



SLOVENSKI STANDARD **SIST EN 300 141-6 V1.2.4:2005**

01-julij-2005

Digitalno omrežje z integriranimi storitvami (ISDN) - Dopolnilna storitev: zadržanje klica (HOLD) - Protokol digitalne naročniške signalizacije št. 1 (DSS1) - 6. del: Abstraktni preskušalni niz (ATS) in dodatna informacija za preskušanje delne izvedbe protokola (PIXIT) - Proforma specifikacija za omrežje

Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 6: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network

[SIST EN 300 141-6 V1.2.4:2005](https://standards.iteh.ai/catalog/standards/sist/fc9b8f20-0bff-4205-93b9-d2bbbd0e4e75/sist-en-300-141-6-v1-2-4-2005)

<https://standards.iteh.ai/catalog/standards/sist/fc9b8f20-0bff-4205-93b9-d2bbbd0e4e75/sist-en-300-141-6-v1-2-4-2005>

Ta slovenski standard je istoveten z: EN 300 141-6 Version 1.2.4

ICS:

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)
--------	---	--

SIST EN 300 141-6 V1.2.4:2005 **en**

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

SIST EN 300 141-6 V1.2.4:2005

<https://standards.iteh.ai/catalog/standards/sist/fc9b8f20-0bff-4205-93b9-d2bbbd0e4e75/sist-en-300-141-6-v1-2-4-2005>

EN 300 141-6 V1.2.4 (1998-06)

European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Call Hold (HOLD) supplementary service;
Digital Subscriber Signalling System No. one (DSS1) protocol;
Part 6: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)
proforma specification for the network**

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST EN 300 141-6 V1.2.4:2005](https://standards.iteh.ai/catalog/standards/sist/fc9b8f20-0bff-4205-93b9-d2bbbd0e4e75/sist-en-300-141-6-v1-2-4-2005)

<https://standards.iteh.ai/catalog/standards/sist/fc9b8f20-0bff-4205-93b9-d2bbbd0e4e75/sist-en-300-141-6-v1-2-4-2005>



Reference

REN/SPS-05145-S-6 (1b1i0iqo.PDF)

Keywords

ISDN, DSS1, supplementary service, HOLD, testing, ATS, PIXIT, network

ETSI

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - 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

Internet

secretariat@etsi.fr

<http://www.etsi.fr>

<http://www.etsi.org>

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1998.
All rights reserved.

Contents

Intellectual Property Rights.....	5
Foreword	5
1 Scope	6
2 References.....	Error! Bookmark not defined.
3 Definitions and abbreviations	7
3.1 Definitions	7
3.2 Abbreviations.....	7
4 Abstract Test Method (ATM).....	8
4.1 Description of ATM used	8
4.1.1 Conventions for test components and PCOs	8
4.1.2 Conventions for variables and parameters.....	9
4.2 Alternative ATM.....	10
5 Untestable test purposes.....	10
6 ATS conventions.....	11
6.1 Declarations part.....	11
6.1.1 Type definitions	11
6.1.1.1 Simple type definitions	11
6.1.1.2 Structured type definitions.....	11
6.1.1.2.1 TTCN structured type definitions	11
6.1.1.2.2 ASN.1 structured type definitions.....	11
6.1.1.3 ASP type definitions.....	12
6.1.1.3.1 TTCN ASP type definitions	12
6.1.1.3.2 ASN.1 ASP type definitions.....	13
6.1.1.4 PDU type definitions.....	13
6.1.1.4.1 TTCN PDU type definitions.....	13
6.1.1.4.2 ASN.1 PDU type definitions.....	13
6.1.2 Test suite constants.....	13
6.1.3 Test suite parameters.....	13
6.1.4 Variables	13
6.1.4.1 Test suite variables	13
6.1.4.2 Test case variables.....	13
6.1.5 Test suite operation definitions	14
6.2 Constraints part.....	14
6.2.1 Structured type constraint declaration	14
6.2.2 ASN.1 type constraint declaration.....	14
6.2.2.1 Specification of encoding rules.....	15
6.2.3 ASP type constraint declaration	16
6.2.3.1 ASN.1 ASP type constraint declaration.....	16
6.2.3.2 TTCN ASP type constraint declaration	16
6.2.4 PDU type constraint declaration.....	16
6.2.4.1 ASN.1 PDU type constraint declaration	16
6.2.4.2 TTCN PDU type constraint declaration.....	16
6.2.5 Chaining of constraints.....	16
6.2.5.1 Static chaining	16
6.2.5.2 Dynamic chaining.....	16
6.2.6 Derived constraints.....	17
6.2.7 Parameterized constraints.....	17
6.2.8 Value assignment	17
6.2.8.1 Specific values.....	17
6.2.8.2 Matching values.....	17
6.3 Dynamic part.....	17
6.3.1 Test cases	17

6.3.2	Test steps.....	17
6.3.2.1	PTC1_IN	17
6.3.2.2	PTC1_OUT	18
6.3.3	Defaults	18
7	ATS to TP map	18
8	PCTR conformance.....	18
9	PIXIT conformance.....	18
10	ATS conformance	19
Annex A (normative): Protocol Conformance Test Report (PCTR) proforma.....		20
A.1	Identification summary	20
A.1.1	Protocol conformance test report	20
A.1.2	IUT identification	20
A.1.3	Testing environment	20
A.1.4	Limits and reservations	21
A.1.5	Comments	21
A.2	IUT conformance status	21
A.3	Static conformance summary	21
A.4	Dynamic conformance summary.....	21
A.5	Static conformance review report	22
A.6	Test campaign report.....	23
A.7	Observations.....	24
Annex B (normative): Partial PIXIT proforma.....		25
B.1	Identification summary	25
B.2	Abstract test suite summary	25
B.3	Test laboratory	25
B.4	Client (of the test laboratory).....	26
B.5	System Under Test (SUT).....	26
B.6	Protocol information	27
B.6.1	Protocol identification.....	27
B.6.2	Parameter values	27
B.6.3	Sending of messages by IUT.....	27
B.6.4	Configuration of IUT	27
B.7	Basic call PIXIT items	28
B.7.1	Parameter values - information element codings	28
Annex C (normative): Abstract Test Suite (ATS).....		29
C.1	The TTCN Graphical form (TTCN.GR).....	29
C.2	The TTCN Machine Processable form (TTCN.MP)	29
Annex D (informative): General structure of ATS		30
Annex E (informative): Changes with respect to the previous ETS 300 141-6		31
History		32

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 SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available **free of charge** from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.fr/ipr> or <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 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 European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS).

The present document is part 6 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Call Hold (HOLD) 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:	19 June 1998
Date of latest announcement of this EN (doa):	30 September 1998
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 1999
Date of withdrawal of any conflicting National Standard (dow):	31 March 1999

1 Scope

This sixth part of EN 300 141 specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the Network side of the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [11]) of implementations conforming to the stage three standard for the Call Hold (HOLD) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 300 141-1 [2].

EN 300 141-5 [4] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the User side of the T reference point or coincident S and T reference point of implementations conforming to EN 300 141-1 [2].

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 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]".
- [2] EN 300 141-1 (V1.2): "Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [3] EN 300 141-2 (V1.2): "Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [4] EN 300 141-5 (V1.2): "Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 5: Test Suite Structure and Test Purposes (TSS&TP) specification for the network".
- [5] 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".
- [6] ISO/IEC 9646-1: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 1: General Concepts".
- [7] ISO/IEC 9646-2: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 2: Abstract Test Suite Specification".
- [8] ISO/IEC 9646-3: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 3: The Tree and Tabular Combined Notation".
- [9] ISO/IEC 9646-4: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 4: Test realization".

- [10] ISO/IEC 9646-5: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 5: Requirements on test laboratories and clients for the conformance assessment process".
- [11] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".
- [12] CCITT Recommendation X.209 (1988): "Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)".

3 Definitions and abbreviations

3.1 Definitions

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

Abstract Test Suite (ATS): See ISO/IEC 9646-1 [6].

Implementation Under Test (IUT): See ISO/IEC 9646-1 [6].

Lower Tester (LT): See ISO/IEC 9646-1 [6].

Point of Control and Observation (PCO): See ISO/IEC 9646-1 [6].

Protocol Implementation Conformance Statement (PICS): See ISO/IEC 9646-1 [6].

PICS proforma: See ISO/IEC 9646-1 [6].

Protocol Implementation eXtra Information for Testing (PIXIT): See ISO/IEC 9646-1 [6].

PIXIT proforma: See ISO/IEC 9646-1 [6].

System Under Test (SUT): See ISO/IEC 9646-1 [6].

Upper Tester (UT): See ISO/IEC 9646-1 [6].

3.2 Abbreviations

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

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BER	Basic Encoding Rules
CM	Co-ordination Message
CP	Co-ordination Point
ExTS	Executable Test Suite
HOLD	Call Hold
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
MTC	Main Test Component
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PTC	Parallel Test Component
SUT	System Under Test
TCP	Test Co-ordination Procedures
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation

UT

Upper Tester

4 Abstract Test Method (ATM)

4.1 Description of ATM used

The requirement for testing the network IUT is to focus on the behaviour of the network IUT at the user-network interface where a T reference point or coincident S and T reference point applies. Thus the IUT is the network DSS1 protocol entity at a particular user-network interface and is not the whole network.

It is possible to specify an ATS based on a Single party (remote) test method for such an IUT. However, it is considered that an ATS based on such an approach is of limited use as the only way to specify IUT generated PDUs is to use the "implicit send" statement. Many users of such an ATS would replace the "implicit send" statements with descriptions of the behaviour at other interfaces.

An ATS based on a multi-party test method is considered to be more useful in that it is closer to how a real test suite would be constructed. Such a test method specifies behaviour at multiple network interfaces. One very important limitation here is that tests are focused on one particular interface. Thus the test system is made up one Main Test Component (MTC) and one or more Parallel Test Components (PTC), see figure 1.

4.1.1 Conventions for test components and PCOs

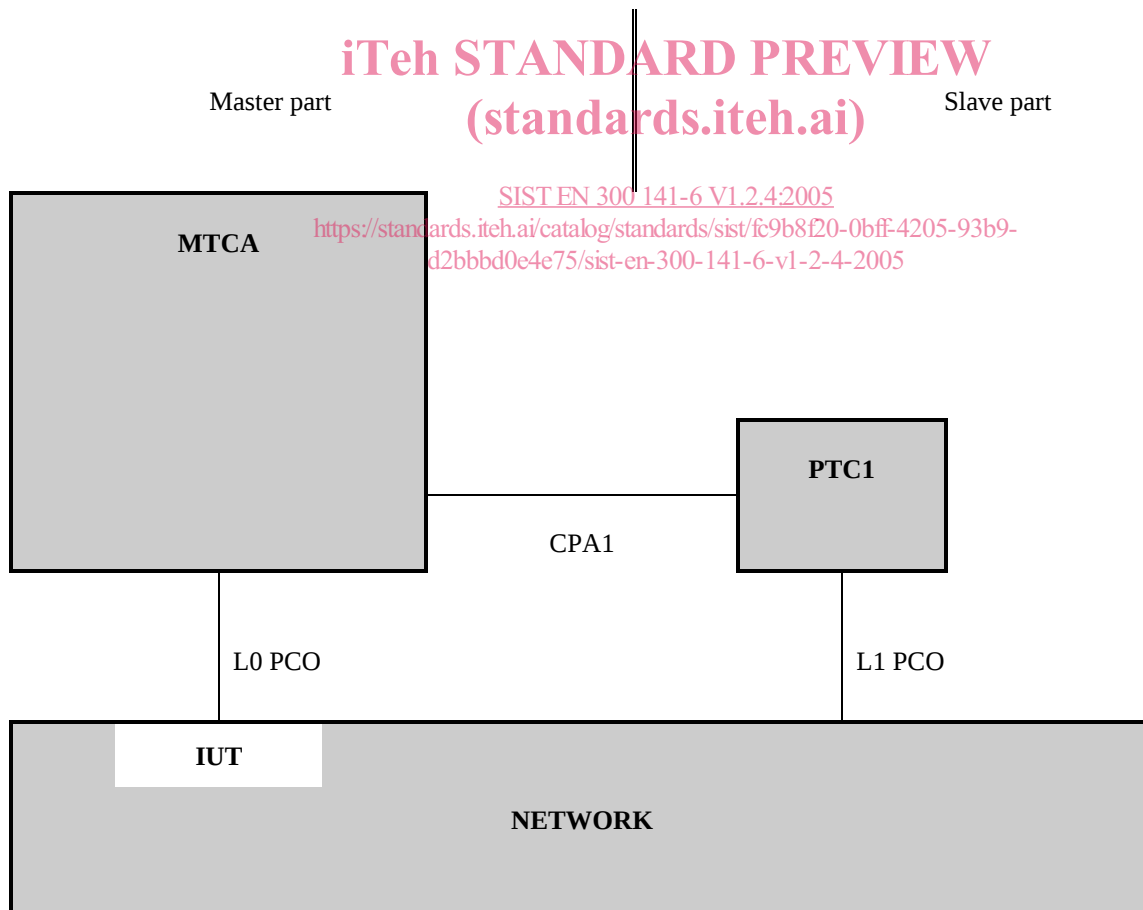


Figure 1: Multi-party test method

In a master/slave arrangement, the MTC is considered to be the master while the PTCs are the slaves. The "slave" testers are only an explicit description of how to deal with the "other" interfaces during the testing process, i.e. "how to make the IUT send the required message".

This means, in particular, that the verdict will only be assigned from the protocol aspects observed on the interface under test (i.e. by the "master" tester), as it would be observed by a terminal connected to this interface. A failure in the correlation between the protocol at the different interfaces to which the different testers are connected, i.e. in the mechanism of the functional service itself, will not cause a FAIL verdict. For instance, if the IUT fails to send a message on the tested interface after another interface has received the proper stimulus, the verdict will be INCONCLUSIVE.

The MTC MTCA has two functions in this configuration. Firstly, it has the MTC function of controlling the one or more PTCs. Thus it is responsible for starting the PTCs and afterwards co-ordinates activities by exchanging Co-ordination Messages (CM) with the PTCs. Secondly it is responsible for the behaviour of the Lower Tester (LT) at PCO L0.

A combination of the remote and multi-party test methods is applied. As can be seen from figure 1, several PCOs are used. All PCOs reside at the service access points between layers 2 and 3.

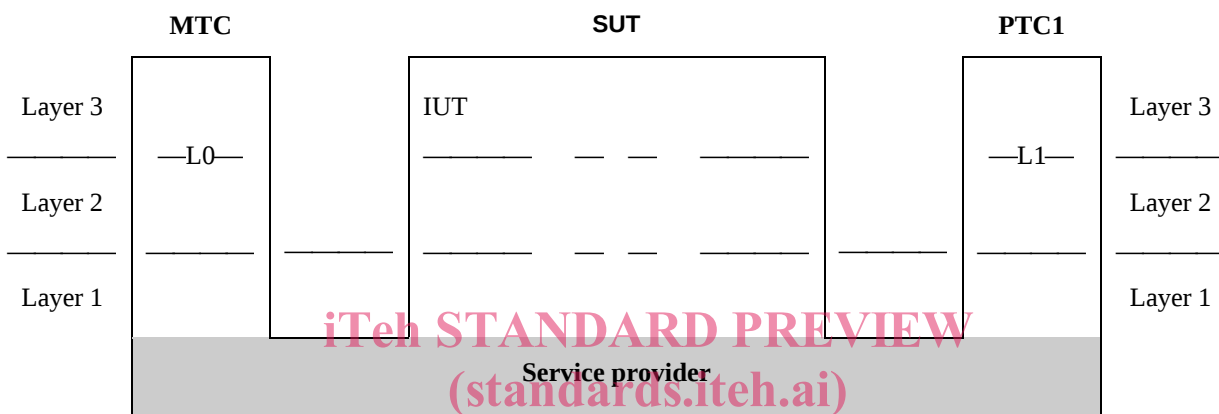


Figure 2: Combination of the remote and multi-party test methods

<https://standards.itech.ai/catalog/standards/sist/fc9b8f20-0bff-4205-93b9-12b678141678/etsi-en-300-141-v1-2-4>

The MTC PCO is named "L0" ("L" for Lower). The L0 PCO is used to control and observe the behaviour of the IUT and test case verdicts are assigned depending on the behaviour observed at this PCO. The PTC PTC1 uses PCO L1. This PCO is used to control and, in a limited way, observe the behaviour of the network equipment at interfaces other than the one under test. No verdicts are assigned at this PCO.

As stated in a previous paragraph, the non-receipt of network generated messages at L0, which are stimulated by events at the L1, will result in INCONCLUSIVE rather than FAIL verdicts being assigned.

4.1.2 Conventions for variables and parameters

MTCA

call reference	CREF1	(to PTC1)
B channel (basic)	bch_num1	
channel nr (primary)	CH_NUM1	
PCO L0	IPN0, LIPN0	

PTC1

call reference	P1CREF
B channel (basic)	P1_bch_num
channel nr (primary)	P1_CH_NUM
PCO L1	IPN1, LIPN1

4.2 Alternative ATM

As stated in subclause 4.1, an ATS based on a single-party (remote) ATM is possible. Such an ATS may be generated from the one specified in the present document. The following general steps should be taken:

- 1) remove all PTC behaviour;
- 2) remove all CREATE statements;
- 3) replace CMs which are used to provoke PDUs at the MTC, with implicit send statements.

An example, showing the difference between the multi-party ATM and single-party ATM for a single test case, is given in tables 1 and 2.

Table 1: Test case dynamic behaviour table using multi-party ATM

TEST CASE DYNAMIC BEHAVIOUR					
Test Case Name		HOLD_N04_001			
Group		RemoteUser_ST_OR_T/Holding/			
Purpose		Ensure that the IUT, while in the Active call state N10, to notify the non-served user that the call is held sends a NOTIFY message with a notification indicator coded as "remote hold" to user B and remains in the Active call state.			
Default Configuration		DF69901(1)			
Comments		CONFIG1			
		9.2.1 valid optional			
Nr	Label	BEHAVIOUR DESCRIPTION	CREF	V	COMMENTS
1		CREATE (PTC1: PTC1_IN_servedUser)			
2		+PR31002			preamble N10
3		CPA1!CP_M START TWAIT	S_HL		
4		L0?NOTIFYr	A_N020(CREF1,hold_NID)	(P)	
5		+CS59901(10,1)			check N10
6		?TIMEOUT TWAIT		(I)	
7		+P049901(1)			postamble N0
DETAILED COMMENTS:					

SIST EN 300 141-6 V1.2.4:2005

Table 2: Test case dynamic behaviour table using single-party ATM

TEST CASE DYNAMIC BEHAVIOUR					
Test Case Name		HOLD_N04_001			
Group		RemoteUser_ST_OR_T/Holding/			
Purpose		Ensure that the IUT, while in the Active call state N10, to notify the non-served user that the call is held sends a NOTIFY message with a notification indicator coded as "remote hold" to user B and remains in the Active call state.			
Default Configuration		DF69901(1)			
Comments		9.2.1 valid optional			
Nr	Label	BEHAVIOUR DESCRIPTION	CREF	V	COMMENTS
1		+PR31002			preamble N10
2		<IUT!NOTIFY>	N020(CREF1,hold_NID)		
3		L0?NOTIFYr	A_N020(CREF1,hold_NID)	(P)	
4		+CS59901(10,1)			check N10
5		?TIMEOUT TWAIT		(I)	
6		+P049901(1)			postamble N0
DETAILED COMMENTS:					

5 Untestable test purposes

There are no test cases for test purposes HOLD_N03_002 to HOLD_N03_003 inclusive. These test cases are not testable given the ATM utilised. An additional PCO at the served user side (i.e. side of the Master) would be required. This would be achievable by using two PTCs at the served user side and an MTC whose only function would be to control the various PTCs.