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*European Standard (Telecommunications series)*

**Broadband Integrated Services Digital Network (B-ISDN);  
Digital Subscriber Signalling System No. two (DSS2) protocol;  
Connection characteristics;  
Modification procedures for sustainable cell rate parameters;  
Part 3: Test Suite Structure and Test Purposes (TSS&TP)  
specification for the user**

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Reference

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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 deliverable covering the Digital Subscriber Signalling System No. two (DSS2) protocol specification for the B-ISDN modification procedures for sustainable cell rate parameters, as identified below:

- Part 1: "Protocol specification [ITU-T Recommendation Q.2963.2 (1997), modified]";
- 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".

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# 1 Scope

The present document specifies the user Test Suite Structure and Test Purposes (TSS&TP) for the  $T_B$  reference point or coincident  $S_B$  and  $T_B$  reference point (as defined in ITU-T Recommendation I.413 [5]) of implementations conforming to the standards for the signalling user-network layer 3 specification for modification procedures for sustainable cell rate parameters of the Digital Subscriber Signalling System No. 2 (DSS2) protocol for the pan-European Broadband Integrated Services Digital Network (B-ISDN), EN 301 276-1 [3].

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.

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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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [2] ETSI EN 300 443-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for basic call/bearer control; Part 1: Protocol specification [ITU-T Recommendation Q.2931 (1995), modified]".
- [3] ETSI EN 301 276-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Connection characteristics; Modification procedures for sustainable cell rate parameters; Part 1: Protocol specification [ITU-T Recommendation Q.2963.2 (1997), modified]".
- [4] ETSI EN 301 003-2: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Connection characteristics; Peak cell rate modification by the connection owner; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [5] ITU-T Recommendation I.413 (1993): "B-ISDN user-network interface".
- [6] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [7] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification".
- [8] ETSI EN 301 003-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Connection characteristics; Peak cell rate modification by the connection owner; Part 1: Protocol specification [ITU-T Recommendation Q.2963.1 (1996), modified]".
- [9] ETSI EN 301 003-3: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Connection characteristics; Peak cell rate modification by the connection owner; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user".

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 276-1 [3], EN 301 003-1 [8], EN 300 443-1 [2] and the following apply.

#### 3.1.1 Definitions related to conformance testing

**Abstract test case:** Refer to ISO/IEC 9646-1 [6].

**Abstract Test Method (ATM):** Refer to ISO/IEC 9646-1 [6].

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

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

**Lower tester:** Refer to ISO/IEC 9646-1 [6].

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

**PICS proforma:** Refer to ISO/IEC 9646-1 [6].

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

**PIXIT proforma:** Refer to ISO/IEC 9646-1 [6].

**Test Purpose (TP):** Refer to ISO/IEC 9646-1 [6].

#### 3.1.2 Definitions related to the IUT

**User:** DSS2 protocol entity at the User side of the user-network interface where a  $T_B$  reference point or coincident  $S_B$  and  $T_B$  reference point applies

**User ( $S_B/T_B$ ):** DSS2 protocol entity at the User side of the user-network interface where a coincident  $S_B$  and  $T_B$  reference point applies

**User ( $T_B$ ):** DSS2 protocol entity at the User side of the user-network interface where a  $T_B$  reference point applies (user is a private ISDN)

### 3.2 Abbreviations

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

|       |   |
|-------|---|
| ATM   | Abstract Test Method                                  |
| ATS   | Abstract Test Suite                                   |
| IUT   | Implementation Under Test                             |
| MBS   | Maximum Burst Size                                    |
| PICS  | Protocol Implementation Conformance Statement         |
| PIXIT | Protocol Implementation eXtra Information for Testing |
| SCR   | Sustainable Cell Rate                                 |
| TP    | Test Purpose  |
| TSS   | Test Suite Structure                                  |
| U10   | Active call state                                     |
| U13   | Modify Requested call state                           |

## 4 Test Suite Structure (TSS)

Signalling procedures at the coincident  $S_B/T_B$  and at the  $T_B$  reference points

Modification procedures at the requesting entity. .... (01)

Modification procedures at the responding entity. .... (02)

**Figure 1: Test suite structure**

## 5 Test Purposes (TP)

### 5.1 Introduction

The modification procedures for sustainable cell rate parameters are based on the modification procedures of EN 301 003-1 [8]. Therefore the test purposes defined in EN 301 003-3 [9] apply. Consequently, only for test requirements in addition to the requirements of EN 301 003-1 [8] TPs are defined.

#### 5.1.1 TP naming convention

TPs are numbered, starting at 01, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite (see table 1).

**Table 1: TP identifier naming convention scheme**

|             |                          |                    |  |
|-------------|--------------------------|--------------------|--|
| Identifier: | <suite_id>_<group>_<nnn> |                    |  |
| <suite_id>  | =                        | type of IUT:       | "SCMU" for Sustainable Cell rate Modification,<br>IUT = User             |
| <group>     | =                        | group number:      | two character field representing the group reference<br>according to TSS |
| <nn>        | =                        | sequential number: | (01-99)  |

#### 5.1.2 Source of TP definition

The TPs are based on EN 301 276-1 [3].

#### 5.1.3 Test strategy

As the base standard EN 301 276-1 [3] 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 301 003-2 [4].

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 [1]).

### 5.1.4 Test of call states

Many TPs include a reference to the IUT's final call state after the realization of the TP. In these cases the TP includes the requirement to ensure that the IUT has entered this particular final call state. Ensuring that the IUT is in a particular call state shall be realized by following the procedures described in clause 5.6.11 of EN 300 443-1 [2]. According to these procedures, the IUT on receipt of a STATUS ENQUIRY message, shall respond with a STATUS message indicating, in the fifth octet of the Call state information element, the current call state of the IUT. This exchange of messages is not mentioned explicitly in each TP but is considered to be implicit in the reference to the final call state. This way of phrasing the TPs has been used to avoid over-complicating the text and structure of the TPs and to improve the readability.

## 5.2 TPs for the sustainable cell rate modification, user

All PICS items referred to in this clause are as specified in EN 301 003-2 [4] 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.

### 5.2.1 Signalling procedures at the coincident $S_B/T_B$ and at the $T_B$ reference points

NOTE: Unless otherwise specified, the connection defined by the requested ATM traffic descriptor is available for use.

#### 5.2.1.1 Modification procedures at the requesting entity (01)

Test purposes for EN 301 276-1 [3], clause 9.

**Selection:** The IUT support the requirements for the modification requesting entity. PICS: R 2.1.

##### SCMU\_01\_01

Ensure that the IUT in U10, in order to initiate a forward SCR (for  $CLP = 0$ ) modification request, sends a MODIFY REQUEST message indicating the requested forward SCR (for  $CLP = 0$ ) in the ATM traffic descriptor information element and enters U13.

##### SCMU\_01\_02

Ensure that the IUT in U10, in order to initiate a forward SCR (for  $CLP = 0 + 1$ ) modification request, sends a MODIFY REQUEST message indicating the requested forward SCR (for  $CLP = 0 + 1$ ) in the ATM traffic descriptor information element and enters U13.

##### SCMU\_01\_03

Ensure that the IUT in U10, in order to initiate a backward SCR (for  $CLP = 0$ ) modification request, sends a MODIFY REQUEST message indicating the requested backward SCR (for  $CLP = 0$ ) in the ATM traffic descriptor information element and enters U13.

##### SCMU\_01\_04

Ensure that the IUT in U10, in order to initiate a backward SCR (for  $CLP = 0 + 1$ ) modification request, sends a MODIFY REQUEST message indicating the requested backward SCR (for  $CLP = 0 + 1$ ) in the ATM traffic descriptor information element and enters U13.

##### SCMU\_01\_05

Ensure that the IUT in U10, in order to initiate a forward MBS (for  $CLP = 0$ ) modification request, sends a MODIFY REQUEST message indicating the requested forward MBS (for  $CLP = 0$ ) in the ATM traffic descriptor information element and enters U13.

**SCMU\_01\_06**

Ensure that the IUT in U10, in order to initiate a forward MBS (for CLP = 0 + 1) modification request, sends a MODIFY REQUEST message indicating the requested forward MBS (for CLP = 0 + 1) in the ATM traffic descriptor information element and enters U13.

**SCMU\_01\_07**

Ensure that the IUT in U10, in order to initiate a backward MBS (for CLP = 0) modification request, sends a MODIFY REQUEST message indicating the requested backward MBS (for CLP = 0) in the ATM traffic descriptor information element and enters U13.

**SCMU\_01\_08**

Ensure that the IUT in U10, in order to initiate a backward MBS (for CLP = 0 + 1) modification request, sends a MODIFY REQUEST message indicating the requested backward MBS (for CLP = 0 + 1) in the ATM traffic descriptor information element and enters U13.

### 5.2.1.2 Modification procedures at the responding entity (02)

Test purposes for EN 301 276-1 [3], clause 9.

**Selection:** The IUT supports the requirements for the responding entity. PICS: R 2.2.

**SCMU\_02\_01**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward SCR (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_02**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward SCR (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_03**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward SCR (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_04**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward SCR (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_05**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward MBS (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_06**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward MBS (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_07**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward MBS (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_08**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward MBS (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be rejected, sends a MODIFY REJECT message and re-enters U10.

**SCMU\_02\_09**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward SCR (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

**SCMU\_02\_10**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward SCR (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

**SCMU\_02\_11**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward SCR (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

**SCMU\_02\_12**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward SCR (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

**SCMU\_02\_13**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward MBS (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

**SCMU\_02\_14**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a forward MBS (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

**SCMU\_02\_15**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward MBS (for CLP = 0) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

**SCMU\_02\_16**

Ensure that the IUT in U10, on receipt of a MODIFY REQUEST message indicating a backward MBS (for CLP = 0 + 1) to be modified in the ATM traffic descriptor information element, when the request for modification is to be accepted, sends a MODIFY ACKNOWLEDGE message and re-enters U10.

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## 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 [7].

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.

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## 7 Requirements for a comprehensive testing service

As a minimum the Remote test method, as specified in ISO/IEC 9646-2 [7], shall be used by any organization claiming to provide a comprehensive testing service for network equipment claiming conformance to EN 301 276-1 [3].

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## Annex A (informative): Bibliography

ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".

ITU-T Recommendation Q.2963.2: "Digital Subscriber Signalling System No. 2 - Connection modification: Modification procedures for sustainable cell rate parameters".

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## History

| <b>Document history</b> |                |  |
|-------------------------|----------------|--|
| V1.1.1                  | February 2001  | Public Enquiry PE 20010608: 2001-02-07 to 2001-06-08 |
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