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*European Standard (Telecommunications series)*

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

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*European Telecommunications Standards Institute*

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Keywords

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## Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS), and is now submitted for the ETSI standards One-step Approval Procedure.

The present document is part 3 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Call Waiting (CW) 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".

The present version updates the references to the basic call specifications.

<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

This third part of EN 300 058 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 [6]) of implementations conforming to the stage three standard for the Call Waiting (CW) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 300 058-1 [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 EN 300 058-1 [1].

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# 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 300 058-1 (V1.2): "Integrated Services Digital Network (ISDN); Call Waiting (CW) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [2] EN 300 058-2 (V1.2): "Integrated Services Digital Network (ISDN); Call Waiting (CW) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [3] ISO/IEC 9646-1: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 1: General Concepts".
- [4] ISO/IEC 9646-2: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 2: Abstract Test Suite specification".
- [5] ISO/IEC 9646-3: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 3: The Tree and Tabular Combined Notation".
- [6] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".
- [7] 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]".
- [8] ITU-T Recommendation I.112: "Vocabulary and terms for ISDNs".
- [9] CCITT Recommendation E.164: "Numbering plan for the ISDN era".
- [10] ITU-T Recommendation I.210: "Principles of the telecommunication services supported by an ISDN and the means to describe them".

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## 3 Definitions

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

### 3.1 Definitions related to conformance testing

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

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

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

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

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

**lower tester:** Refer to ISO/IEC 9646-1 [3].

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

**point of control and observation:** Refer to ISO/IEC 9646-1 [3].

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

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

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

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

**system under test:** Refer to ISO/IEC 9646-1 [3].

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

### 3.2 Definitions related to EN 300 058-1

**Integrated Services Digital Network (ISDN):** See ITU-T Recommendation I.112 [8], definition 308.

**ISDN number:** A number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [9].

**service; telecommunication service:** See ITU-T Recommendation I.112 [8], definition 201.

**subscriber B:** Subscriber B is the subscriber who is provided by the network with the CW supplementary service on a particular interface.

**supplementary service:** See ITU-T Recommendation I.210 [10], subclause 2.4.

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

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

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

**user B:** User B is the one user who reacts to the call waiting at subscriber B.

**user C:** User C is the user who has originated a call to subscriber B which causes the CW supplementary service to be invoked.

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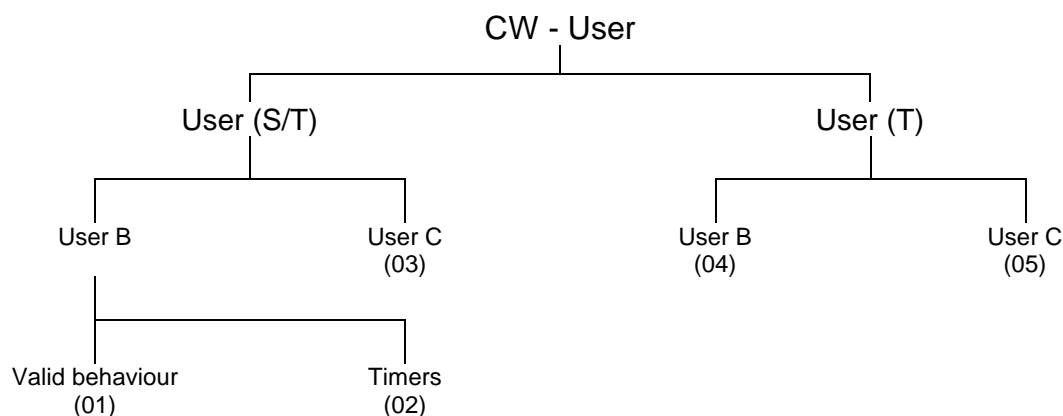
## 4 Abbreviations

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

ATM	Abstract Test Method
ATS	Abstract Test Suite
CW	Call Waiting
DSS1	Digital Subscriber Signalling System No. one
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TP	Test Purpose
TSS	Test Suite Structure
U00	Null call state
U08	Connect Request call state
U11	Disconnect Request call state

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## 5 Test Suite Structure (TSS)



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

**Figure 1: Test suite structure**

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## 6 Test Purposes (TP)

### 6.1 Introduction

For each test requirement a TP is defined.

#### 6.1.1 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. "CW"	
<iut>	=	type of IUT:	U          User N          Network
<group>	=	group	2 digit field representing group reference according to TSS
<nnn>	=	sequential number	(001-999)

### 6.1.2 Source of TP definition

The TPs are based on EN 300 058-1 [1].

### 6.1.3 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> <i>tab</i> <paragraph number in base ETS> <i>tab</i> <PICS reference> <i>tab</i> <condition> <i>CR</i>	see table 1 subclause 0.0.0 XY 0.0 mandatory, optional, conditional
Stimulus	Ensure that the IUT in the <basic call state> <trigger> <i>see below for message structure</i> <i>or</i> <goal>	U00, U10, etc. receiving a XXXX message to request a ....
Reaction	<action> <conditions> <i>if the action is sending</i> <i>see below for message structure</i> <next action>, <i>etc.</i> and enters <supplementary service state> <i>and/or</i> and remains in the same state(s)	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 <i>or</i> including <coding of the field> and <i>back to a or b,</i>	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.	

### 6.1.4 Test strategy

As the base standard EN 300 058-1 [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 300 058-2 [2]. The criteria applied include the following:

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



## 6.2 User TPs for CW

All PICS items referred to in this subclause are as specified in EN 300 058-2 [2] unless indicated otherwise by another numbered reference.

### 6.2.1 User (S/T)

**Selection:** IUT supports coincident S and T reference point procedures

#### 6.2.1.1 Valid behaviour

##### **CW\_U01\_001** subclause 9.5.1

Ensure that the busy IUT, if a B-channel is available, receiving a valid and compatible SETUP message, responds with an ALERTING message.

##### **CW\_U01\_002** subclause 9.5.1

Ensure that the busy IUT that have information channel control, receiving a valid and compatible SETUP message containing a Channel identification information element with an information channel selection indicating "no B-channel available", responds with an ALERTING message.

##### **CW\_U01\_003** subclause 9.5.2

Ensure that the free IUT in Null call state U00 but whose resources are in use, receiving a valid and compatible SETUP message containing a Channel identification information element with an information channel selection indicating "no B-channel available", if it can not proceed with the offered call, responds with a RELEASE COMPLETE message containing a Cause information element with cause value #34 "no circuit/channel available".

##### **CW\_U01\_004** subclause 9.5.2

Ensure that the busy IUT receiving a valid and compatible SETUP message, but that is unable to proceed with the call, responds with a RELEASE COMPLETE message containing a Cause information element with cause value #17 "user busy".

##### **CW\_U01\_005** subclause 9.6.1 **MC 2** **optional**

Ensure that the IUT after setting free resources to accept a waiting call by releasing an existing call, sends a CONNECT message to the waiting call and enters the Connect Request call state U08.

##### **CW\_U01\_006** subclause 9.6.1 **MC 3** **optional**

Ensure that the IUT after setting free resources to accept a waiting call by using the call hold supplementary service to hold an existing call in the active state, sends a CONNECT message to the waiting call and enters the Connect Request call state U08.

##### **CW\_U01\_007** subclause 9.6.1 **MC 2 or MC 3** **optional**

Ensure that the IUT after setting free resources, to accept the waiting call, sends a CONNECT message containing a Channel identification information element encoded as "channel is indicated, no alternative acceptable" to the waiting call and enter the Connect Request call state U08.

##### **CW\_U01\_008** subclause 9.6.2 **MC 4** **optional**

Ensure that the IUT after sending the ALERTING message, to reject the incoming waiting call, sends a DISCONNECT message to the waiting call and enters the Disconnect Request call state U11.

##### **CW\_U01\_009** subclause 9.6.1

Ensure that the IUT in Connect Request call state U08, receiving a CONNECT ACKNOWLEDGE message containing a Channel identification information element indicating the B-channel to be used, sends no messages and enters the Active call state U10.

### 6.2.1.2 Timers

**CW\_U02\_001**      **subclause 9.5.1.2**      **TM 1**      **optional**  
 Ensure the correct implementation of the timer T-CW.

**CW\_U02\_002**      **subclause 9.5.2**      **TM 1**      **optional**  
 Ensure that the IUT, on the expiry of timer T-CW,  
 sends a DISCONNECT message with cause value #19.

### 6.2.1.3 User C

**CW\_U03\_001**      **subclauses 9.5.1.1**  
 Ensure that the IUT in Call Initiated call state U01 or Outgoing Call Proceeding call state U03, receiving an ALERTING message containing a Notification indicator information element with notification description #96 "call is a waiting call",  
 continues normal call handling.

## 6.2.2 User (T)

**Selection:** IUT supports T reference point procedures

### 6.2.2.1 User B

**CW\_U04\_001**      **subclause 10.1**      **MC 5**      **mandatory**  
 Ensure that the IUT during incoming call establishment, when a waiting call is present at its S interface,  
 sends an ALERTING message containing a Notification indicator information element with notification  
 description #96 "call is a waiting call".

### 6.2.2.2 User C

**CW\_U05\_002**      **subclauses 10.2**  
 Ensure that the IUT in Call Initiated call state U01 or Outgoing Call Proceeding call state U03, receiving an ALERTING message containing a Notification indicator information element with notification description #96 "call is a waiting call",  
 continues normal call handling.

## 7 Compliance

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

- a) consist of a set of test cases corresponding to the set or to a subset of the TPs specified in clause 6;
- b) use a TSS which is an appropriate subset of the whole of the TSS specified in clause 5;
- c) use the same naming conventions for the test groups and test cases;
- d) maintain the relationship specified in clause 6 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 6 shall be included in a compliant ATS.

## 8 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 user equipment claiming conformance to EN 300 058-1 [1].

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## Annex A (informative): Changes with respect to the previous ETS 300 058-3

The following changes have been done:

- conversion to EN layout;
- substitution of non-specific references to basic standards where the intention is to refer to the latest version.

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## History

<b>Document history</b>		
Edition 1	September 1996	Publication as ETS 300 058-3
V1.2.3	February 1998	One-step Approval Procedure      OAP 9824: 1998-02-13 to 1998-06-12