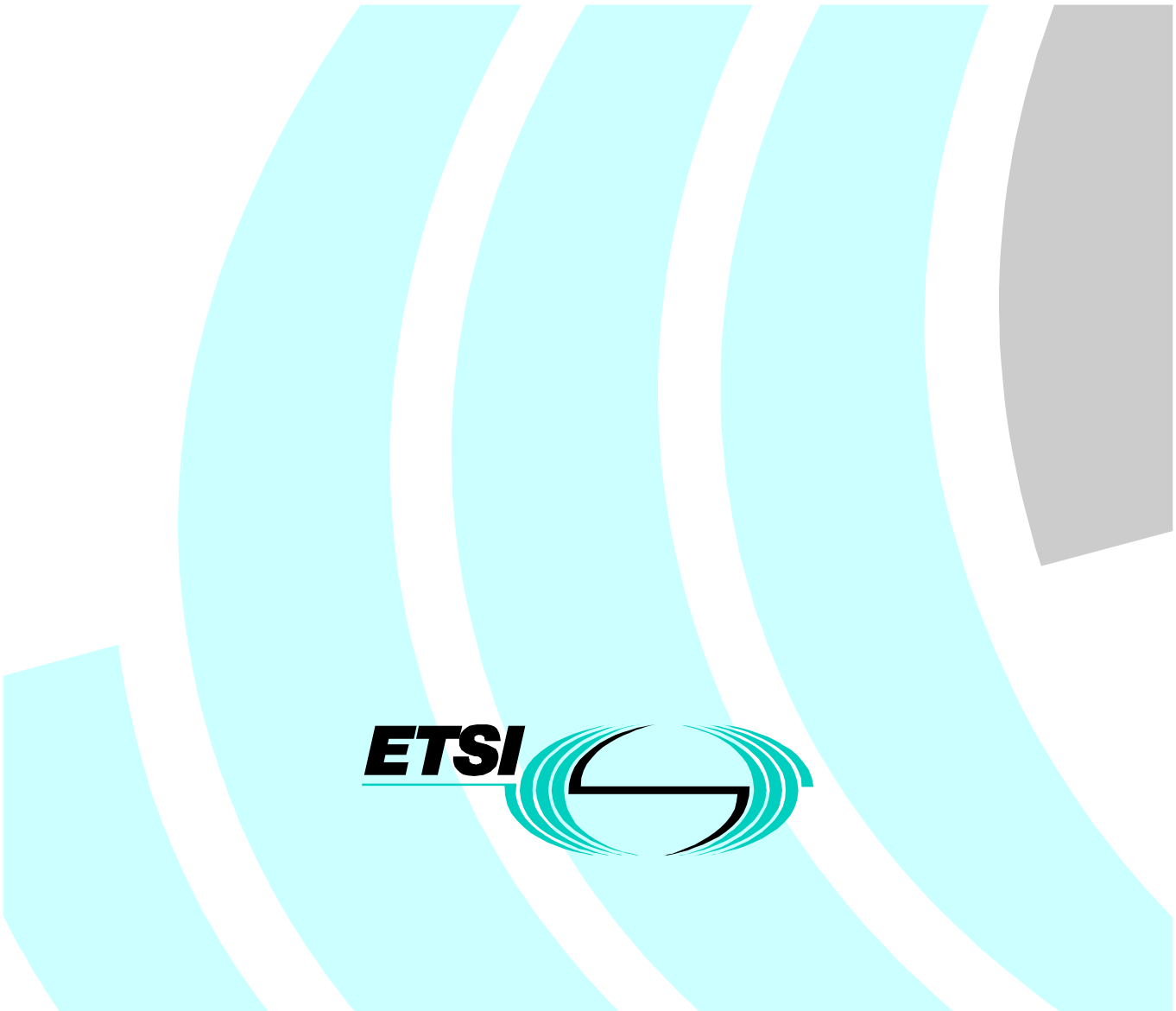
ETSI EN 302 094-5 V1.1.1 (2001-09)

European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Digital Subscriber Signalling System No. one (DSS1) and
Signalling System No.7 (SS7) protocols;
Call Forwarding on Not Reachable (CFNRc)
supplementary service for
Cordless Terminal Mobility (CTM) phase 1;
Part 5: Test Suite Structure and Test Purposes (TSS&TP)
specification for the network**



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 5 of a multi-part deliverable covering the Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocol specification for the Call Forwarding on not reachable supplementary service for CTM phase 1, as identified below:

Part 1: "Protocol specification";

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

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

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

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) 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:	7 September 2001
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1 Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) at the Network side of Implementations conforming to the stage three standard for the Call Forwarding on Not Reachable (CFNRc) supplementary services for the signalling application for the mobility management service phase 1 protocol, EN 302 094-1 [1].

A further part of the present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma based on the present document. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the User side of implementations conforming to EN 302 094-1 [1].

2 References

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

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

[1] ETSI EN 302 094-1 (V1.1.3): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocols; Call Forwarding on Not Reachable (CFNRc) supplementary service for Cordless Terminal Mobility (CTM) phase 1; Part 1: protocol specification".

[2] ETSI EN 302 094-2 (V1.1.3): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7) protocols; Call Forwarding on Not Reachable (CFNRc) supplementary service for Cordless Terminal Mobility (CTM) phase 1; Part 2: protocol implementation Conformance Statement (PICS) proforma specification".

[3] ETSI ETS 300 406: "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] ETSI I-ETS 300 808: "Private Integrated Services Network (PISN); Cordless Terminal Mobility (CTM); Inter-exchange signalling protocol; Cordless terminal outgoing call additional network feature".

3 Definitions and abbreviations

3.1 Definitions

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

abstract test case: Refer to ISO/IEC 9646-1.

Abstract Test Suite (ATS): Refer to ISO/IEC 9646-1.

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1.

implicit send event: Refer to ISO/IEC 9646-3.

lower tester: Refer to ISO/IEC 9646-1.

Protocol Implementation Conformance Statement (PICS): Refer to ISO/IEC 9646-1.

PICS proforma: Refer to ISO/IEC 9646-1.

Protocol Implementation eXtra Information for Testing (PIXIT): Refer to ISO/IEC 9646-1.

Test Purpose (TP): Refer to ISO/IEC 9646-1.

3.2 Abbreviations

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

APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation no. 1
ATS	Abstract Test Suite
CFNRc	Call Forwarding on Not Reachable
CTM	Cordless Terminal Mobility
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SS	Supplementary Service
SS-CFNRc	Call Forwarding on Not Reachable Supplementary Service
TP	Test Purpose
TSS	Test Suite Structure

4 Test Suite Structure (TSS)

Signalling procedures at the S/T Reference Point	**Group**
Served user procedures	
Registration	N01
Erasure	N02
Activation	N03
Deactivation	N04
Interrogation	N05
Operation	N07
Calling user procedures	
Notification of diversion	N08
Identification of the diverted-to user	N09
Called (diverted-to) user procedures	N10

Figure 1: Test suite structure

5 Test Purposes (TP)

5.1 Introduction

For each requirement a TP is defined.

5.2 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 (see table 1).

Table 1: TP identifier naming convention scheme

Identifier: **<ss>_<group>_<nnn>**			
<ss>	=	supplementary service:	"CFNRc"
<group>	=	group	'N' for user side and up to 2 digits field representing the group reference according to TSS: (e.g. N02)
<nnn>	=	sequential number	(001-999)

5.2.1 Source of TP definition

The TPs are based on EN 302 094-1 [1].

5.2.2 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 SS-CFNRc

TP part	Text	Example
Header	**<Identifier>** *tab* **<paragraph number in base ETS>** *tab*	see table 1 **clause 0.0.0**
Stimulus	Ensure that the IUT in the <basic call state> <trigger> *see below for message structure* *or* <goal>	 N10 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: 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.		

5.2.3 Test strategy

As the base standard EN 302 094-1 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification EN 302 094-2 [2].

The TPs are only based on conformance requirements related to the externally observable behaviour of the IUT, and are limited to conceivable situations to which a real implementation is likely to be faced (ETS 300 406 [3]).

Only the requirements from the point of view of the alpha interface are considered. This implies that the interactions with other networks (which are related to the beta interface) are out of scope of the present document and that the corresponding Test Purposes are not included in the present document.

All test purposes are mandatory unless they have selection criteria. Optional test purposes (with selection criteria) are applicable according to the configuration options of the IUT. The configuration option shall be covered by a PICS item.

5.3 TPs for SS-CFNRc

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;
- all PICS items referred to in this clause are as specified in EN 302 094-2 [2] unless indicated otherwise by another numbered reference.

Selection: IUT supports network requirements. PICS: R 2.2.

5.3.1 Served user procedures

5.3.1.1 Registration

CFNRc_N01_001 clause 9.1.1

Ensure that the IUT in call state N2 for a CTM incoming call, on receipt of a FACILITY message including an EncapsulatedStimulus invoke component containing encapsulated a keypad information requesting registration,

sends the FACILITY message, including an EncapsulatedStimulus invoke component with the Display information.

5.3.1.2 Erasure

CFNRc_N02_001 clause 9.1.1

Ensure that the IUT in call state N2 for a CTM incoming call, on receipt of a FACILITY message including an EncapsulatedStimulus invoke component containing encapsulated a keypad information requesting erasure,

sends the FACILITY message, including an EncapsulatedStimulus invoke component with the Display information.

5.3.1.3 Activation

CFNRc_N03_001 clause 9.1.1

Ensure that the IUT in call state N2 for a CTM incoming call, on receipt of a FACILITY message including an EncapsulatedStimulus invoke component containing encapsulated a keypad information requesting activation,

sends the FACILITY message, including an EncapsulatedStimulus invoke component with the Display information.

5.3.1.4 Deactivation

CFNRc_N04_001 clause 9.1.1

Ensure that the IUT in call state N2 for a CTM incoming call, on receipt of a FACILITY message including an EncapsulatedStimulus invoke component containing encapsulated a keypad information requesting deactivation,

sends a FACILITY message, including an EncapsulatedStimulus invoke component with the Display information.

5.3.1.5 Interrogation

CFNRc_N05_001 clause 9.1.1

Ensure that the IUT in call state N2 for a CTM incoming call, on receipt of a FACILITY message including an EncapsulatedStimulus invoke component containing encapsulated a keypad information requesting interrogation,

sends a FACILITY message, including an EncapsulatedStimulus invoke component with the Display information.

5.3.1.6 Operation

CFNRc_N06_001 clause 9.2.4

Ensure that the IUT, in call state N02 for a CTM incoming call destinated to a user having previously successfully register and activated CFNRc, upon receipt of a CTMIncomingCallManagementInfo or GSMIncomingCallManagementInfo return error with the congestion error value,

does not send any indication to the served user.

CFNRc_N06_002 clause 9.2.4

Ensure that the IUT, in call state N02 for a CTM incoming call destinated to a user having previously successfully register and activated CFNRc, upon receipt of a CTMIncomingCallManagementInfo or GSMIncomingCallManagementInfo return error with the pagingfailure error value,

does not send any indication to the served user.

CFNRc_N06_003 clause 9.2.4

Ensure that the IUT, in call state N02 for a CTM incoming call destinated to a user having previously successfully register and activated CFNRc, upon receipt of a CTMIncomingCallManagementInfo or GSMIncomingCallManagementInfo return error with the radioConnectionFailure error value,

does not send any indication to the served user.

5.3.1.7 Reminder notification

CFNRc_N07_001 clause 9.3.1

Ensure that the IUT, in state N00, on receipt of a valid SETUP message for a CTM outgoing call,

returns a SETUP ACKNOWLEDGE or a CALL PROCEEDING message without the Notification information element.

5.3.2 Calling user procedures

5.3.2.1 Notification of diversion to the calling user

Selection: IUT supports the notification of the diversion to the calling network. PICS: MC 8

CFNRc_N08_001 clause 9.2.2.1

Ensure that the IUT in the Call Initiated call state N01, to indicate that the first call diversion has occurred,

sends a CALL PROCEEDING or NOTIFY message containing a Notification indicator information element coded "call is diverting" to the calling user.

5.3.2.2 Identification of the diverted-to user to the calling user

CFNRc_N09_001 clause 9.2.3.1

Ensure that the IUT in the Call Delivered call state N04, to indicate completion of the call at the diverted-to,

sends a CONNECT message and possibly a NOTIFY or PROGRESS message none of which includes a Redirection number information element.

5.3.3 Called (diverted-to) user procedures

Selection: IUT supports the procedure associated with the release of the diverting number to the diverted-to user. PICS: MC 9

CFNRc_N10_001 clause 9.2.5.1

Ensure that the IUT in order to establish the call to the diverted-to user and if the indication is received that the presentation of the number is allowed and only one call diversion occurred,

sends a SETUP message containing one valid Redirecting number information element giving the reason for the call diversion with the presentation indicator set to "presentation allowed" and the redirecting number information provided in the number digits field.

CFNRc_N10_002 clause 9.2.5.1

Ensure that the IUT in order to establish the call to the diverted-to user and if the indication is received that the presentation of the number is restricted and only one call diversion occurred,

sends a SETUP message containing one valid Redirecting number information element giving the reason for the call diversion with the presentation indicator set to "presentation restricted".

6 Compliance

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

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

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

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

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

e) comply with ISO/IEC 9646-2 [5].

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 [5], shall be used by any organization claiming to provide a comprehensive testing service for network equipment claiming conformance to I-ETS 300 808 [7].

History

Document history				
V1.1.1	January 2001	Public Enquiry	PE 20010601:	2001-01-31 to 2001-06-01
V1.1.1	July 2001	Vote	V 20010907:	2001-07-09 to 2001-09-07
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