

**Private Integrated Services Network (PISN);  
Inter-exchange signalling protocol;  
Cordless terminal authentication  
supplementary services;  
Part 1: Test Suite Structure and Test Purposes (TSS&TP)  
specification for the VPN "b" service entry point**

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**Reference**

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DEN/SPAN-05196-2

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**Keywords**

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CTM, mobility, PISN, QSIG, supplementary  
service, testing, TSS&TP**ETSI**

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## Foreword

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

The present document covers the Private Integrated Service Network (PISN) Inter-exchange signalling protocol -Call Completion supplementary service - Test Suite Structure and Test Purposes (TSS&TP) specification.

The present document is part 1 of a multi-part deliverable covering the Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Cordless terminal authentication supplementary services, as identified below:

- Part 1:** "Test Suite Structure and Test Purposes (TSS&TP) specification for the VPN "b" service entry point";
- Part 2: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the VPN "b" service entry point".

<b>Proposed national transposition dates</b>	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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# 1 Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for the Cordless Terminal Authentication supplementary services of the Inter-exchange signalling protocol for Private Integrated Services Networks (PISN).

The objective of this TSS and TPs specification is to provide conformance tests, which give a greater probability of inter-operability. The TSS and TPs specification covers the procedures described in EN 300 366 [13].

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [3], ISO/IEC 9646-2 [4] and ISO/IEC 9646-3 [14]) is used as basis for the test methodology.

The Test Suite Structure and Test Purposes specified in this standard are only intended for VPN scenarios at the "b" service entry point.

The VPN "b" service entry point is defined in EN 301 060-1 [7] and ETR 172 [8].

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

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# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] ETSI ETS 300 239 (1995): "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Generic functional protocol for the support of supplementary services [ISO/IEC 11582 (1995), modified]".
- [2] ETSI ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [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] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [6] ITU-T Recommendation I.210 (1993): "Principles of the telecommunication services supported by an ISDN and the means to describe them".
- [7] ETSI EN 301 060-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Basic call control; Enhancement at the "b" service entry point for Virtual Private Network (VPN) applications; Part 1: Protocol specification".
- [8] ETSI ETR 172: "Business TeleCommunications (BTC); Virtual Private Networking (VPN); Services and networking aspects; Standardization requirements and work items".

- [9] ETSI ETS 300 692: "Private Integrated Services Network (PISN); Cordless Terminal Mobility (CTM); Location handling services; Functional capabilities and information flows".
- [10] ETSI EN 300 171: "Private Telecommunication Network (PTN); Specification, functional models and information flows; Control aspects of circuit mode basic services".
- [11] ETSI I-ETS 300 809: "Private Integrated Services Network (PISN); Cordless Terminal Mobility (CTM); Inter-exchange signalling protocol; Cordless terminal authentication supplementary services".
- [12] 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".
- [13] ETSI EN 300 366: "Universal Personal Telecommunication (UPT); UPT phase 2; Functional specification of the interface of a UPT Integrated Circuit Card (ICC) and Card Accepting Devices (CADs); UPT card accepting Dual Tone Multiple Frequency (DTMF) device; Conformance test specification".
- [14] ISO/IEC 9646-3: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [15] ISO/IEC 11571: "Information technology - Telecommunications and information exchange between systems - Private Integrated Services Networks - Addressing".
- [16] ISO/IEC 11579-1: "Information technology - Telecommunications and information exchange between systems - Private integrated services network - Part 1: Reference configuration for PISN Exchanges (PINX)".
- [17] ETSI EN 300 415: Do not exist as an EN but as an ETS "Private Integrated Services Network (PISN); Terms and definitions".

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## 3 Definitions and abbreviations

### 3.1 Definitions

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

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

**Implementation Under Test (IUT):** 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]

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

**Virtual Private Network (VPN):** refer to EN 301 060-1 [7]

**Application Protocol Data Unit (APDU):** see ETS 300 239 [1]

**Basic Service:** see ITU-T Recommendation I.210 [6]

**Complete Number:** see ISO/IEC 11571 [15]

**CTM user:** see ETS 300 692 [9]

**Home PINX:** see ETS 300 692 [9]

**Private Integrated Services Network Exchange (PINX):** see ISO/IEC 11579-1 [16]

**PISN Number:** see ISO/IEC 11571 [15]

**Signalling:** see ITU-T Recommendation I.112 [5]

**Supplementary Service:** see ITU-T Recommendation I.210 [6]

**User:** see EN 300 171 [10]

**Visitor area:** see EN 300 415 [17]

**Visitor PINX:** see ETS 300 692 [9]

## 3.2 Abbreviations

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

APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation number 1
ATS	Abstract Test Suite
BC	Basic Call
CR	Call Reference
CTM	Cordless Terminal Mobility
IE	Information Element
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PINX	Private Integrated Services Network eXchange
PISN	Private Integrated Services Network
PIXIT	Protocol Implementation eXtra Information for Testing
PSS1	Private Integrated Signalling System Number 1
sc	call independent signalling connection
SS-CTAN	Supplementary service - Authentication of a PISN
SS-CTAT	Supplementary service - Authentication of a CTM user
T1	Timer T1
T2	Timer T2
T3	Timer T3
T4	Timer T4
T5	Timer T5
TP	Test Purpose
TSS	Test Suite Structure
VPN	Virtual Private Network

## 4 Test Suite Structure (TSS)

### Signalling protocol for the support of SS-CTAT

### Group

#### SS-CTAT signalling procedures

Actions at the Home PINX for initiation of SS-CTAT	Home01
Actions at the Home PINX for requesting authentication parameters	Home02
Actions at the Home PINX when fetching authentication parameters	Home03
Actions at the Visitor PINX for execution of SS-CTAT	Visit01
Actions at the Visitor PINX for requesting authentication parameters	Visit02
Actions at the Authentication Server PINX	Auth

#### Protocol interaction between SS-CTAT and Cordless Terminal Location Registration (SS-CTLR)

Actions at the Previous Visitor PINX	PrevVisit
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### Signalling protocol for the support of SS-CTAN

### Group

#### SS-CTAN signalling procedures

Actions at the Visitor PINX	Visit
Actions at the Home PINX	Home
Actions at the Authentication Server PINX	Auth

## 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>_<group>_<nnn>			
<ss>	=	supplementary service:	"CTAT" or "CTAN"
<group>	=	group	up to 8 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 I-ETS 300 809 [11].



### 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 SS-CTAT**

TP part	Text	Example
<b>Header</b>	<Identifier> <i>tab</i> <paragraph number in base ETS> <i>tab</i>	see table 1 <b>subclause 0.0.0</b>
<b>Stimulus</b>	Ensure that the IUT in the <basic call state> or <CTAT/CTAN state> <trigger> <i>see below for message structure</i> or <goal>	state 3 or CTAT/CTAN-Idle, etc. receiving a XXXX message to request a ...
<b>Reaction</b>	<action> <conditions> <i>if the action is sending</i> <i>see below for message structure</i> <next action>, etc. and remains in the same state or and enters state <state>	sends, saves, does, etc. using en bloc sending, ...
<b>Message structure</b>	<message type> message containing a a) <info element> information element with b) a <field name> encoded as or including <coding of the field> and <i>back to a or b</i> ,	SETUP, FACILITY, CONNECT, ...  Bearer capability, Facility, ...
<b>Selection</b>	Selection criteria reference	Behaviour as Visitor PINX for SS-CTAT. PICS: A1
NOTE 1:	In order to use the same structure as for test group selection, the selection criteria is indicated at the bottom of the test purpose.	
NOTE 2:	Unless specified the messages are valid and contain at least the mandatory information elements and possibly optional information elements, the information elements are valid and contain at least the mandatory parameters and possibly optional parameters.	

### 5.1.4 Test strategy

As the base standard I-ETS 300 809 [11] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification I-ETS 300 809 [11].

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 [2]).

## 5.2 TPs for SS-CTAT and SS-CTAN

All PICS items referred to in this subclause are as specified in I-ETS 300 809 [11] 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.

The following wording convention was defined to make the test purposes more readable:

- When a message is to be sent or received on a call independent signalling connection, the message name shall be followed by a '(sc)', e.g. CONNECT (sc) means that the CONNECT message is conveyed on a call independent signalling connection.

All the test purposes are valid for both user and network side of the VPN b interface. In order to simplify the text and to make the test purposes more readable, only the User side Call states (Ux) are indicated in the test purposes. For the network side of the VPNb interface, the mapping table below indicates which network call state (Ny) corresponds to the user call state used in the test purpose. Equivalent call state means there that the same message flow applies from the IUT point of view (e.g.: IUT sends a SETUP message gives the call state U01 or N06).

User side call state	equivalent network side call state
U00	N00
U03	N09

EXAMPLE:

*Ensure that the IUT in the call state U03 ...*

is equivalent to the following network side test purpose:

*Ensure that the IUT in the call state N09 ...*

## 5.2.1 SS-CTAT signalling procedures

### 5.2.1.1 Actions at the Home PINX for initiation of SS-CTAT

**Groupselection:** Behaviour as Home PINX or combined Home PINX and Authentication Server PINX for SS-CTAT. PICS: A2 OR A3.

#### CTAT\_Home01\_001 subclause 6.5.1.1

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeInitIdle state, on determining that the SS-CTAT is to be invoked without providing challenge and response values to the Visitor PINX, sends a SETUP (sc) message to the Visitor PINX containing in the Facility IE a authCtmUser invoke APDU where element calcCtatInfo is omitted, enters the CtatHomeInitiating state.

**Selection:** Signalling procedures for initiation of SS-CTAT without challenge and expected response. PICS: B9.

#### CTAT\_Home01\_002 subclause 6.5.1.1

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeInitIdle state, on determining that the SS-CTAT is to be invoked with providing challenge and response values to the Visitor PINX, sends a SETUP (sc) message to the Visitor PINX containing in the Facility IE a authCtmUser invoke APDU with element calcCtatInfo, enters the CtatHomeInitiating state.

**Selection:** Signalling procedures for initiation of SS-CTAT without challenge and expected response. PICS: B10.

#### CTAT\_Home01\_003 subclause 6.5.1.1

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeInitiating state, on receipt of a CONNECT (sc) message containing in the Facility IE a authCtmUser return result APDU from the Visitor PINX, sends a CONNECT ACKNOWLEDGEMENT (sc) message, enters the CtatHomeInitIdle state

**Selection:** Signalling procedures for initiation of SS-CTAT without challenge and expected response. PICS: B10.

#### CTAT\_Home01\_004 subclause 6.5.1.2

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeInitiating state, on receipt of a CONNECT (sc) message containing in the Facility IE a authCtmUser return error or reject APDU from the Visitor PINX, sends a CONNECT ACKNOWLEDGEMENT (sc) message, enters the CtatHomeInitIdle state.

**Selection:** Signalling procedures for initiation of SS-CTAT without challenge and expected response. PICS: B10.

**CTAT\_Home01\_005 subclause 6.5.1.2**

Ensure that the IUT in the call state U03 (sc) and the CtatHomeInitiating state, on expiry of T1, clears the call independent signalling connection or does not take any action.

**Selection:** Signalling procedures for initiation of SS-CTAT without challenge and expected response. PICS: B10.

**5.2.1.2 Actions at the Home PINX for requesting authentication parameters**

**Groupselection:** Behaviour as Home PINX or combined Home PINX and Authentication Server PINX for SS-CTAT. PICS: A2 OR A3.

**CTAT\_Home02\_001 subclause 6.5.2.1**

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeRequestIdle state, on receipt of a SETUP (sc) message from the Visitor PINX containing in the Facility IE a getCtatParam invoke APDU, the CTM user's PISN number (valid and the CTM user is authorized for SS-CTAT) included in the pisinNumber argument, sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtatParam return result APDU.

**CTAT\_Home02\_002 subclause 6.5.2.1**

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeRequestIdle state, on receipt of a SETUP (sc) message from the Visitor PINX containing in the Facility IE a getCtatParam invoke APDU, the CTM user's PISN number (valid and the CTM user is authorized for SS-CTAT) included in the pisinNumber argument, sends a SETUP (sc) message to the Authentication Server PINX containing in the Facility IE a ctatParamEnq invoke APDU, enters CtatHomeRequesting state.

**Selection:** Behaviour as Home PINX for SS-CTAT (separate from an Authentication Server PINX). PICS: A2.

**CTAT\_Home02\_003 subclause 6.5.2.1**

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeRequesting state, on receipt of a CONNECT (sc) message from the Authentication Server PINX containing in the Facility IE a ctatParamEnq return result APDU, sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtatParam return result APDU containing the authentication parameters receiving from the Authentication Server PINX, enters the CtatHomeRequestIdle state.

**CTAT\_Home02\_004 subclause 6.5.2.2**

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeRequestIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a getCtatParam invoke APDU, invalid PISN number included in the pisinNumber argument, sends a CONNECT (sc) message containing in the Facility IE a getCtatParam return error APDU containing the error invalidServedUserNr, remains in the CtatHomeRequestIdle state.

**CTAT\_Home02\_005 subclause 6.5.2.2**

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeRequestIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a getCtatParam invoke APDU, the CTM user is not authorized for SS-CTAT, sends a CONNECT (sc) message containing in the Facility IE a getCtatParam return error APDU containing the error notAuthorized, remains in the CtatHomeRequestIdle state.

**CTAT\_Home02\_006 subclause 6.5.2.2**

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeRequesting state, if authentication parameters are not received from the Authentication Server PINX because of a time out error, sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtatParam return error APDU containing the error value temporarilyUnavailable, enters the CtatHomeRequestIdle state.

**Selection:** Behaviour as Home PINX for SS-CTAT (separate from an Authentication Server PINX). PICS: A2.

**CTAT\_Home02\_007 subclause 6.5.2.2**

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeRequesting state, if authentication parameters are not received from the Authentication Server PINX because of any error except for a time out error,  
 sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtatParam return error APDU containing the error value ParameterNotAvailable,  
 enters CtatHomeRequestIdle state.

**Selection:** Behaviour as Home PINX for SS-CTAT (separate from an Authentication Server PINX). PICS: A2.

**5.2.1.3 Actions at the Home PINX when fetching authentication parameters**

**Groupselection:** Behaviour as Home PINX for SS-CTAT (separate from an Authentication Server PINX). PICS: A2.

**CTAT\_Home03\_001 subclause 6.5.3.1**

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeFetchIdle state, on receipt of a SETUP (sc) message from the Visitor PINX containing in the Facility IE a getCtatParam invoke APDU, element canCompute shall be omitted,  
 sends a SETUP (sc) message to the Authentication Server PINX containing in the Facility IE a ctatParamEnq invoke APDU, element canCompute shall be omitted,  
 enters the CtatHomeFetching state.

**CTAT\_Home03\_002 subclause 6.5.3.1**

Ensure that the IUT in the call state U00 (sc) and in the CtatHomeFetchIdle state, on receipt of a SETUP (sc) message from the Visitor PINX containing in the Facility IE a getCtatParam invoke APDU, element canCompute shall be included,  
 sends a SETUP (sc) message to the Authentication Server PINX containing in the Facility IE a ctatParamEnq invoke APDU, element canCompute shall be included,  
 enters the CtatHomeFetching state.

**CTAT\_Home03\_003 subclause 6.5.3.2**

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeFetching state, on receipt of a CONNECT (sc) message from the Authentication Server PINX containing in the Facility IE a ctatParamEnq return result APDU,  
 sends a CONNECT ACKNOWLEDGEMENT (sc) message to the Authentication Server PINX,  
 enters the CtatHomeFetchIdle state.

**CTAT\_Home03\_004 subclause 6.5.3.2**

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeFetching state, on receipt of a CONNECT (sc) message from the Authentication Server PINX containing in the Facility IE a ctatParamEnq return error or reject APDU,  
 sends a CONNECT ACKNOWLEDGEMENT (sc) message to the Authentication Server PINX,  
 enters the CtatHomeFetchIdle state.

**CTAT\_Home03\_005 subclause 6.5.3.2**

Ensure that the IUT in the call state U03 (sc) and in the CtatHomeFetching state, on expiry of T2,  
 clears the call independent signalling connection or does not take any action,  
 enters the CtatHomeFetchIdle state.

**5.2.1.4 Actions at the Visitor PINX for execution of SS-CTAT**

**Groupselection:** Behaviour as Visitor PINX for SS-CTAT. PICS: A1.

**CTAT\_Visit01\_001 subclause 6.5.5.1**

Ensure that the IUT in the call state U00 (sc) and in the CtatVisitExecIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a authCtmUser invoke APDU either element calcCtatInfo is included or authentication parameters for this CTM user are already available,  
 sends a CONNECT (sc) message containing in the Facility IE a authCtmUser return result APDU containing the parameter auth\_res\_correct,  
 enters the CtatVisitExecuting state.

**Selection:** Signalling procedures at a Visitor PINX for receiving request from Home PINX for SS-CTAT without challenge and expected response. PICS: B4.

**CTAT\_Visit01\_002 subclause 6.5.5.1**

Ensure that the IUT in the call state U00 (sc) and in the CtatVisitExecIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a authCtmUser invoke APDU and the element calcCtatInfo is not included and the authentication parameters for this CTM user are not available,  
 sends a SETUP (sc) message containing in the Facility IE a getCtatParam invoke APDU, element canCompute shall be included,  
 enters the CtatVisitExecuting state.

**Selection:** Signalling procedures at a Visitor PINX for receiving request from Home PINX for SS-CTAT without challenge and expected response. PICS: B5.

**CTAT\_Visit01\_003 subclause 6.5.5.1**

Ensure that the IUT in the call state U09 (sc) and in the CtatVisitExecuting state, on receipt of the correct Authentication result from the CTM user,  
 sends a CONNECT (sc) message containing in the Facility IE a authCtmUser return result APDU containing the parameter auth\_res\_correct,  
 enters the CtatVisitExecIdle state.

**Selection:** Signalling procedures at a Visitor PINX for receiving request from Home PINX for SS-CTAT without challenge and expected response. PICS: B4.

**CTAT\_Visit01\_004 subclause 6.5.5.1**

Ensure that the IUT in the call state U09 (sc) and in the CtatVisitExecuting state, on receipt of the incorrect Authentication result from the CTM user,  
 sends a CONNECT (sc) message containing in the Facility IE a authCtmUser return result APDU containing the parameter auth\_res\_incorrect,  
 enters the CtatVisitExecIdle state.

**Selection:** Signalling procedures at a Visitor PINX for receiving request from Home PINX for SS-CTAT without challenge and expected response. PICS: B4.

**CTAT\_Visit01\_005 subclause 6.5.5.2**

Ensure that the IUT in the call state U09 (sc) and in the CtatVisitExecuting state, on expiry of T3 (authentication parameters are not received for any reason),  
 sends a CONNECT (sc) message containing in the Facility IE a authCtmUser return error APDU,  
 enters the CtatVisitExecIdle state.

**Selection:** Signalling procedures at a Visitor PINX for receiving request from Home PINX for SS-CTAT without challenge and expected response. PICS: B5.

**CTAT\_Visit01\_006 subclause 6.5.5.2**

Ensure that the IUT in the call state U09 (sc) and in the CtatVisitExecuting state, if the authentication request is not answered by the CTM user because of time out error,  
 sends a CONNECT (sc) message containing in the Facility IE a authCtmUser return error APDU containing the error temporarilyUnavailable,  
 enters the CtatVisitExecIdle state.

**Selection:** Signalling procedures at a Visitor PINX for receiving request from Home PINX for SS-CTAT without challenge and expected response. PICS: B4.

**CTAT\_Visit01\_007 subclause 6.5.5.2**

Ensure that the IUT in the call state U09 (sc) and in the CtatVisitExecuting state, if the authentication request is not answered by the CTM user because of any error except for time out error,  
 sends a CONNECT (sc) message containing in the Facility IE a authCtmUser return error APDU containing the error ParameterNotAvailable,  
 enters the CtatVisitExecIdle state.

**Selection:** Signalling procedures at a Visitor PINX for receiving request from Home PINX for SS-CTAT without challenge and expected response. PICS: B4.

### 5.2.1.5 Actions at the Visitor PINX for requesting authentication parameters

**Groupselection:** Signalling procedures at a Visitor PINX for requesting authentication parameters from Home PINX. PICS: B7.

#### CTAT\_Visit02\_001 subclause 6.5.6.1

Ensure that the IUT in the call state U00 (sc) and in the CtatVisitRequestIdle state, in order to make an enquiry to request the authentication parameters for CTM user,  
 sends a SETUP (sc) message containing in the Facility IE a getCtatParam invoke APDU, element canCompute shall be omitted,  
 enters the CtatVisitRequesting state.

#### CTAT\_Visit02\_002 subclause 6.5.6.1

Ensure that the IUT in the call state U00 (sc) and in the CtatVisitRequestIdle state, in order to make an enquiry to request the authentication parameters for CTM user,  
 sends a SETUP (sc) message containing in the Facility IE a getCtatParam invoke APDU, element canCompute shall be included,  
 enters the CtatVisitRequesting state.

**Selection:** Support of procedures for calculation of challenge/response at the Visitor PINX. PICS: B8.

#### CTAT\_Visit02\_003 subclause 6.5.6.1

Ensure that the IUT in call state U03 (sc) and in the CtatVisitRequesting state, on receipt of a CONNECT (sc) message containing in the Facility IE a getCtatParam return result APDU with challenge and response value,  
 sends a CONNECT ACKNOWLEDGEMENT message,  
 enters the CtatVisitRequestIdle state.

#### CTAT\_Visit02\_004 subclause 6.5.6.1

Ensure that the IUT in the call state U03 (sc) and in the CtatVisitRequesting state, on receipt of a CONNECT (sc) message containing in the Facility IE a getCtatParam return result APDU, element ctatParamInfo contains parameter authSessionKeyInfo,  
 sends a CONNECT ACKNOWLEDGEMENT (sc) message,  
 enters the CtatVisitRequestIdle state.

**Selection:** Support of procedures for calculation of challenge/response at the Visitor PINX. PICS: B8.

#### CTAT\_Visit02\_005 subclause 6.5.6.2

Ensure that the IUT in the call state U03 (sc) and in the CtatVisitRequesting state, on receipt of a CONNECT (sc) message containing in the Facility IE a getCtatParam return error or reject APDU,  
 sends a CONNECT ACKNOWLEDGEMENT message,  
 enters the CtatVisitRequestIdle state.

#### CTAT\_Visit02\_006 subclause 6.5.6.2

Ensure that the IUT in the call state U03 (sc) and in the CtatVisitRequesting state, on expiry of T3,  
 clears the call independent signalling connection or does not take any action,  
 enters the CtatVisitRequestIdle state.

### 5.2.1.6 Actions at the Authentication Server PINX

**Groupselection:** Behaviour as Authentication Server PINX for SS-CTAT (separate from a Home PINX). PICS: A4.

#### CTAT\_Auth\_001 subclause 6.5.7.1

Ensure that the IUT in the call state U00 (sc) and in the CtatAuthenticationIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a ctatParamEnq invoke APDU, the PISN number of the CTM user (which is valid and authentication parameters are available for this CTM user) included in the pisenNumber argument, element canCompute is not included,  
 sends a CONNECT (sc) message containing in the Facility IE a ctatParamEnq return result APDU, element ctatParamInfo contains the calculated authentication information (choice calcCtatInfo),  
 remains in the CtatAuthenticationIdle state.

**CTAT\_Auth\_002 subclause 6.5.7.1**

Ensure that the IUT in the call state U00 (sc) and in CtatAuthenticationIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a ctatParamEnq invoke APDU, the PISN number of the CTM user (which is valid and authentication parameters are available for this CTM user) included in the pismNumber argument, element canCompute is included,

sends a CONNECT (sc) message containing in the Facility IE a ctatParamEnq return result APDU, element ctatParamInfo contains the authentication session key (choice authSessionKeyInfo),  
remains in the CtatAuthenticationIdle state.

**CTAT\_Auth\_003 subclause 6.5.7.2**

Ensure that the IUT in the call state U00 (sc) and in CtatAuthenticationIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a ctatParamEnq invoke APDU, an invalid PISN number included in the pismNumber argument,

sends a CONNECT (sc) message containing in the Facility IE a ctatParamEnq return error APDU containing the error invalidServedUserNr,  
remains in the CtatAuthenticationIdle state.

**CTAT\_Auth\_004 subclause 6.5.7.2**

Ensure that the IUT in the call state U00 (sc) and in CtatAuthenticationIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a ctatParamEnq invoke APDU, and the authentication parameters are not available,

sends a CONNECT (sc) message containing in the Facility IE a ctatParamEnq return error APDU containing the error paramNotAvailable,  
remains in the CtatAuthenticationIdle state.

## 5.2.2 Protocol interaction between SS-CTAT and Cordless Terminal Location Registration (SS-CTLR)

### 5.2.2.1 Actions at the Previous Visitor PINX

**Groupselection:** Interactions at Previous Visitor PINX. PICS: E2.

**CTAT\_PrevVisit\_001 subclause 6.8.1.1**

Ensure that the IUT in the call state U00 (sc) and in the VisitIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a pismEnquiry invoke APDU during CTLR and when either the authentication parameters or generated challenge(s) and the expected response value(s) for this PISN number are available,

sends a CONNECT (sc) message containing in the Facility IE a pismEnquiry return result APDU and transferAuthParam invoke APDU, ctatParamInfo may be included,  
remains in the CtatAuthenticationIdle state.

## 5.2.3 SS-CTAN signalling procedures

### 5.2.3.1 Actions at the Visitor PINX

**Groupselection:** Behaviour as Visitor PINX for SS-CTAN. PICS: A1.

**CTAN\_Visit\_001 subclause 7.5.1.1**

Ensure that the IUT in the call state U00 (sc) and in the CtanVisitRequestIdle state, on receipt of a valid authentication request from the CTM user and in order to make a request to the Home PINX to get the authentication parameters for this CTM user,

sends a SETUP (sc) message to the Home PINX containing in the Facility IE a getCtanParam invoke APDU to the Home PINX containing the challenge and Authentication algorithm which was received from the CTM user,  
enters the CtanVisitRequesting state.

**CTAN\_Visit\_002 subclause 7.5.1.1**

Ensure that the IUT in the call state U00 (sc) and in the CtanVisitRequestIdle state, on receipt of a valid authentication request from the CTM user and in order to make a request to the Home PINX to get the authentication parameters for this CTM user,

sends a SETUP (sc) message to the Home PINX containing in the Facility IE a getCtanParam invoke APDU to the Home PINX containing the element canCompute if the Visitor PINX is able to compute a response value, enters the CtanVisitRequesting state.

**Selection:** Support of procedures for calculation of response value at the Visitor PINX. PICS: B5.

**CTAN\_Visit\_003 subclause 7.5.1.1**

Ensure that the IUT in the call state U03 (sc) and in the CtanVisitRequesting state, on receipt of a CONNECT (sc) message containing in the Facility IE a getCtanParam return result APDU, the element ctanParamInfo contains the authentication session key,

sends a CONNECT ACKNOWLEDGEMENT (sc) message, enters the CtanVisitRequestIdle state.

**Selection:** Support of procedures for calculation of response value at the Visitor PINX. PICS: B5.

**CTAN\_Visit\_004 subclause 7.5.1.1**

Ensure that the IUT in the call state U03(sc) and in the CtanVisitRequesting state, on receipt of a CONNECT (sc) message containing in the Facility IE a getCtanParam return result APDU contains the calculated response value,

sends a CONNECT ACKNOWLEDGEMENT message, enters the CtanVisitRequestIdle state.

**CTAN\_Visit\_005 subclause 7.5.1.2**

Ensure that the IUT in the call state U03 (sc) and in the CtanVisitRequesting state, on receipt of a CONNECT (sc) message containing in the Facility IE a getCtanParam return error or reject APDU from the Home PINX,

sends a CONNECT ACKNOWLEDGEMENT message, enters the CtanVisitRequestIdle state.

**CTAN\_Visit\_006 subclause 7.5.1.2**

Ensure that the IUT in the call state u03 (sc) and in the CtanVisitRequesting state, on expiry of T4,

clears the call independent signalling connection or does not take any action,

enters the CtanVisitRequestIdle state.

**5.2.3.2 Actions at the Home PINX**

**Groupselection:** Behaviour as Home PINX or combined Home PINX and Authentication Server PINX for SS-CTAN. PICS: A2 OR A3.

**CTAN\_Home\_001 subclause 7.5.2.1**

Ensure that the IUT in the call state U00 (sc) and in the CtanHomeRequestIdle state, on receipt of a SETUP (sc) message from the Visitor PINX containing in the Facility IE a getCtanParam invoke APDU, the PISN number of the CTM user (which is valid and the CTM user is authorized for the SS-CTAN) included in the pismNumber argument,

sends a SETUP (sc) message to the Authentication Server PINX containing in the Facility IE a ctanParamEnq invoke APDU, containing the received challenge, enters the CtanHomeFetching state.

**Selection:** Behaviour as Home PINX for SS-CTAN (separate from an Authentication Server PINX). PICS: A2.

**CTAN\_Home\_002 subclause 7.5.2.1**

Ensure that the IUT in the call state U03 (sc) and in the CtanHomeFetching state, on receipt of a CONNECT (sc) message from the Authentication Server PINX containing in the Facility IE a ctanParamEnq return result APDU,

sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtanParam return result APDU containing the information received from the Authentication Server PINX, enters the CtanHomeRequestIdle state.

**Selection:** Behaviour as Home PINX for SS-CTAN (separate from an Authentication Server PINX). PICS: A2.



**CTAN\_Home\_003 subclause 7.5.2.2**

Ensure that the IUT in the call state U00 (sc) and in CtanHomeRequestIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a getCtanParam invoke APDU, invalid PISN number included in the pisinNumber argument,

sends a CONNECT (sc) message containing in the Facility IE a getCtanParam return error APDU containing the error invalidServedUserNr,  
remains in the CtanHomeRequestIdle state.

**CTAN\_Home\_004 subclause 7.5.2.2**

Ensure that the IUT in the call state U00 (sc) and in CtanHomeRequestIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a getCtanParam invoke APDU, the CTM user is not authorized for SS-CTAN,

sends a CONNECT (sc) message containing in the Facility IE a getCtanParam return error APDU containing the error notAuthorized,  
remains in the CtanHomeRequestIdle state.

**CTAN\_Home\_005 subclause 7.5.2.2**

Ensure that the IUT in the call state U03 (sc) and in the CtanHomeFetching state, on receipt of a CONNECT (sc) message from the Authentication Server PINX containing in the Facility IE a ctanParamEnq return error APDU,

sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtanParam return error APDU containing the received error value from the Authentication Server PINX,  
enters the CtanHomeRequestIdle state.

**Selection:** Behaviour as Home PINX for SS-CTAN (separate from an Authentication Server PINX). PICS: A2.

**CTAN\_Home\_006 subclause 7.5.2.2**

Ensure that the IUT in the call state U03 (sc) and in the CtanHomeFetching state, on receipt of a CONNECT (sc) message from the Authentication Server PINX containing in the Facility IE a ctanParamEnq return reject APDU,

sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtanParam return error APDU containing the error paramNotAvailable,  
enters the CtanHomeRequestIdle state.

**Selection:** Behaviour as Home PINX for SS-CTAN (separate from an Authentication Server PINX). PICS: A2.

**CTAN\_Home\_007 subclause 7.5.2.2**

Ensure that the IUT in the call state U03 (sc) and in the CtanHomeFetching state, on expiry of T5,

sends a CONNECT (sc) message to the Visitor PINX containing in the Facility IE a getCtanParam return error APDU containing the error temporarilyUnavailable,  
enters the CtanHomeRequestIdle state.

**Selection:** Behaviour as Home PINX for SS-CTAN (separate from an Authentication Server PINX). PICS: A2.

**5.2.3.3 Actions at the Authentication Server PINX**

**Groupselection:** Behaviour as Authentication Server PINX for SS-CTAN. PICS: A4.

**CTAN\_Auth\_001 subclause 7.5.3.1**

Ensure that the IUT in call state U00 (sc) and in CtanAuthenticationIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a ctanParamEnq invoke APDU, the PISN number of the CTM user (which is valid and authentication parameters are available for this CTM user) included in the pisinNumber argument, element canCompute is not included,

sends a CONNECT (sc) message containing in the Facility IE a ctanParamEnq return result APDU, element ctanParamInfo contains the calculated response value (choice calcCtanInfo),  
remains in the CtanAuthenticationIdle state.

**CTAN\_Auth\_002 subclause 7.5.3.1**

Ensure that the IUT in the call state U00 (sc) and in CtanAuthenticationIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a ctanParamEnq invoke APDU, the PISN number of the CTM user (which is valid and authentication parameters are available for this CTM user) included in the pishNumber argument, element canCompute is included,

sends a CONNECT (sc) message containing in the Facility IE a ctanParamEnq return result APDU, element ctanParamInfo contains the authentication session key (choice authSessionKeyInfo),  
remains in the CtanAuthenticationIdle state.

**CTAN\_Auth\_003 subclause 7.5.3.2**

Ensure that the IUT in the call state U00 (sc) and in state CtanAuthenticationIdle, on receipt of a SETUP (sc) message containing in the Facility IE a ctanParamEnq invoke APDU, an invalid PISN number included in the pishNumber argument,

sends a CONNECT (sc) message containing in the Facility IE a ctanParamEnq return error APDU containing the error invalidServedUserNr,  
remains in the CtanAuthenticationIdle state.

**CTAN\_Auth\_004 subclause 7.5.3.2**

Ensure that the IUT in the call state U00 (sc) and in the CtanAuthenticationIdle state, on receipt of a SETUP (sc) message containing in the Facility IE a ctanParamEnq invoke APDU, and the authentication parameters are not available,

sends a CONNECT (sc) message containing in the Facility IE a ctanParamEnq return error APDU containing the error paramNotAvailable,  
remains in the CtanAuthenticationIdle state.

## 6 Compliance

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

- a) consist of a set of test cases corresponding to the set or to a subset of the TPs specified in clause 5;
- b) use a TSS, which is an appropriate subset of the whole of the TSS specified in clause 4;
- c) use the same naming conventions for the test groups and test cases;
- d) maintain the relationship specified in clause 5 between the test groups and TPs and the entries in the PICS proforma to be used for test case deselection;
- e) comply with ISO/IEC 9646-2 [4].

In the case of a) or b) above, a subset shall be used only where a particular Abstract Test Method (ATM) makes some TPs untestable. All testable TPs from clause 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 I-ETS 300 808 [12].

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## Bibliography

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

- EN 300 172 (V1.4): "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Circuit-mode basic services [ISO/IEC 11572 (1996) modified]".

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## History

<b>Document history</b>			
V1.1.1	January 2000	Public Enquiry	PE 200018: 2000-01-05 to 2000-05-05
V1.1.2	October 2000	Vote	V 20001201: 2000-10-02 to 2000-12-01