



SLOVENSKI STANDARD

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Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2; Test responder specification

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ICS:

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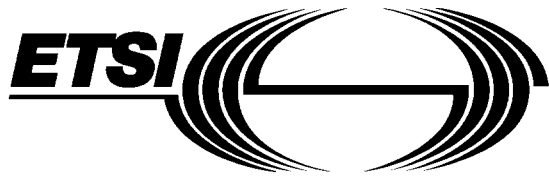
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ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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Contents

Foreword	5
1 Scope	7
2 Normative references	7
3 Abbreviations	8
4 Architecture	8
5 TC testing user Application Service Element (ASE)	9
5.1 General principles	9
5.2 Operations and Errors	9
6 TC test management protocol	10
6.1 Test management protocol PDUs	10
6.2 Command structure	10
6.3 Abstract syntax	11
6.4 Procedures	11
6.4.1 Procedure at the test system side	11
6.4.2 Procedure at the test responder side	11
6.4.2.1 Generic rules	11
6.4.2.2 Handling of TMP-PDUs	12
6.4.2.3 Execution of the wait command	13
6.4.2.4 Execution of other commands	13
6.4.2.5 Data echo	14
Annex A (normative): TC test responder Operations and Errors	15
Annex B (normative): Test management protocol PDUs	17
Annex C (informative): Example of use of the TC test responder	19
Annex D (informative): Implementing loops using the TC test responder	22
Annex E (informative): Bibliography	23
History	24

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

Transposition dates	
Date of adoption of this ETS:	6 September 1996
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1 Scope

This European Telecommunication Standard (ETS) defines a simple and flexible test responder which enables the use of Abstract Test Suites (ATSs) for Transaction Capabilities (TC) independently from the actual TC-users which reside in a System Under Test (SUT).

No assumption is made about the actual implementation of the interface between this function and TC.

The availability of a standardized TC test responder has the following advantages:

- it makes it possible to write a unique ATS which can be executed against any TC implementation which resides in a system where the test responder is also implemented;
- it allows all the defined TC functionalities to be tested, irrespective of the sub-set of functionalities actually used by the TC-users which are available at the moment when an equipment is under test;
- it helps to isolate faults during testing, since the proper response to a TC message or component will be independent of the proper execution of a real TC-user operation;
- it allows the TC stack to be tested before being delivered to a customer for supporting one or more particular TC-user applications;
- the test responder can even be used to perform stack-to-stack interoperability testing independently of any particular TC-user application.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- SIST ETS 300 658:1998
- [1] <https://standards.iteh.ai/catalog/standards/sist/164527c1-b72a-4611-8558-7da12fcc737e/sist-ets-300-658-1998> ETS 300 134: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities Application Part (TCAP)".
- [2] ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities Application Part (TCAP) version 2".
- [3] ISO/IEC 8824 (1995): "Information Technology - Abstract Syntax Notation One (ASN.1)" (also published as ITU-T Recommendations X.680 (1994), X.681 (1994), X.682 (1994) and X.683 (1994)).
- [4] ISO/IEC 8825-1 (1995): "Information Technology - ASN.1 Encoding Rules - Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)" (also published as ITU-T Recommendation X.690 (1994)).
- [5] ISO/IEC 9646-1 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [6] CCITT Recommendations Q.771-Q.775 (1988): "Specifications of Signalling System No.7, Transaction Capabilities Application Part (TCAP)" (Blue Book).
- [7] ITU-T Recommendations Q.771-Q.775 (1993): "Specifications of Signalling System No.7: Transaction Capabilities (TC)" (White Book).

3 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

AE	Application Entity
ASE	Application Service Element
ASN.1	Abstract Syntax Notation One (as specified in ISO/IEC 8824 [3])
ATS	Abstract Test Suite
IUT	Implementation Under Test
LT	Lower Tester
PDU	Protocol Data Unit
SCCP	Signalling Connection Control Part (SS7)
SUT	System Under Test
TC	Transaction Capabilities
TMP	Test Management Protocol
UT	Upper Tester

4 Architecture

The TC test responder is a particular TC-user which can be implemented together with TC in any system, using several possible configurations.

The communication between the TC test responder which resides in a SUT and a test system relies on the use of a particular Application Service Element (ASE), called "TC Testing User ASE". The TC test responder plays the role of the ASE supplier while the test system plays the role of the ASE consumer.

The TC Testing User ASE can be implemented as the single component of an Application Entity (AE) located at a particular sub-system number, or it can be combined with other application layer elements in which case it is selected by using any application-context-name starting with the following value:

```
{ccitt identified-organization etsi(0) 658 ac(5)}
```

NOTE: ETS 300 009-1, Signalling Connection Control Part (SCCP) will allocate a sub-system number which may be used for addressing an AE which contains the test responder (e.g. when only CCITT Blue Book [6] TC facilities are available).

According to ISO/IEC 9646-1 [5], the set of data units conveyed between two instances of the test responder and a test system can be considered as an "in-band" Test Management Protocol (TMP), which can be used to support co-ordinated test methods between the test responder acting as an Upper Tester (UT) and the Lower Tester (LT) functionality of the test system (see figure 1).

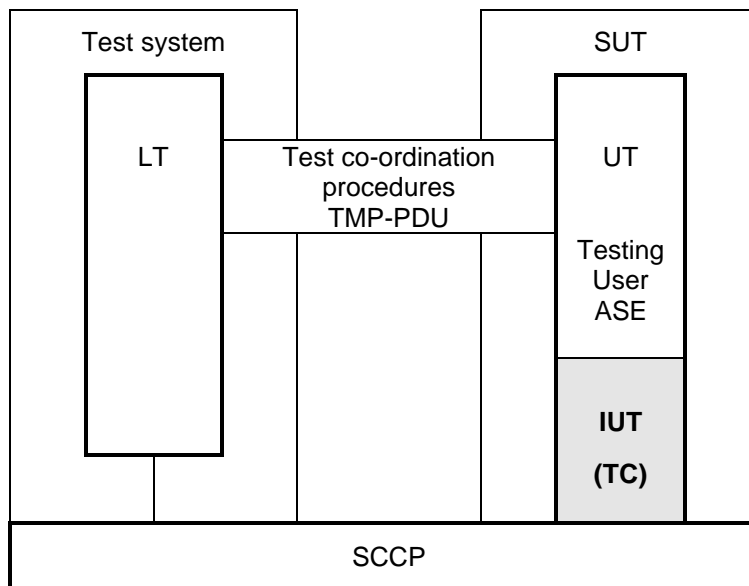


Figure 1

The use of this test responder does not require any access to the TC service interface within the SUT, nor does it place any constraints on its implementation. This test responder does not provide means for testing the behaviour of a TC implementation in response to invalid behaviour of the local TC-user.

The "in-band" nature of the TMP implies that, although being under test, the TC service is reliable enough to carry such Protocol Data Units (PDUs) and deliver them to a user. In order to overcome potential difficulties due to a missing or unreliable TC service, the Testing User ASE procedures are defined in such a way that each TMP-PDU can be received in different types of messages or components.

The main purpose of the TMP is to allow series of commands to be sent from the test system to the test responder in order to provoke some behaviour in the TC Implementation Under Test (IUT). Each command is either a TC service primitive to be passed by the test responder to the TC under test or the indication that the test responder should keep waiting for a subsequent event.

5 TC testing user Application Service Element (ASE)

5.1 General principles

The TC testing user ASE can be built on top of the 1988 version (ETS 300 134 [1], based on the CCITT Blue Book [6]) or the 1993 version (ETS 300 287 [2], based on the ITU-T White Book [7]) of TC¹⁾. This ASE can handle simultaneously several dialogues. It embodies the knowledge of seven operations; two of them can be invoked by the ASE consumer (i.e. the test system), five of them can be invoked by the ASE supplier (i.e. SUT). The two operations invoked by the test responder are defined as class 1 operations. However, this has no impact on the behaviour of the test responder²⁾.

The TMP-PDUs can be conveyed in the operations arguments, operations result parameters, errors parameters and when available, in the user information parameter of the dialogue portion.

There is no specific relation between a TMP-PDU and the type of message or component which is used to carry it.

NOTE: The upper service interface of the TC Testing User ASE is not standardized. However, such an interface could be made accessible to locally trigger a particular test scenario (e.g., for interoperability testing) or enable the test responder to report to some management function expiry of the timer T-Test.

5.2 Operations and Errors

The Abstract Syntax Notation One (ASN.1) module TC-Testing-User defined in annex A contains the specification of the operations which can be invoked by the test system or the test responder during communication.

The local values assigned to the following operations and errors shall be considered as default values. The actual local values used for these operations and errors shall be treated as configuration parameters.

```
class1SupplierOperation
class2SupplierOperation
class3SupplierOperation
class4SupplierOperation
localConsumerError
localSupplierError
```

-
- 1) It is up to the test suite designer to write the test cases in such a way that the Test Responder does not request 1993 functionalities from a 1988 TC implementation.
 - 2) Whether the test responder reports an outcome for these operations depends on the commands received in the TMP PDUs. This does not violate any rule as far as TC is concerned since the class of an operation is irrelevant to the TC residing at the side where the operation is executed.