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



Reference

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Contents

Intellectual Property Rights	4
Foreword	4
1 Scope	5
2 References	5
3 Definitions and abbreviations	6
3.1 Definitions	6
3.1.1 Definitions related to conformance testing	6
3.1.2 Definitions related to EN 300 182-1	6
3.2 Abbreviations	7
4 Test Suite Structure (TSS)	8
5 Test Purposes (TP)	8
5.1 Introduction	8
5.1.1 TP naming convention	8
5.1.2 Source of TP definition	9
5.1.3 TP structure	9
5.1.4 Test strategy	9
5.2 User TPs for AOC	10
5.2.1 Subscription option dependent	10
5.2.1.1 Per-call basis	10
5.2.1.1.1 Activation	10
5.2.1.1.1.1 Normal	10
5.2.1.1.1.2 Exceptions	12
5.2.1.1.2 GFP	17
5.2.1.2 All calls	17
5.2.1.2.1 Activation	17
5.2.1.2.1.1 Transfer - call establishment phase	17
5.2.1.2.1.2 Exceptions	19
5.2.1.2.1.3 GFP	21
5.2.2 Subscription option independent	21
5.2.2.1 Independent of bearer	21
5.2.2.1.1 Normal	22
5.2.2.1.2 GFP	23
5.2.2.2 Transfer - active phase	24
5.2.2.3 Transfer - clearing phase	24
6 Compliance	30
7 Requirements for a comprehensive testing service	30
Annex A (informative): Changes with respect to the previous ETS 300 182-3	31
History	32

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Foreword

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

The present document is part 3 of a multi-part EN covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Advice of Charge (AOC) supplementary service, as identified below:

- Part 1: "Protocol specification";
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";**
- Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";
- Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";
- Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

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

National transposition dates	
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Date of withdrawal of any conflicting National Standard (dow):	31 January 2001

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 Advice of Charge (AOC) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 300 182-1 [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 300 182-1 [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, 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 EN 300 182-1 (V1.2): "Integrated Services Digital Network (ISDN); Advice of Charge (AOC) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [2] ETSI EN 300 182-2 (V1.2): "Integrated Services Digital Network (ISDN); Advice of Charge (AOC) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [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] ISO/IEC 9646-3 (1998): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [6] ETSI 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".
- [7] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".
- [8] 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]".
- [9] ITU-T Recommendation I.112 (1993): "Vocabulary and terms for ISDNs".
- [10] ITU-T Recommendation E.164 (1997): "The international public telecommunication numbering plan".

- [11] ITU-T Recommendation I.210 (1993): "Principles of the telecommunication services supported by an ISDN and the means to describe them".
- [12] ETSI ETS 300 196-2: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

3 Definitions and abbreviations

3.1 Definitions

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

3.1.1 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]

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]

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]

3.1.2 Definitions related to EN 300 182-1

call reference: see EN 300 403-1 [8], subclause 4.3

component: see EN 300 196-1 [6], subclause 11.2.2.1

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [9], definition 308

invoke component: see EN 300 196-1 [6], subclause 11.2.2.1

ISDN number: a number conforming to the numbering and structure specified in ITU-T Recommendation E.164 [10]

return error component: see EN 300 196-1 [6], subclause 11.2.2.1

return result component: see EN 300 196-1 [6], subclause 11.2.2.1

served user: served user is the user who invokes the AOC supplementary service

service; telecommunication service: see ITU-T Recommendation I.112 [9], definition 201

supplementary service: see ITU-T Recommendation I.210 [11], subclause 2.4

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

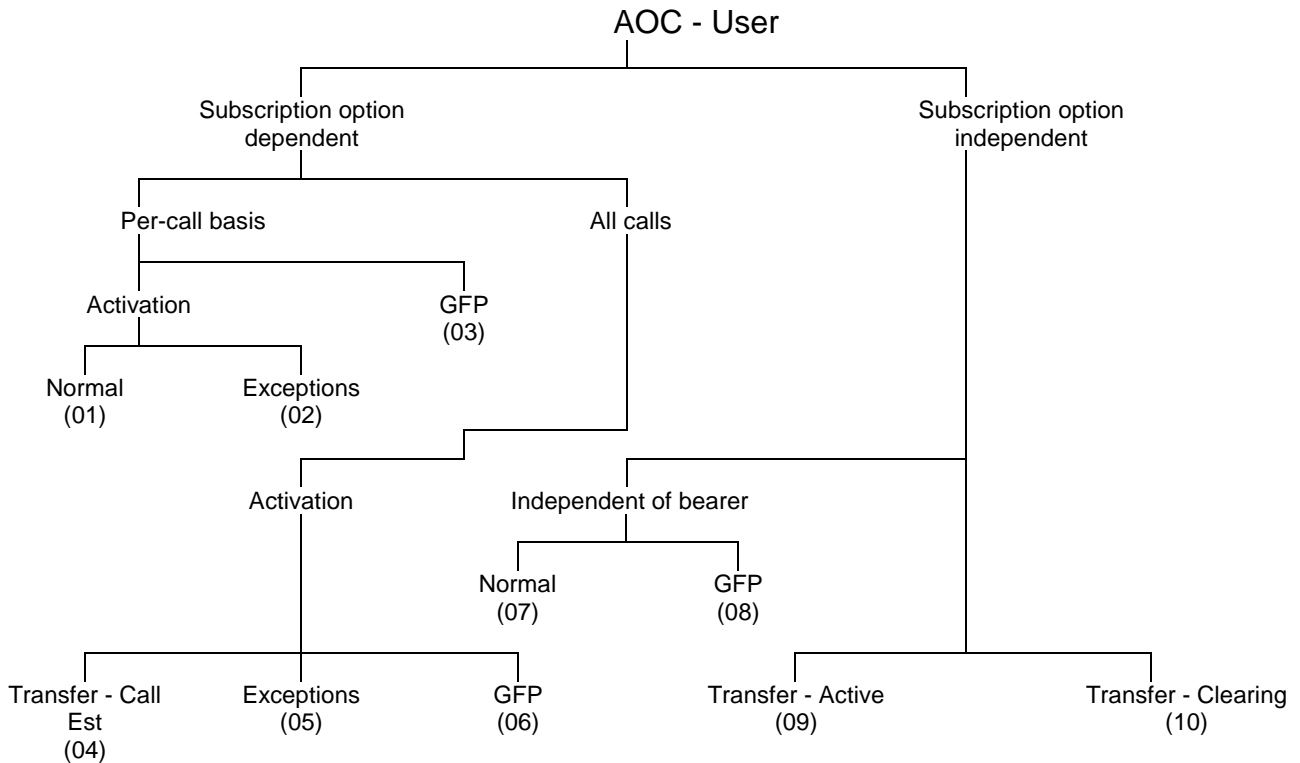
user (T): DSS1 protocol entity at the User side of the user-network interface where a T reference point applies (User is a Private ISDN)

3.2 Abbreviations

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

AOC	Advice of Charge
ATM	Abstract Test Method
ATS	Abstract Test Suite
DSS1	Digital Subscriber Signalling System No. one
GFP	Generic Functional Protocol
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
U02	Overlap Sending call state
U03	Outgoing Call Proceeding call state
U04	Call Delivered call state
U06	Call Present call state
U07	Call Received call state
U08	Connect Request call state
U09	Incoming Call Proceeding call state
U10	Active call state
U19	Release Request call state

4 Test Suite Structure (TSS)



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. "AOC"	
<iut>	=	type of IUT:	U User N 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 EN 300 182-1 [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> <i>tab</i> <paragraph number in base ETS> <i>tab</i> <type of test> <i>tab</i> <condition> <i>CR</i>	see table 1 subclause 0.0.0 valid, invalid, inopportune mandatory, optional, conditional
Stimulus	Ensure that the IUT in the <basic call state> / <supplementary service state> <trigger> <i>see below for message structure</i> <i>or</i> <goal>	U10 etc. /AOC-S Idle,... 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>, etc. and remains in the same state <i>or</i> and enters state <state>	sends, saves, does, etc. using en bloc sending, ...
Message structure	<message type> message containing a a) <info element> information element with b) a <field name> encoded as <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.	

5.1.4 Test strategy

As the base standard EN 300 182-1 [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 300 182-2 [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.

5.2.2.1.1 Normal

AOC_U07_001 **subclause 9.2.4.1** **valid** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via broadcast datalink and including a Facility information element with a correctly coded AOCECurrency invoke component indicating "AOCECurrencyInfo", accepts the provided information and sends no message.

Selection: Bearer independent broadcast connectionless transport mechanism supported. PICS: ETS 300 196-2 [12] MCu 2.7.

AOC_U07_002 **subclause 9.2.4.1** **valid** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via broadcast datalink and including a Facility information element with a correctly coded AOCEChargingUnit invoke component indicating "AOCEChargingUnitInfo", accepts the provided information and sends no message.

Selection: Bearer independent broadcast connectionless transport mechanism supported. PICS: ETS 300 196-2 [12] MCu 2.7.

AOC_U07_003 **subclause 9.2.4.1** **valid** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via point-to-point datalink and including a Facility information element with a correctly coded AOCECurrency invoke component indicating "AOCECurrencyInfo", accepts the provided information and sends no message.

Selection: Bearer independent point to point connectionless transport mechanism supported. PICS: ETS 300 196-2 [12] MCu 2.6.

AOC_U07_004 **subclause 9.2.4.1** **valid** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via point-to-point datalink and including a Facility information element with a correctly coded AOCEChargingUnit invoke component indicating "AOCEChargingUnitInfo", accepts the provided information and sends no message.

Selection: Bearer independent point to point connectionless transport mechanism supported. PICS: ETS 300 196-2 [12] MCu 2.6.

AOC_U07_005 **subclause 9.2.4.2** **inopportune** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via broadcast data link and including a Facility information element with a correctly encoded AOCECurrency invoke component indicating "chargeNotAvailable", accepts the provided information and sends no message.

Selection: Bearer independent broadcast connectionless transport mechanism. PICS: ETS 300 196-2 [12] MCu 2.7.

AOC_U07_006 **subclause 9.2.4.2** **inopportune** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via broadcast data link and including a Facility information element with a correctly encoded AOCEChargingUnit invoke component indicating "chargeNotAvailable", accepts the provided information and sends no message.

Selection: Bearer independent broadcast connectionless transport mechanism. PICS: ETS 300 196-2 [12] MCu 2.7.

AOC_U07_007 **subclause 9.2.4.2** **inopportune** **optional**

Ensure that the IUT, if more than one charging unit is used and not all types are available, on receipt of a FACILITY message using the dummy call reference via broadcast data link and including a Facility information element with a correctly encoded AOCEChargingUnit invoke component indicating the available charging information and "notAvailable" for the remaining charging unit types, accepts the provided information and sends no message.

Selection: Bearer independent broadcast connectionless transport mechanism. PICS: ETS 300 196-2 [12] MCu 2.7.

AOC_U07_008 **subclause 9.2.4.2** **inopportune** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via point-to-point data link and including a Facility information element with a correctly encoded AOCECurrency invoke component indicating "chargeNotAvailable", accepts the provided information and sends no message.

Selection: Bearer independent point to point connectionless transport mechanism supported. PICS:
ETS 300 196-2 [12] MCu 2.6.

AOC_U07_009 **subclause 9.2.4.2** **inopportune** **optional**

Ensure that the IUT on receipt of a FACILITY message using the dummy call reference via point-to-point data link and including a Facility information element with a correctly encoded AOCEChargingUnit invoke component indicating "chargeNotAvailable", accepts the provided information and sends no message.

Selection: Bearer independent point to point connectionless transport mechanism supported. PICS:
ETS 300 196-2 [12] MCu 2.6.

AOC_U07_010 **subclause 9.2.4.2** **inopportune** **optional**

Ensure that the IUT, if more than one charging unit is used and not all types are available, on receipt of a FACILITY message using the dummy call reference via point-to-point data link and including a Facility information element with a correctly encoded AOCEChargingUnit invoke component indicating the available charging information and "notAvailable" for the remaining charging unit types, accepts the provided information and sends no message.

Selection: Bearer independent point to point connectionless transport mechanism supported. PICS:
ETS 300 196-2 [12] MCu 2.6.

5.2.2.1.2 **GFP**

AOC_U08_001 **[6] subclauses 8.3.2.2.2 and 8.3.2.4.2** **invalid** **optional**

Ensure that the IUT in AOC Idle state receiving a FACILITY message, using the dummy call reference via broadcast datalink, containing a Facility information element with an invalid protocol profile, ignores the message.

Selection: Bearer independent broadcast connectionless transport mechanism. PICS: ETS 300 196-2 [12] MCu 2.7.

AOC_U08_002 **[6] subclauses 8.3.2.2.2 and 8.3.2.4.2** **invalid** **optional**

Ensure that the IUT in AOC Idle state receiving FACILITY message, using the dummy call reference via broadcast datalink, without a Facility information element, ignores the message.

Selection: Bearer independent broadcast connectionless transport mechanism. PICS: ETS 300 196-2 [12] MCu 2.7.

AOC_U08_003 **[6] subclauses 8.3.2.2.2 and 8.3.2.4.2** **invalid** **optional**

Ensure that the IUT in AOC Idle state receiving a FACILITY message, using the dummy call reference via point-to-point datalink, containing a Facility information element with an invalid protocol profile, ignores the message.

Selection: Bearer independent point to point connectionless transport mechanism supported. PICS:
ETS 300 196-2 [12] MCu 2.6.

AOC_U08_004 **[6] subclauses 8.3.2.2.2 and 8.3.2.4.2** **invalid** **optional**

Ensure that the IUT in AOC Idle state receiving FACILITY message, using the dummy call reference via point-to-point datalink, without a Facility information element, ignores the message.

Selection: Bearer independent point to point connectionless transport mechanism supported. PICS:
ETS 300 196-2 [12] MCu 2.6.

AOC_U08_005 **[6] subclauses 8.3.2.2.2 and 8.3.2.4.2** **inopportune** **mandatory**

Ensure that the IUT in AOC Idle state receiving a message other than FACILITY with a dummy call reference and this message does not apply to some other application of the dummy call reference, ignores the message.

AOC_U10_028 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) state, on receipt of a RELEASE message including a Facility information element with a correctly coded AOCDCurrency invoke component indicating "chargeNotAvailable", accepts the provided information and continues normal call handling.

Selection: AOC-D supported. PICS: MC 2.

AOC_U10_029 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) state, on receipt of a RELEASE message including a Facility information element with a correctly coded AOCDChargingUnit invoke component indicating "chargeNotAvailable", accepts the provided information and continues normal call handling.

Selection: AOC-D supported. PICS: MC 2.

AOC_U10_030 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) State, if more than one charging unit is available, on receipt of a RELEASE message including a Facility information element with a correctly coded AOCDChargingUnit invoke component indicating the available charging information and "notAvailable" for the remaining charging unit types, accepts the provided information and continues normal call handling.

Selection: AOC-D supported. PICS: MC 2.

AOC_U10_031 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) state, on receipt of a RELEASE COMPLETE message including a Facility information element with a correctly coded AOCDCurrency invoke component indicating "chargeNotAvailable", accepts the provided information and enters state U00.

Selection: AOC-D supported. PICS: MC 2.

AOC_U10_032 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) state, on receipt of a RELEASE COMPLETE message including a Facility information element with a correctly coded AOCDChargingUnit invoke component indicating "chargeNotAvailable", accepts the provided information and enters state U00.

Selection: AOC-D supported. PICS: MC 2.

AOC_U10_033 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) state, if more than one charging unit is used and not all are available, on receipt of a RELEASE COMPLETE message including a Facility information element with a correctly coded AOCDChargingUnit invoke component indicating the available charging information and "notAvailable" for the remaining charging unit types, accepts the provided information and enters state U00.

Selection: AOC-D supported. PICS: MC 2.

AOC_U10_034 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) state, on receipt of a DISCONNECT message including a Facility information element with a correctly coded AOCECurrency invoke component indicating "chargeNotAvailable", accepts the provided information and continues normal call handling.

Selection: AOC-E supported. PICS: MC 3.

AOC_U10_035 **subclause 9.2.3.2** **inopportune** **optional**

Ensure that the IUT in Active Call (U10) state, on receipt of a DISCONNECT message including a Facility information element with a correctly coded AOCEChargingUnit invoke component indicating "chargeNotAvailable", accepts the provided information and continues normal call handling.

Selection: AOC-E supported. PICS: MC 3.

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 user equipment claiming conformance to EN 300 182-1 [1].

Annex A (informative): Changes with respect to the previous ETS 300 182-3

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.

History

Document history		
Edition 1	September 1996	Publication as ETS 300 182-3
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V1.3.2	May 2000	Publication