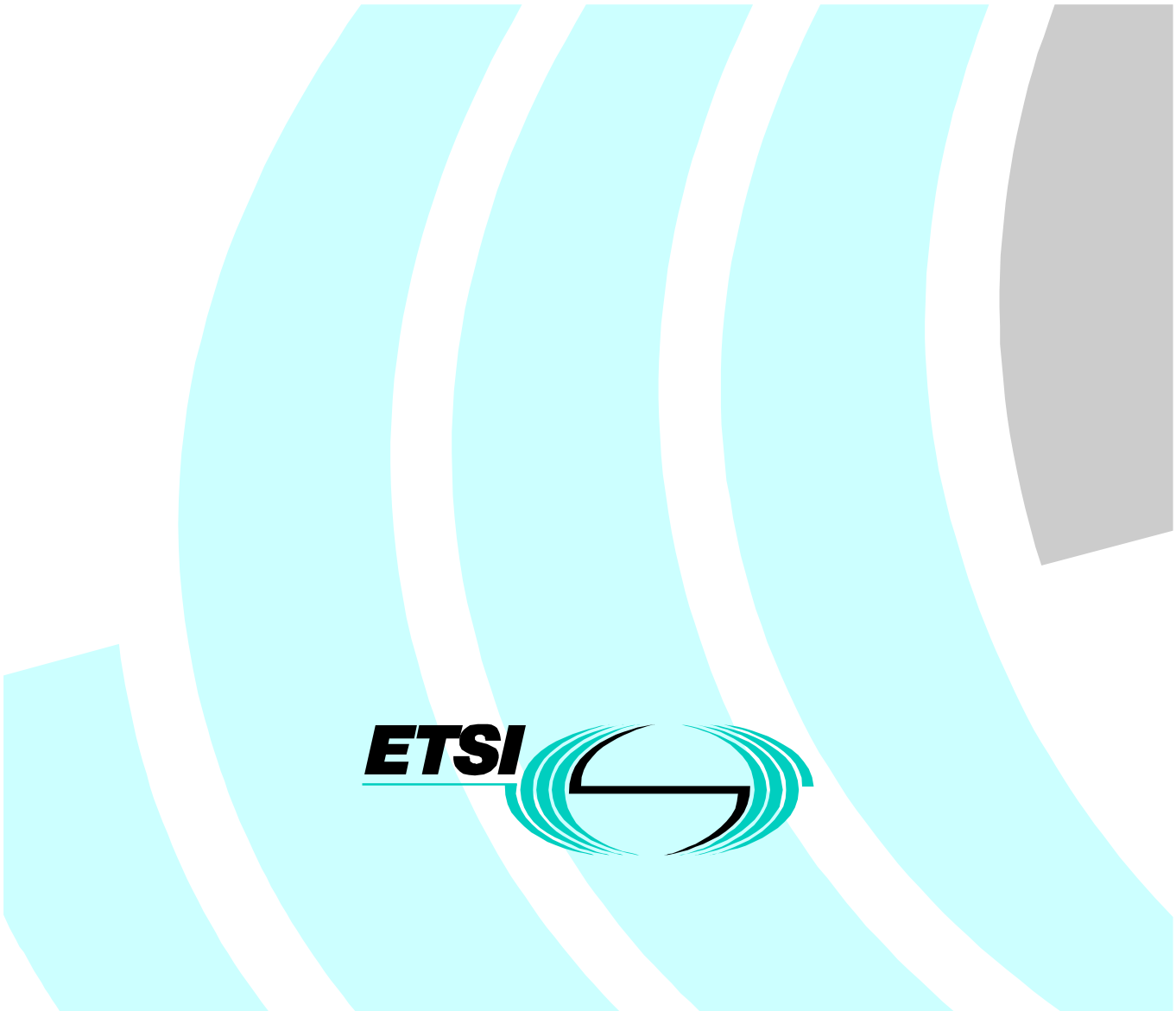
ETSI TS 101 818-3 V1.1.1 (2001-07)

Technical Specification

**Integrated Services Digital Network (ISDN);
Digital Subscriber Signalling System No. one (DSS1) protocol;
Trunk Hunting (TH) supplementary service;
Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user**



Reference
DTS/SPAN-130172-3

Keywords
DSS1, ISDN, supplementary service, TH,
TSS&TP, user

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Contents

Intellectual Property Rights 4
Foreword 4
1 Scope 5
2 References 5
3 Definitions and abbreviations 6
3.1 Definitions 6
3.2 Abbreviations 6
4 Test Suite Structure 6
5 Test Purposes (TP) 7
5.1 Introduction 7
5.1.1 TP naming convention 7
5.1.2 Source of TP definition 7
5.1.3 TP structure 8
5.1.4 Test strategy 8
5.2 User TPs for TH 8
5.2.1 User (S/T) 9
5.2.2 User (T) 9
5.2.2.1 Temporary Hunt Group withdrawal 9
5.2.2.2 Cancellation of temporary Hunt Group withdrawal 10
6 Compliance 11
7 Requirements for a comprehensive testing service 11
Annex A (informative): Bibliography 12
History 13

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://www.etsi.org/ipr).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 3 of a multi-part deliverable covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Trunk Hunting (TH) 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".

1 Scope

The present document 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 Trunk Hunting (TH) service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, TS 101 818-1 [1].

The present document is applicable to testing of user implementations claiming to conform to TS 101 818-1 [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 Network side of the T reference point or coincident S and T reference point of implementations conforming to TS 101 818-1 [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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, subsequent revisions do apply.

[1] ETSI TS 101 818-1 (V1.1.1): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1); Trunk Hunting (TH) supplementary service; Part 1: Protocol specification".

[2] ETSI TS 101 818-2 (V1.1.1): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1); Trunk Hunting (TH) supplementary service; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3] ETSI EN 300 196-1 (V1.3.1): " 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".

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

[5] ISO/IEC 9646-1: "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 1: General Concepts".

[6] ISO/IEC 9646-2: "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 2: Abstract Test Suite specification".

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

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 101 818-1 [1], EN 300 196-1 [3] and ISO/IEC 9646-1 [5] and the following apply:

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

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

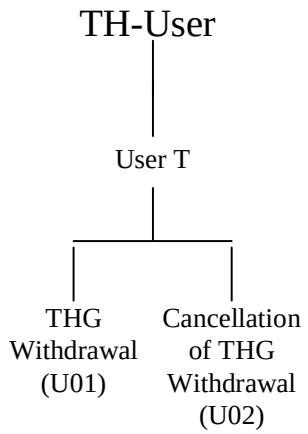
3.2 Abbreviations

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

ATM	Abstract Test Method
ATS	Abstract Test Suite
CR	Call Reference
DSS1	Digital Subscriber Signalling System No. one
HG	Hunt Group
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TH	Trunk Hunting
THG	Temporary Hunting Group
TP	Test Purpose
TSS	Test Suite Structure

4 Test Suite Structure

The test suite structure is specified in figure 1.



NOTE: Numbers in brackets represent group numbers and are used in TP identifiers.

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:	e.g. "TH"	
<iut>	=	type of IUT:	U N	User 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 TS 101 818-1 [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

TP part	Text	Example
Header	**<Identifier>** *tab* **<clause number in base specification>** *tab*	see table 1 **clause 0.0.0**
Stimulus	Ensure that the IUT in the <(supplementary) service state> <trigger> *see below for message structure* *or* <goal>	 Wait HG Withdrawal state receiving a XXXX message to request a ...
Reaction	<action> *if the action is sending* *see below for message structure* <next action>, *etc.* and enters <supplementary service state> *and/or* and remains in the same call state(s) *or* and enters call state <state> with CR<number(s)>	sends, does, etc.
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, ...
Selection	Selection criteria reference	Support Trunk Hunting SS. PICS: R 1.1
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. NOTE 3: 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 TS 101 818-1 [1] contained no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification, TS 101 818-2 [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 [4]).

All the test purposes are mandatory unless they have a 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.

5.2 User TPs for TH

All PICS items referred to in this clause are as specified in TS 101 818-2 [2] unless indicated otherwise.

Unless specified otherwise:

- The components indicated are valid and contain at least the mandatory parameters and possibly optional parameters.
- All components are sent and received using the bearer-independent connectionless transport mechanism as described in clause 8.3.2.2 of EN 300 196-1 [3].

5.2.1 User (S/T)

Procedures for interworking with Private ISDNs are not applicable for the Trunk Hunting supplementary service.

5.2.2 User (T)

5.2.2.1 Temporary Hunt Group withdrawal

Selection: IUT supports the request for the withdrawal of an access from a Hunt group. PICS: MC.1.

TH_U01_001 clause 9.1.1.1
Ensure that the IUT in the TH Idle state and the "Maximum hunt group number for which the access may be member" is equal to 1, to withdraw the access from its hunt group,
sends a WithdrawTHG invoke component with or without the huntGroupNr parameter included and enters the Wait THG Withdrawal state.

TH_U01_002 clause 9.1.1.1
Ensure that the IUT in the TH Idle state and the "Maximum hunt group number for which the access may be member" is more than 1 and the access has been defined as a member of only one hunt group, to withdraw the access from its hunt group,
sends a WithdrawTHG invoke component with or without the huntGroupNr parameter included and enters the Wait THG Withdrawal state.

TH_U01_003 clause 9.1.1.1
Ensure that the IUT in the TH Idle state and the "Maximum hunt group number for which the access may be member" is more than 1 and the access has been defined as a member of more than one hunt group, to withdraw the access from its hunt group,
sends a WithdrawTHG invoke component with the huntGroupNr parameter included and enters the Wait THG Withdrawal state.

TH_U01_004 clause 9.1.1.1
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return result component,
sends no message and enters the TH idle state.

TH_U01_005 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return error component indicating "notSubscribed",
sends no message and enters the TH idle state.

TH_U01_006 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return error component indicating "wrongHuntGroupNr",
sends no message and enters the TH idle state.

TH_U01_007 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return error component indicating "noHuntGroupNr",
sends no message and enters the TH idle state.

TH_U01_008 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return error component indicating "supplementaryServiceInteractionNotAllowed",
sends no message and enters the TH idle state.

TH_U01_009 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return error component indicating "withdrawalNotSubscribed",
sends no message and enters the TH idle state.

TH_U01_010 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return error component indicating "withdrawalNotSupported",
sends no message and enters the TH idle state.

TH_U01_011 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a WithdrawTHG return error component indicating "notAvailable",
sends no message and enters the TH idle state.

TH_U01_012 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, on expiry of T-WITHDRAWAL,
sends no message and enters the TH idle state.

TH_U01_013 clause 9.1.1.2
Ensure that the IUT in the Wait HG Withdrawal state, having sent a WithdrawTHG invoke component, receiving a reject component,
sends no message and enters the TH idle state.

5.2.2.2 Cancellation of temporary Hunt Group withdrawal

Selection: IUT supports the request for the cancellation of withdrawal of an access from a Hunt Group. PICS: MC.2.

TH_U02_001 clause 9.1.2.1
Ensure that the IUT in the TH Idle state and the "Maximum hunt group number for which the access may be member" is set to 1, and having withdrawn the access from the hunt group, to cancel the withdrawal of the access from its hunt group,
sends a CancelWithdrawTHG invoke component with or without the huntGroupNr parameter and enters the Wait HG Cancellation state.

TH_U02_002 clause 9.1.2.1
Ensure that the IUT in the TH Idle state and the "Maximum hunt group number for which the access may be member" is more than 1 but the access has been defined as a member of only one group, and having withdrawn the access from the hunt group, to cancel the withdrawal of the access from its hunt group,
sends a CancelWithdrawTHG invoke component with or without the huntGroupNr parameter and enters the Wait HG Cancellation state.

TH_U02_003 clause 9.1.2.1
Ensure that the IUT in the TH Idle state and the "Maximum hunt group number for which the access may be member" is more than 1 and the access has been defined as a member of more than one group, and having withdrawn the access from the hunt group, to cancel the withdrawal of the access from its hunt group,
sends a CancelWithdrawTHG invoke component with or without the huntGroupNr parameter and enters the Wait HG Cancellation state.

TH_U02_004 clause 9.1.2.1
Ensure that the IUT in the Wait HG Cancellation state, having sent a CancelWithdrawTHG invoke component, receiving a CancelWithdrawTHG return result component,
sends no message and enters the TH idle state.

TH_U02_005 clause 9.1.2.2
Ensure that the IUT in the Wait HG Cancellation state, having sent a CancelWithdrawTHG invoke component, receiving a CancelWithdrawTHG return error component indicating "wrongHuntGroupNr",
sends no message and enters the TH idle state.

TH_U02_006 clause 9.1.2.2
Ensure that the IUT in the Wait HG Cancellation state, having sent a CancelWithdrawTHG invoke component, receiving a CancelWithdrawTHG return error component indicating "noHuntGroupNr",
sends no message and enters the TH idle state.

TH_U02_007 clause 9.1.2.2
Ensure that the IUT in the Wait HG Cancellation state, having sent a CancelWithdrawTHG invoke component, receiving a CancelWithdrawTHG return error component indicating "withdrawalNotSubscribed",
sends no message and enters the TH idle state.

TH_U02_008 clause 9.1.2.2
Ensure that the IUT in the Wait HG Cancellation state, having sent a CancelWithdrawTHG invoke component, receiving a CancelWithdrawTHG return error component indicating "withdrawalNotSupported",
sends no message and enters the TH idle state.

TH_U02_009 clause 9.1.2.2
Ensure that the IUT in the Wait HG Cancellation state, having sent a CancelWithdrawTHG invoke component, on expiry of T-CANCELLATION,
sends no message and enters the TH idle state.

TH_U02_010 clause 9.1.2.2
Ensure that the IUT in the Wait HG Cancellation state, having sent a CancelWithdrawTHG invoke component, receiving a reject component,
sends no message and enters the TH idle 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 [6].

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 [6], shall be used by any organization claiming to provide a comprehensive testing service for user equipment claiming conformance to TS 101 818-1 [1].

Annex A (informative): Bibliography

- ETSI 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]".

History

Document history		
V1.1.1	July 2001	Publication