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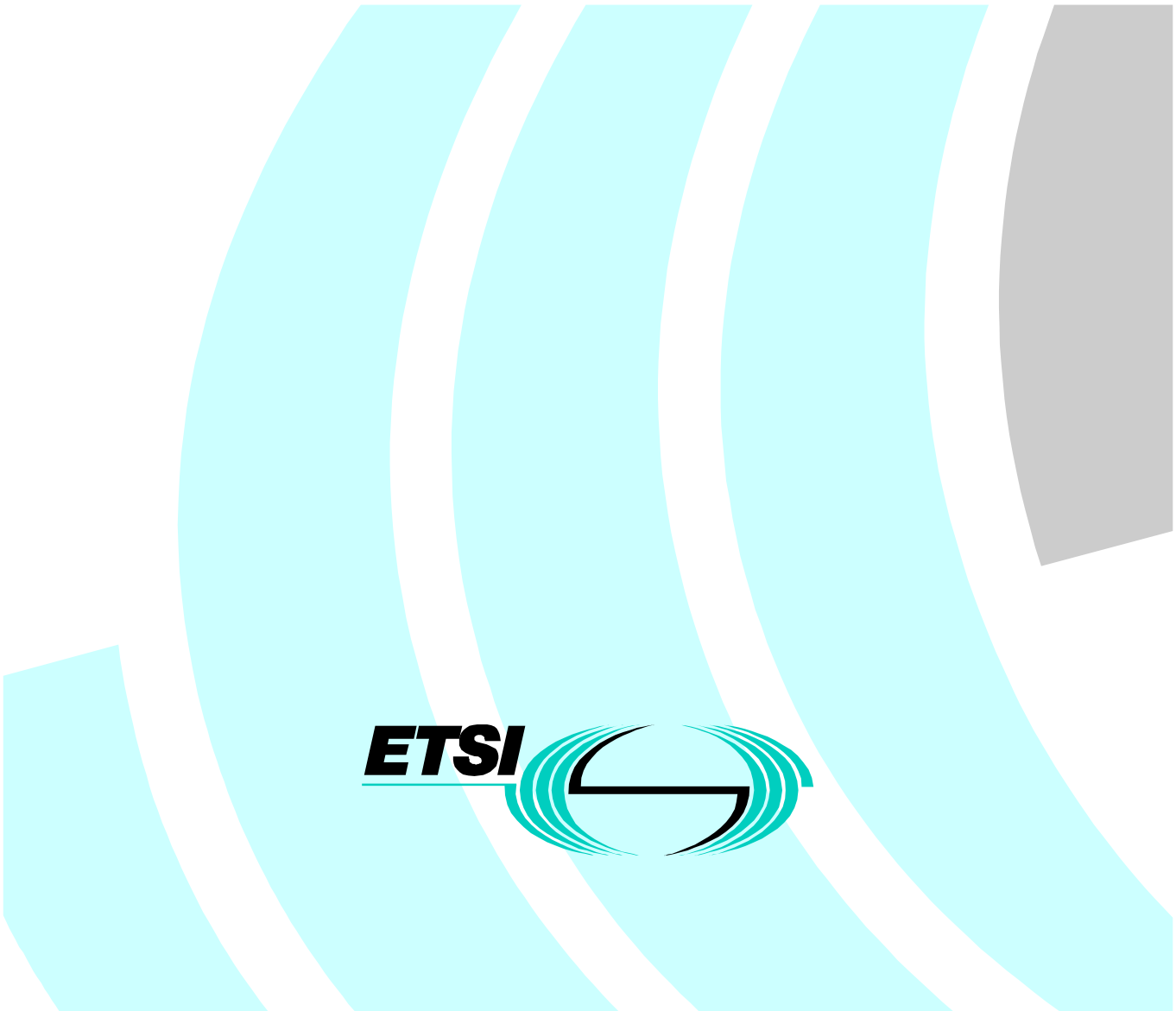
*European Standard (Telecommunications series)*

# Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Teleaction service; Part 7: Test Suite Structure and Test Purposes (TSS&TP) specification for the Teleaction Management Function (TMF)



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***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
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# Contents

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# Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS).

The present document is part 7 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Teleaction 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 End User Terminal (EUT)";

Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the End User Terminal (EUT)";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the Service Provider Terminal (SPT)";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the Service Provider Terminal (SPT)";

**Part 7: "Test Suite Structure and Test Purposes (TSS&TP) specification for the Teleaction Management Function (TMF)";**

Part 8: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the Teleaction Management Function (TMF)".

| National transposition dates | |
|---|---|
| Date of adoption of this EN: | 29 October 1999 |
| Date of latest announcement of this EN (doa): | 31 January 2000 |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | 31 July 2000 |
| Date of withdrawal of any conflicting National Standard (dow): | 31 July 2000 |

# 1 Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for the Teleaction management Function (TMF) 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 Teleaction service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 301 145-1 [1].

Test Purposes described in this specification do not apply to Data Link establishment and Disconnection procedures contained in ETS 300 402-2 [3] or semi-permanent B channels in-band procedures in accordance with ETS 300 099 [4].

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 End User Terminal (EUT) and the Service provider Terminal (SPT) of the T reference point or coincident S and T reference point of implementations conforming to EN 301 145-1 [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] EN 301 145-1 (V1.1): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Teleaction service; Part 1: Protocol specification".

[2] EN 301 145-2 (V1.1): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Teleaction service; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3] ETS 300 402-2: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 2: General protocol specification [IUT-T Recommendation Q.921 (1993) modified]".

[4] ETS 300 099: "Integrated Services Digital Network (ISDN); Specification of the Packet Handler access point Interface (PHI)".

[5] ITU-T Recommendation I.112 (1993): "Vocabulary and terms for ISDNs".

[6] ITU-T Recommendation I.210 (1993): "Principles of the telecommunication services supported by an ISDN and the means to describe them".

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

[8] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[9] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".

[10] EN 301 131 (V1.1): "Integrated Services Digital Network (ISDN); Teleaction teleservice; Service description".

# 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 suite:** refer to ISO/IEC 9646-1 [8].

**implementation under test:** refer to ISO/IEC 9646-1 [8].

**Protocol Implementation Conformance Statement (PICS):** refer to ISO/IEC 9646-1 [8].

**PICS proforma:** refer to ISO/IEC 9646-1 [8].

**Protocol Implementation eXtra Information for Testing (PIXIT):** refer to ISO/IEC 9646-1 [8].

**PIXIT proforma:** refer to ISO/IEC 9646-1 [8].

**test purpose:** refer to ISO/IEC 9646-1 [8].

### 3.1.2 Definitions related to EN 301 145-1

**Bd channel:** 64 kbit/s timeslot over which multiple D channel connections are multiplexed using the procedures of ETS 300 099 [4], clause 9.

**Bearer Service:** see ITU-T Recommendation I.112 [5], definition 202.

**End User (EU):** entity to whom a teleaction application service is provided or who is affected by that application service.

**End User Terminal (EUT):** device (or location of a device) that, depending on the application (e.g. by monitoring of subdevices):

- on the basis of local conditions or by interrogation, generates information and presents this information for transmission by the network to a service provider (SP);
- receives information from a SP in order to affect local conditions;
- upon polling requests, received from a Teleaction Management Function (TMF), executes the requested local actions (e.g. authorization, functionality checks, etc.) and sends appropriate response to the TMF.

**EU access capability:** telecommunication means used between an EUT and a TMF (e.g. ISDN bearer service, dedicated connection, etc.).

**Integrated Services Digital Network (ISDN):** see ITU-T Recommendation I.112 [5], definition 308.

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

**Service Provider (SP):** entity which, by using one or more TMFs, provides a teleaction application service to one or more EUTs.

NOTE: The SP may be the Basic Network Provider (BNP), the TMFP, or another organization responsible for one or more SPTs.

**Service Provider Terminal (SPT):** device (or location of such a device) which, depending on the application:

- receives information from one or more EUTs for handling and processing in accordance with the application service offered by the SPT;
- generates control messages and information requests and presents that information for transmission for one or more EUTs;
- monitors EUTs on the network, either by retrieving EUT status information stored in TMFs, and/or by receiving status information automatically from the TMFs (e.g. alarms);
- receives polling requests from TMFs and sends appropriate response to the TMF. Execution of local procedures such as authorization and functionality check are outside the scope of the specification [1];
- transfers to the TMF information to be broadcasted to the EUTs, if the broadcast functionality is supported by the TMF.

**SPT access capability:** telecommunication means used between a SPT and a TMF (e.g. ISDN Bearer service, dedicated connection, etc.).

**service; telecommunication service:** see ITU-T Recommendation I.112 [5], subclause 2.2, definition 201.

**supplementary service:** see ITU-T Recommendation I.210 [6] subclause 2.4.

**teleaction application:** one specific end-to-end application offered by a service provider using the teleaction service.

**teleaction service:** teleaction service is the transport mechanism used by a teleaction application.

**teleservice:** see ITU-T Recommendation I.112 [5], subclause 2.2, definition 203.

**Teleaction Management Function (TMF):** set of network functions added to either the public ISDN or assigned to a separate public, or private, network entity. The tasks of the TMF are:

- to ensure reliable communication paths between the EUTs and the SPT, i.e. to ensure available and secure access for the EUTs to the network and communication paths for the SPT in the ISDN, respectively;
- authorization of connected EUTs/SPTs;
- EUT/SPT functionality check;
- to address the appropriate EUT/SPT for transfer of information generated by SPT/EUT;
- as a TMFP option, to broadcast appropriate EUTs for transfer of information generated by a SPT.

**Teleaction Management Function Provider (TMFP):** entity responsible for the installation and maintenance of one or more of the TMFs. A TMFP may be the same as BNP.

**user:** DSS1 Protocol entity at the user side of the user-network interface.

## 3.2 Abbreviations

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

| | |
|---|---|
| ATM | Abstract Test Method |
| ATS | Abstract Test Suite |
| BNP | Basic Network Provider |
| CRF | Connection Related Function |
| DLCI | Data Link Connection Identifier |
| DSS1 | Digital Subscriber Signalling System No. one |
| EUT | End User Terminal |
| FH | Frame Handler |
| ISDN | Integrated Services Digital Network |
| IUT | Implementation under test |
| LAPD | Link Access Procedure for the D-Channel |
| NT2 | Network Termination type 2 |
| PICS | Protocol Implementation Conformance Statement |
| PIXIT | Protocol Implementation eXtra Information for Testing |
| PTN | Private Telecommunication Network |
| SAPI | Service Access Point Identifier |
| SPT | Service provider Terminal |
| TA | Terminal Adapter |
| TE1 | Terminal Equipment type 1 |
| TMF | Teleaction Management Function |
| TMFP | Teleaction Management Function Provider |
| TP | Test Purpose |
| TSS | Test Suite Structure |

# 4 Test Suite Structure (TSS)

| **Clauses/Subclauses** | **Group** |
|---|---|
| Procedures at the coincident S and T reference point (clause 9) | |
| - Data link establishment at EU/SP interface (subclause 9.1) | |
| - Normal procedures (subclause 9.1.1) | 00 |
| - Exceptional procedures (subclause 9.1.2) | 01 |
| - Data link disconnection at EU/SP interface (subclause 9.2) | |
| - Normal procedures (subclause 9.2.1) | 02 |
| - Exceptional procedures (subclause 9.2.2) | 03 |
| - Error procedures (subclause 9.3) | 04 |
| Maintenance, polling and broadcast procedures (clause 13) | |
| - Procedures (subclause 13.2) | |
| - Loop procedure (subclause 13.2.2) | 05 |
| - Alarm reporting procedures (subclause 13.2.3) | 06 |
| - Alarm clearance (subclause 13.2.4) | 07 |
| - Broadcast procedures (subclause 13.3) | 08 |
| - Status request procedure (subclause 13.4) | 09 |

# 5 Test Purposes (TP)

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual service and whether it applies to the EUT, the SPT or the TMF (see table 1).

## 5.1 Introduction

For each test requirement a TP is defined.

**Table 1: TP naming convention scheme**

| | | | | |
|---|---|---|---|---|
| Identifier: **<service>_<iut group>_<nnn>** | | | | |
| <service> | = | basic service: | e.g. "TELEACTION" | |
| <iut> | = | type of IUT: | E | End User Terminal |
| | | | S | Service Provider Terminal |
| | | | T | Teleaction Management Function |
| <group> | = | group | 2 digit field representing group reference according to TSS | |
| <nnn> | = | sequential number | (001-999) | |

### 5.1.1 Void

### 5.1.2 Source of TP definition

The TPs are based on EN 301 145-1 [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>** | see table 1 |
| **Stimulus** | Ensure that the IUT,<br><initial condition (preamble)><br><trigger> *see below for message structure*<br><br>*or* <goal> | <br>having received a XXXX message<br>receiving a XXXX message<br>(see note 2)<br>to request a ... |
| **Reaction** | <action><br><conditions><br>*if the action is sending*<br>*see below for message structure*<br><next action>, *etc.*<br>and remains in the same state(s)<br>*or* and (re-)enters state <state> | sends, processes, discards, etc.<br>... |
| **Message structure** | <message type><br>message<br>*a)* including (*or* without) <information element><br>information element<br>indicating<br><coding of the field> and *back to a or b,* | LOOP REQUEST, REPORT, ...<br><br>Loop Originator, Diagnostic, ...<br><br><br>the diagnostic value *val*, "*Argument value*", … |
| NOTE 1: 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.<br>NOTE 2: All messages shall be considered as "valid and compatible" unless otherwise specified in the test purpose. | | |

## 5.1.4 Test strategy

As the base standard EN 301 145-1 [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 301 145-2 [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.

## 5.1.5 Data link procedures.

Following features of the specification are not covered by the test purposes:

**Clause 9:** link establishment and disconnection procedures contained in ETS 300 402-2 [3] subclause 5.5 using SAPI = 12.

**Clause 9:** semi-permanent B Channels in-band procedures in accordance with ETS 300 099 [4].

**Subclause 9.1.1.2:** network layer communication procedures (network protocol dependent).

**Subclause 9.3:** mandatory information element missing, out of sequence or content error (implementation dependent procedures).

Data link establishment at EU/SP interface is a mandatory preamble to each test of subclause 9.3 and clause 13.

For link establishment by SPT, procedures in accordance with ETS 300 402-2 [3] (SAPI = 12) (D Channel access) or in-band procedures in accordance with ETS 300 099 [4] (semi-permanent B Channels) are to be considered.

Data link disconnection shall be performed after each test (procedures of ETS 300 402-2 [3]), to put the EU/SP interface in a stable state.

## 5.2 TMF TPs for Teleaction bearer service

All PICS items referred to in this subclause are as specified in EN 301 145-2 [2] unless indicated otherwise by another numbered reference.

**Selection:** Does the IUT perform as a TMF. PICS: R4.3.

### 5.2.1 Procedures at the coincident S and T reference point (clause 9)

#### 5.2.1.1 Data link establishment at EU/SP interface (subclause 9.1)

##### 5.2.1.1.1 Normal procedures (subclause 9.1.1)

**TELEACTION_T00_001 valid mandatory**
Ensure that the IUT, on receipt of a SABME command frame including the DLCI from a EUT, when the SPT is connected by semi-permanent Bd Channel to the TMF,
relays the received frame from the EUT to the SPT.

**Selection:** Does the IUT support semi-permanent B Channel physical interface. PICS MCt 1.

**TELEACTION_T00_002 valid mandatory**
Ensure that the IUT, on receipt of a SABME command frame including the DLCI from a EUT, when the SPT is connected by D Channel and no datalink connection exists between TMF and SPT,
sends a SABME command frame including the DLCI of the SPT to the SPT,

and,

optionally sends an UA command frame to the EUT.

**TELEACTION_T00_003 valid mandatory**
Ensure that the IUT, having received a SABME command frame from the EUT and having sent a SABME command frame to the SPT, on receipt of a UA command frame from the SPT, when the SPT is connected by D Channel and no datalink connection exists between TMF and SPT,
when a UA command frame has till be sent to the EUT, sends no frame,

or,

when no UA command frame has been sent to the EUT, sends a UA command frame to the EUT.

**TELEACTION_T00_004 valid mandatory**
Ensure that the IUT, on receipt of a SABME command frame including the DLCI from a EUT, when the SPT is connected by D Channel and a datalink connection exists between TMF and SPT,
sends an UA command frame to the EUT.

**TELEACTION_T00_005 valid mandatory**
Ensure that the IUT, on receipt of a SABME command frame including the DLCI of the EUT from a SPT via a semi-permanent B Channel,
sends a UA command frame to the SPT and sends the SABME command frame to the required EUT,

or

sends the received SABME command frame to the EUT.

**Selection:** Does the IUT support semi-permanent B Channel physical interface. PICS MCt 1.

##### 5.2.1.1.2 Exceptional procedures (subclause 9.1.2)

**TELEACTION_T01_001 valid optional**
Ensure that the IUT, to indicate that an end-to-end establishment between EUT and SPT has failed, if information is available (as result of polling procedures or receipt of alarm indications),
sends a REPORT message to the SPT.

No additional test purposes for this group. See ETS 300 402-2 specifications [3].

#### 5.2.1.2 Data link disconnection at EU/SP interface (subclause 9.2)

##### 5.2.1.2.1 Normal procedures (subclause 9.2.1)

No test purposes for this group. See ETS 300 402-2 specifications [3].

##### 5.2.1.2.2 Exceptional procedures (subclause 9.2.2)

No test purposes for this group. See ETS 300 402-2 specifications [3].

#### 5.2.1.3 Error procedures (subclause 9.3)

**TELEACTION_T04_001 syntactically invalid mandatory**
Ensure that the IUT, on receipt of an unrecognized message,
discards the message.

**TELEACTION_T04_002 inopportune mandatory**
Ensure that the IUT, on receipt of an unexpected message (LOOP REQUEST),
discards the message.

**TELEACTION_T04_003 syntactically invalid mandatory**
Ensure that the IUT, on receipt of a message ( REPORT message including a Report type information element indicating the type value #7 "Status report request") with an unrecognized information element,
ignores the unrecognized information element and processes the message as valid.

**TELEACTION_T04_004 inopportune mandatory**
Ensure that the IUT, on receipt of a message (REPORT message including a Report type information element indicating the type value #7 "Status report request") with an unexpected information element (Loop originator),
ignores the unexpected information element and processes the message as valid.

**TELEACTION_T04_005 inopportune mandatory**
Ensure that the IUT, on receipt of a message (REPORT message including a Report type information element indicating the type value #7 "Status report request") with a duplicated information element (second occurrence of Report type indicating value #2 "Broadcast request"),
ignores the second occurrence of the information element and processes the message as valid.

**TELEACTION_T04_006 inopportune mandatory**
Ensure that the IUT, on receipt of a message (REPORT message including a Report type information element indicating the type value #7 "Status report request") with an optional information element out of sequence (Diagnostic),
ignores the out of sequence information element and processes the message as valid.

**TELEACTION_T04_007 inopportune mandatory**
Ensure that the IUT, on receipt of a message (REPORT message including a Report type information element indicating the type value #7 "Status report request") with an optional information element content error (Diagnostic),
ignores the erroneous information element and processes the message as valid.

### 5.2.2 Maintenance, polling and broadcast procedures (clause 13)

#### 5.2.2.1 Procedures (subclause 13.2)

##### 5.2.2.1.1 Loop Procedures (subclause 13.2.2)

**TELEACTION_T05_001**
Ensure that the IUT, to initialize a loop procedure on an activated datalink,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating a valid destination and, optionally, including a Diagnostic information element indicating the default value #0.

**Selection:** Does the IUT support initiation of loopback procedure on activated datalinks. PICS: SCt 2.

**TELEACTION_T05_002**
Ensure that the IUT, to initialize a loop procedure on a deactivated datalink,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating a valid destination and, optionally, including a Diagnostic information element indicating the default value #0.

**Selection:** Does the IUT support initiation of loopback procedure on deactivated datalinks. PICS: SCt 3

**TELEACTION_T05_003**
Ensure that the IUT, to initialize a loop procedure for a Terminal Endpoint 1,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating destination value #1 "TE1" and, optionally, including a Diagnostic information element indicating the default value #0.

**TELEACTION_T05_004**
Ensure that the IUT, to initialize a loop procedure for a Terminal Adapter,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating destination value #2 "TA" and, optionally, including a Diagnostic information element indicating the default value #0.

**TELEACTION_T05_005**
Ensure that the IUT, to initialize a loop procedure for a Network Termination 2,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating destination value #4 "NT2" and, optionally, including a Diagnostic information element indicating the default value #0.

**TELEACTION_T05_006**
Ensure that the IUT, to initialize a loop procedure for a Private Telecommunications Network,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating destination value #8 "PTN" and, optionally, including a Diagnostic information element indicating the default value #0.

**TELEACTION_T05_007**
Ensure that the IUT, to initialize a loop procedure for a Frame Handler Connection Related Function-S,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating destination value #128 "FH CRF-S" and, optionally, including a Diagnostic information element indicating the default value #0.

**TELEACTION_T05_008**
Ensure that the IUT, to initialize a loop procedure for a Frame Handler Connection Related Function-P,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating destination value #129 "FH CRF-P" and, optionally, including a Diagnostic information element indicating the default value #0.

**TELEACTION_T05_009**
Ensure that the IUT, to initialize an end-to-end loop procedure, when it has no knowledge of the actual entity which terminates the logical link,
sends a LOOP REQUEST message including a Loop originator information element indicating origination value #96 "TMF", including a Loop destination information element indicating destination value #15 "LAPD termination" and, optionally, including a Diagnostic information element indicating the default value #0.

**TELEACTION_T05_010**
Ensure that the IUT, having send a LOOP REQUEST message to an EUT, on receipt of a LOOP RESPONSE message including a Loop destination information element indicating the requested loop destination, including a Diagnostic information element and including a Test data information element,
stores the diagnostic information contained in the Diagnostic information element and sends no message.

NOTE: This can be tested by sending a REPORT (status report request) from a SPT to the TMF and verifying that the diagnostic value sent in the REPORT (status report response) is the same that the diagnostic value of the LOOP RESPONSE.

#### 5.2.2.1.2 Alarm reporting Procedures (subclause 13.2.3)

**TELEACTION_T06_001**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #0 "Alarm event", including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF doesn't know how is accessing the service,

transfers the received REPORT message to the SPT.

**Selection:** Does the IUT support immediate transfer of REPORT message to the SPT. PICS: SCt 8.
IUT does not support delayed transfer of REPORT message to the SPT. PICS: NOT SCt 9.

**TELEACTION_T06_002**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #0 "Alarm event", including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF doesn't know how is accessing the service,

stores the received REPORT message and transfers it to the SPT within a period defined by the relevant fault report delay class (EN 301 131 [10]).

**Selection:** Does the IUT support delayed transfer of REPORT message to the SPT. PICS: SCt 9.
IUT does not support immediate transfer of REPORT message to the SPT. PICS: NOT SCt 8.

**TELEACTION_T06_003**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #0 "Alarm event", including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF doesn't know how is accessing the service,

sends the received REPORT message to the SPT,

or,

stores the received REPORT message and transfers it to the SPT within a period defined by the relevant fault report delay class (EN 301 131 [10]).

**Selection:** Does the IUT support immediate transfer of REPORT message to the SPT. PICS: SCt 8.
Does the IUT support delayed transfer of REPORT message to the SPT. PICS: SCt 9.

**TELEACTION_T06_004**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #0 "Alarm event", including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF knows is accessing the service via the D Channel,

sends a REPORT message including the received information elements and including a DLCI information element indicating the DLCI of the EUT to the SPT.

**Selection:** Does the IUT support immediate transfer of REPORT message to the SPT. PICS: SCt 8.
IUT does not support delayed transfer of REPORT message to the SPT. PICS: NOT SCt 9.
Does the IUT support D Channel physical interface. PICS: MCt 2.

**TELEACTION_T06_005**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #0 "Alarm event", including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF knows is accessing the service via the D Channel,

stores the received REPORT message and sends a REPORT message including the received (and stored) information elements and including a DLCI information element indicating the DLCI of the EUT to the SPT within a period defined by the relevant fault report delay class (EN 301 131 [10]).

**Selection:** Does the IUT support delayed transfer of REPORT message to the SPT. PICS: SCt 9.
IUT does not support immediate transfer of REPORT message to the SPT. PICS: NOT SCt 8.
Does the IUT support D Channel physical interface. PICS: MCt 2.

**TELEACTION_T06_006**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #0 "Alarm event", including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF knows is accessing the service via the D Channel,

sends a REPORT message including the received information elements and including a DLCI information element indicating the DLCI of the EUT to the SPT,

or,

stores the received REPORT message and sends a REPORT message including the received (and stored) information elements and including a DLCI information element indicating the DLCI of the EUT to the SPT within a period defined by the relevant fault report delay class (EN 301 131 [10]).

**Selection:** Does the IUT support immediate transfer of REPORT message to the SPT. PICS: SCt 8.
Does the IUT support delayed transfer of REPORT message to the SPT. PICS: SCt 9.
Does the IUT support D Channel physical interface. PICS: MCt 2.

**TELEACTION_T06_007**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #0 "Alarm event", including a Diagnostic information element, and optionally including a Terminal data information element, from an SPT,

sends the received REPORT message to all EUTs subscribed to the teleaction teleservice provided by the SPT.

NOTE 1: The REPORT message shall be send to all EUTs within a period defined by the relevant fault report class specified in EN 301 131 [10].

**TELEACTION_T06_008**
Ensure that the IUT, to indicate the occurrence of an internal alarm situation,

sends a REPORT message including a report type information element indication type value #0 "Alarm event", including a Diagnostic information element indicating diagnostic value #3 "Transmission path unavailable due to network element failure", and optionally including a Terminal data information element, to all connected EUTs and SPTs.

NOTE 2: The REPORT message shall be send to all EUTs and SPTs within a period defined by the relevant fault report class specified in EN 301 131 [10].

#### 5.2.2.1.3 Alarm clearance (subclause 13.2.4)

**TELEACTION_T07_001**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #1 "Alarm cleared", optionally including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF don't know how is accessing the service,

transfers the received REPORT message to the SPT.

NOTE 1: The received REPORT message should be sent to the SPT at the earliest possible opportunity (EN 301 145-1 [1]). The non-transmission of the message within a fixed period shall not be considered as an error because the period is application dependent.

**TELEACTION_T07_002**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #1 "Alarm cleared", optionally including a Diagnostic information element, and optionally including a Terminal data information element, from an EUT, when the EUT is subscribed to a SPT that the TMF knows is accessing the service via the D Channel,

sends a REPORT message including the received information elements and including a DLCI information element indicating the DLCI of the EUT to the SPT.

**Selection:** Does the IUT support D Channel physical interface. PICS: MCt 2.

NOTE 2: The REPORT message should be sent to the SPT at the earliest possible opportunity (EN 301 145-1 [1]). The non-transmission of the message within a fixed period shall not be considered as an error because the period is application dependent.

**TELEACTION_T07_003**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #1 "Alarm cleared", including a Diagnostic information element, and optionally including a Terminal data information element, from an SPT,
sends the received REPORT message to all EUTs subscribed to the teleaction teleservice provided by the SPT.

NOTE 3: The received REPORT message should be sent to the EUTs at the earliest possible opportunity (EN 301 145-1 [1]). The non-transmission of the message within a fixed period shall not be considered as an error because the period is application dependent.

**TELEACTION_T07_004**
Ensure that the IUT, to indicate the clearing of an internal alarm situation,
sends a REPORT message including a Report type information element indicating type value #1 "Alarm cleared", to all connected EUTs and SPTs.

NOTE 4: The REPORT message shall be send to all EUTs and SPTs within a period defined by the relevant fault report class specified in EN 301 131 [10].

### 5.2.2.2 Broadcast procedures (subclause 13.3)

**TELEACTION_T08_001**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #2 "Broadcast request - unnumbered or number 0" from the SPT,
transfers the received REPORT message to all connected EUTs subscribed to the teleaction application offered by the SPT,

on completion of the broadcast, sends a REPORT message including a report type information element indicating type value #3 "Broadcast confirm - unnumbered or number 0" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8

**TELEACTION_T08_002**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #34 "Broadcast request - number 1" from the SPT,
transfers the received REPORT message to all connected EUTs subscribed to the teleaction application offered by the SPT,

on completion of the broadcast, sends a REPORT message including a report type information element indicating type value #35 "Broadcast confirm - number 1" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
Does the IUT support multiple broadcast request from the SPT. PICS: SCt 10.

**TELEACTION_T08_003**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #98 "Broadcast request - number 3",
transfers the received REPORT message to all connected EUTs subscribed to the teleaction application offered by the SPT,

on completion of the broadcast, sends a REPORT message including a report type information element indicating type value #99 "Broadcast confirm - number 3" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
Does the IUT support multiple broadcast request from the SPT. PICS: SCt 10.

NOTE 1: The IUT supports up to 4 outstanding requests.

**TELEACTION_T08_004**
Ensure that the IUT, having received a broadcast request including a Report type information element indicating type value #2 "Broadcast request - number 0" without confirm it, on receipt of a REPORT message including a Report type information element indicating type value #34 "Broadcast request - number 1" from the SPT,

transfers the received REPORT message to all connected EUTs subscribed to the teleaction application offered by the SPT,

on completion of the previous broadcast request, sends a REPORT message including a report type information element indicating type value #3 "Broadcast confirm - number 0" to the SPT,

on completion of the broadcast, sends a REPORT message including a report type information element indicating type value #35 "Broadcast confirm - number 1" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
Does the IUT support multiple broadcast request from the SPT. PICS: SCt 10.

**TELEACTION_T08_005**
Ensure that the IUT, having received three broadcast requests (type value #2, #34 and #66 respectively - numbered 0, 1 and 2) without confirm them, on receipt of a REPORT message including a Report type information element indicating type value #98 "Broadcast request - number3" from the SPT,

transfers the received REPORT message to all connected EUTs subscribed to the teleaction application offered by the SPT,

on completion of the broadcast request number 0, sends a REPORT message including a report type information element indicating type value #3 "Broadcast confirm - number 0" to the SPT,

on completion of the broadcast request number 1, sends a REPORT message including a report type information element indicating type value #35 "Broadcast confirm - number 1" to the SPT,

on completion of the broadcast request number 2, sends a REPORT message including a report type information element indicating type value #67 "Broadcast confirm - number 2" to the SPT,

on completion of the broadcast request number 3, sends a REPORT message including a report type information element indicating type value #99 "Broadcast confirm - number 3" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
Does the IUT support multiple broadcast request from the SPT. PICS: SCt 10.

NOTE 2: The IUT supports up to 4 outstanding requests.

**TELEACTION_T08_006**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #2 "Broadcast request" from the SPT,

sends a REPORT message including a report type information element indicating type value #4 "Broadcast denied - function not implemented" to the SPT.

**Selection:** IUT does not support broadcast functions. PICS: NOT MCt 8.

**TELEACTION_T08_007**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #34 "Broadcast request - number 1",

discards the received message,

sends a REPORT message including a report type information element indicating type value #36 "Broadcast denied - function not implemented - number 1" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
IUT does not support multiple broadcast request from the SPT. PICS: NOT SCt 10.

**TELEACTION_T08_008**
Ensure that the IUT, having received a broadcast request including a Report type information element indicating type value #34 "Broadcast request - number 1" without confirm it, on receipt of a REPORT message including a Report type information element indicating type value #34 "Broadcast request - number 1" from the SPT,

sends a REPORT message including a report type information element indicating type value #38 "Broadcast denied - identical outstanding request - number 1" to the SPT,

on completion of the previous broadcast, sends a REPORT message including a report type information element indicating type value #35 "Broadcast confirm - number 1" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
Does the IUT support multiple broadcast request from the SPT. PICS: SCt 10.

**TELEACTION_T08_009**
Ensure that the IUT, having received three broadcast requests (type value #2, #34 and #66 respectively - numbered 0, 1 and 2) without confirm them, on receipt of a REPORT message including a Report type information element indicating type value #98 "Broadcast request - number3" from the SPT,

sends a REPORT message including a Report type information element indicating type value #101 "broadcast denied - maximum number of requests exceeded - number 3" to the SPT,

on completion of the broadcast request number 0, sends a REPORT message including a report type information element indicating type value #3 "Broadcast confirm - number 0" to the SPT,

on completion of the broadcast request number 1, sends a REPORT message including a report type information element indicating type value #35 "Broadcast confirm - number 1" to the SPT,

on completion of the broadcast request number 2, sends a REPORT message including a report type information element indicating type value #67 "Broadcast confirm - number 2" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
Does the IUT support multiple broadcast request from the SPT. PICS: SCt 10.

NOTE 3: The IUT supports up to 3 outstanding requests.

**TELEACTION_T08_010**
Ensure that the IUT, on receipt of a REPORT message including a Report type information element indicating type value #98 "Broadcast request - number 3" from the SPT,

sends a REPORT message including a report type information element indicating type value #101 "Broadcast denied - maximum number of requests exceeded - number 3" to the SPT.

**Selection:** Does the IUT support broadcast functions. PICS: MCt 8.
Does the IUT support multiple broadcast request from the SPT. PICS: SCt 10.

NOTE 4: The IUT supports up to 3 outstanding requests.

### 5.2.2.3 Status request procedure (subclause 13.4)

**TELEACTION_T09_001**
Ensure that the IUT, on receipt of a REPORT message including a DLCI information element indicating the DLCI of a EUT, including a Report type information element indicating type value #7 "Status report request" from the SPT, when EUT has subscribed to the SPT and status information is available for that EUT,

sends a REPORT message including a report type information element indicating type value #8 "Status report response" and a Diagnostic information element indicating the status information of the EUT (different from #5 "EUT not subscribed" and #6 "Status information unavailable") to the SPT.

**TELEACTION_T09_002**
Ensure that the IUT, on receipt of a REPORT message including a DLCI information element indicating the DLCI of a EUT, including a Report type information element indicating type value #7 "Status report request" from the SPT, when EUT has subscribed to the SPT,

sends a REPORT message including a report type information element indicating type value #8 "Status report response" and a Diagnostic information element indicating the diagnostic value #5 "EUT not subscribed" to the SPT.

**TELEACTION_T09_003**
Ensure that the IUT, on receipt of a REPORT message including a DLCI information element indicating the DLCI of a EUT, including a Report type information element indicating type value #7 "Status report request" from the SPT, when EUT has subscribed to the SPT but no status information is available for that EUT,

sends a REPORT message including a report type information element indicating type value #8 "Status report response" and a Diagnostic information element indicating the diagnostic value #6 "Status information unavailable") to the SPT.

# 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 [9].

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 [9], shall be used by any organization claiming to provide a comprehensive testing service for network equipment claiming conformance to EN 301 145-1 [1].

# Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [IUT-T Recommendation Q.920 (1993) modified]".

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

# History

| Document history | | | | |
|---|---|---|---|---|
| V1.1.4 | March 1999 | Public Enquiry | PE 9929: | 1999-03-19 to 1999-07-16 |
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