR2.

CCNR_U11_008 subclause 10.1.3.1, 10.1.6.1 mandatory
Ensure that the IUT in call state U31 for CR2 and U0 for CR3, receiving a FACILITY message containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, to request CCNR call establishment,
sends a SETUP message with CR3 containing the same call establishment information as the original call and a Facility information element with a CCBS-T-Call invoke component, remains in call state U31 for CR2 and enters call state U1 for CR3.

CCNR_U11_009 subclause 10.1.3.1, 10.1.4.1 mandatory
Ensure that the IUT in call state U31 for CR2, receiving a FACILITY message containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, to suspend CCNR,
sends a FACILITY message containing a Facility information element with a CCBS-T-Suspend invoke component and remains in call state U31 for CR2.

CCNR_U11_010 subclause 10.1.4.2 mandatory
Ensure that the IUT in call state U31 for CR2, having sent a FACILITY message containing a Facility information element with a CCBS-T-Suspend invoke component, receiving a FACILITY message containing a Facility information element with a reject component,
sends a RELEASE message containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U19 for CR2.

CCNR_U11_011 subclause 10.1.5.1 mandatory
Ensure that the IUT in call state U31 for CR2, having sent a FACILITY message containing a Facility information element with a CCBS-T-Suspend invoke component, to resume CCNR,
sends a FACILITY message containing a Facility information element with a CCBS-T-Resume invoke component and remains in call state U31 for CR2.

CCNR_U11_012 subclause 10.1.5.2 mandatory
Ensure that the IUT in call state U31 for CR2, having sent a FACILITY message containing a Facility information element with a CCBS-T-Resume invoke component, receiving a FACILITY message containing a Facility information element with a reject component,
sends a RELEASE message containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U19 for CR2.

CCNR_U11_013 subclause 10.1.6.1 mandatory
Ensure that the IUT in call state U31 for CR2 and U4 for CR3, receiving a RELEASE message,
sends a RELEASE COMPLETE message with CR2 and enters call state U19 for CR2 and remains in call state U4 for CR3.

CCNR_U11_014 subclause 10.1.6.2 optional
Ensure that the IUT in call state U31 for CR2 and U3 for CR3, receiving a DISCONNECT message with CR3 containing a Cause information element indicating cause value 17 "User busy" and a Facility information element with a CCBS-T-Available invoke component,
sends a RELEASE message with CR3, enters call state U19 for CR3 and remains in call state U31 for CR2.

Selection: The IUT does support the CCNR request retention option. PICS: MC 4.

CCNR_U11_015 subclause 10.1.6.2 optional
Ensure that the IUT in call state U31 for CR2 and U3 for CR3, receiving a DISCONNECT message with CR3 containing a Cause information element indicating cause value 17 "User busy" and a Facility information element with a CCBS-T-Available invoke component and a RELEASE message with CR2,
sends a RELEASE message with CR3 and a RELEASE COMPLETE message with CR2, enters call state U19 for CR3 and U0 for CR2.

Selection: The IUT does not support the CCNR request retention option. PICS: NOT MC 4.

CCNR_U11_016 subclause 10.1.6.2 mandatory
Ensure that the IUT in call state U31 for CR2 and U3 for CR3, receiving a DISCONNECT message with CR3 containing a Cause information element indicating cause value other than 17 "User busy" and a Facility information element with a CCBS-T-Available invoke component and a RELEASE message with CR2,
sends a RELEASE message with CR3 and a RELEASE COMPLETE message with CR2, enters call state U19 for CR3 and U0 for CR2.

CCNR_U11_017 subclause 10.1.6.2 mandatory
Ensure that the IUT in call state U31 for CR2 and U1 for CR3, receiving a RELEASE COMPLETE message with CR3,
sends a RELEASE message with CR2, enters call state U19 for CR3 and U0 for CR2.

CCNR_U11_018 subclause 10.1.6.2 mandatory
Ensure that the IUT in call state U31 for CR2 and U1 for CR3, receiving a FACILITY message with CR3 containing a Facility information element with a reject component including the invoke identifier,
sends a RELEASE COMPLETE message with CR3 and a RELEASE message with CR2, enters call state U0 for CR3 and U19 for CR2.

CCNR_U11_019 subclause 10.1.7.1 mandatory
Ensure that the IUT in call state U31 for CR2, receiving a FACILITY message containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, to suspend CCNR,
sends a RELEASE message containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U19 for CR2.

5.2.2.2 Procedures for the destination T reference point

CCNR_U12_001 subclause 10.2.1.1 mandatory
Ensure that the IUT handling an incoming call to an end-destination, to indicate that CCNR is available to that destination,
sends an ALERTING message containing a Facility information element with a CCBS-T-Available invoke component and enters the call state U7.

CCNR_U12_002 subclause 10.2.2.1 mandatory
Ensure that the IUT in call state U7 for CR1 and U0 for CR2, receiving a DISCONNECT message with CR1 and a REGISTER message with CR2 containing a Facility information element with a CCNR-T-Request invoke component including the retentionSupported parameter indicating "TRUE",
continues basic call clearing for CR1 and sends a FACILITY message with CR2 containing a Facility information element with a CCNR-T-Request return result component including the retentionSupported parameter indicating "TRUE" and enters call state U0 for CR1 and U31 for CR2.

Selection: The IUT does support the CCNR request retention option. PICS: MC 4.

CCNR_U12_003 subclause 10.2.2.1 mandatory
Ensure that the IUT in call state U7 for CR1 and U0 for CR2, receiving a DISCONNECT message with CR1 and a REGISTER message with CR2 containing a Facility information element with a CCNR-T-Request invoke component including the retentionSupported parameter indicating "TRUE",

continues basic call clearing for CR1 and sends a FACILITY message with CR2 containing a Facility information element with a CCNR-T-Request return result component including the retentionSupported parameter indicating "TRUE" and enters call state U0 for CR1 and U31 for CR2.

Selection: The IUT does NOT support the CCNR request retention option. PICS: NOT MC 4.

CCNR_U12_004 subclause 10.2.2.1 mandatory
Ensure that the IUT in call state U7 for CR1 and U0 for CR2, receiving a DISCONNECT message with CR1 and a REGISTER message with CR2 containing a Facility information element with a CCNR-T-Request invoke component including the retentionSupported parameter indicating "FALSE",

continues basic call clearing for CR1 and sends a FACILITY message with CR2 containing a Facility information element with a CCNR-T-Request return result component and enters call state U0 for CR1 and U31 for CR2.

CCNR_U12_005 subclause 10.2.2.2 mandatory
Ensure that the IUT in call state U7 for CR1 and U0 for CR2, receiving a DISCONNECT message with CR1 and a REGISTER message with CR2 containing a Facility information element with a CCNRRequest invoke component,

continues basic call clearing for CR1 and sends a RELEASE message with CR2 containing a Cause information element indicating cause value 29 "facility rejected" and enters call state U0 for CR1 and U19 for CR2.

CCNR_U12_006 subclause 10.2.3.1 mandatory
Ensure that the IUT in call state U31 for CR2, to indicate that the end-destination became not busy,

sends a FACILITY message containing a Facility information element with a CCBS-T-RemoteUserFree invoke component and remains in call state U31.

CCNR_U12_007 subclause 10.2.3.2 mandatory
Ensure that the IUT in call state U31 for CR2, having sent a FACILITY message containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, receiving a FACILITY message containing a Facility information element with a reject component,

sends a RELEASE message containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U19.

CCNR_U12_008 subclause 10.2.4.1 mandatory
Ensure that the IUT in call state U31 for CR2, having sent a FACILITY message containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, receiving a FACILITY message containing a Facility information element with a CCBS-T-Suspend invoke component,

sends no message and remains in call state U31.

CCNR_U12_009 subclause 10.2.5.1 mandatory
Ensure that the IUT in call state U31 for CR2, when a suspended CCBS request exists, receiving a FACILITY message containing a Facility information element with a CCBS-T-Resume invoke component,

sends no message and remains in call state U31.

CCNR_U12_010 subclause 10.2.6.1 mandatory
Ensure that the IUT in call state U31 for CR2 and U0 for CR3, having sent a FACILITY message with CR2 containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, receiving a SETUP message containing a Facility information element with a CCBS-T-Call invoke component,

continues basic call establishment for CR3, sends a RELEASE message with CR2 containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U10 for CR3 and U19 for CR2.

CCNR_U12_011 subclause 10.2.6.2 optional
Ensure that the IUT in call state U31 for CR2 and U0 for CR3, having sent a FACILITY message with CR2 containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, receiving a SETUP message containing a Facility information element with a CCBS-T-Call invoke component after the end-destination became busy,

initiates basic call clearing for CR3 and includes a Facility information element with a CCBS-T-Available invoke component in the first call clearing message, enters call state U0 for CR3 and remains in call state U31 for CR2.

Selection: The IUT does support the CCNR request retention option. PICS: MC 4.

CCNR_U12_012 subclause 10.2.6.2 optional
Ensure that the IUT in call state U31 for CR2 and U0 for CR3, having sent a FACILITY message with CR2 containing a Facility information element with a CCBS-T-RemoteUserFree invoke component, receiving a SETUP message containing a Facility information element with a CCBS-T-Call invoke component after the end-destination became busy, initiates basic call clearing for CR3 and includes a Facility information element with a CCBS-T-Available invoke component in the first call clearing message, sends a RELEASE message with CR2 containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U0 for CR3 and U19 for CR2.

Selection: The IUT does NOT support the CCNR request retention option. PICS: NOT MC 4.

CCNR_U12_013 subclause 10.2.7.1 mandatory
Ensure that the IUT in call state U31 for CR2, when CCNR is activated, to deactivate CCNR, sends a RELEASE message containing a Cause information element indicating cause value 31 "Normal, unspecified" and enters call state U19.

6 Compliance

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

a) consist of a set of test cases corresponding to the set or to a subset of the TPs specified in clause 6;

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

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

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

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

In the case of a) or b) above, a subset shall be used only where a particular Abstract Test Method (ATM) makes some TPs untestable. All testable TPs from clause 5 shall be included in a compliant ATS.

7 Requirements for a comprehensive testing service

As a minimum the Remote test method, as specified in ISO/IEC 9646-2 [4], shall be used by any organization claiming to provide a comprehensive testing service for network equipment claiming conformance to EN 301 065-1 [1].

History

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