



**Methods for Testing and Specification (MTS);
Conformance Test Suite for TTCN-3
Object Oriented Features;
Part 2: Test Suite Structure and Test Purposes (TSS&TP)**

Reference

DTS/MTS-103663-2

Keywords

testing, TSS&TP, TTCN-3

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - 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

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2020.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.

3GPP™ and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M™ logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	4
Foreword.....	4
Modal verbs terminology.....	4
1 Scope	5
2 References	5
2.1 Normative references	5
2.2 Informative references.....	5
3 Definition of terms, symbols and abbreviations.....	6
3.1 Terms.....	6
3.2 Symbols.....	6
3.3 Abbreviations	6
4 Test Suite Structure (TSS).....	7
Annex A (normative): Description of Test Purposes	8
A.1 Introduction	8
A.1.1 Test Purposes (TP)	8
A.1.2 Test purpose naming convention.....	8
A.1.3 Test purpose structure	8
A.1.4 Test purpose format.....	8
A.2 Test purposes for the TTCN-3 conformance test suite.....	9
History	10

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Methods for Testing and Specification (MTS).

The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.9].

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

The present document provides the Implementation Conformance Statement (ICS) pro forma for the conformance test suite for TTCN-3 Object Oriented Features, as defined in ETSI ES 203 790 [1] in compliance with the relevant guidance given in the pro forma for TTCN-3 reference test suite ETSI TS 103 663 (multi-part) [4]. In the present document only the core language features, specified in ETSI ES 203 790 [1] have been considered but not the tool implementation (see ETSI ES 201 873-5 [i.1] and ETSI ES 201 873-6 [i.2]), language mapping (see ETSI ES 201 873-7 [i.3], ETSI ES 201 873-8 [i.4] and ETSI ES 201 873-9 [i.5]) and language extension (see e.g. ETSI ES 202 781 [i.6], ETSI ES 202 784 [i.7] and ETSI ES 202 785 [i.8]) aspects.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI ES 203 790 (V1.1.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; TTCN-3 Language Extensions: Object-Oriented Features".
- [2] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [3] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [4] ETSI TS 103 663 (all parts): "Methods for Testing and Specification (MTS); Conformance Test Suite for TTCN-3 Object Oriented Features".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI ES 201 873-5: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 5: TTCN-3 Runtime Interface (TRI)".
- [i.2] ETSI ES 201 873-6: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 6: TTCN-3 Control Interface (TCI)".
- [i.3] ETSI ES 201 873-7: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 7: Using ASN.1 with TTCN-3".

- [i.4] ETSI ES 201 873-8: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 8: The IDL to TTCN-3 Mapping".
- [i.5] ETSI ES 201 873-9: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 9: Using XML schema with TTCN-3".
- [i.6] ETSI ES 202 781: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; TTCN-3 Language Extensions: Configuration and Deployment Support".
- [i.7] ETSI ES 202 784: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; TTCN-3 Language Extensions: Advanced Parameterization".
- [i.8] ETSI ES 202 785: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; TTCN-3 Language Extensions: Behaviour Types".
- [i.9] ETSI TS 103 663-1: "Methods for Testing and Specification (MTS); Conformance Test Suite for TTCN-3 Object Oriented Features; Part 1: Implementation Conformance Statement (ICS)".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ISO/IEC 9646-1 [2], ISO/IEC 9646-7 [3], ETSI ES 203 790 [1] (TTCN-3) and the following apply:

Abstract Test Suite (ATS): test suite composed of abstract test cases

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation claimed to conform to a given specification, stating which capabilities have been implemented

ICS pro forma: document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS

Implementation eXtra Information for Testing (IXIT): statement made by a supplier or implementor of an IUT which contains or references all of the information related to the IUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the IUT

IXIT pro forma: document, in the form of a questionnaire, which when completed for the IUT becomes the IXIT

Implementation Under Test (IUT): implementation of one or more OSI protocols in an adjacent user/provider relationship, being part of a real open system which is to be studied by testing

3.2 Symbols

Void.

3.3 Abbreviations

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

ATS	Abstract Test Suite
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
IXIT	Implementation eXtra Information for Testing
TC	Test Case
TCI	TTCN-3 Control Interface
TP	Test Purpose
TRI	TTCN-3 Runtime Interface
TS	Test System

TSS	Test Suite Structure
TSS&TP	Test Suite Structure and Test Purposes
TTCN-3	Testing and Test Control Notation edition 3

4 Test Suite Structure (TSS)

The Test Suite Structure is in close alignment with V1.1.1 of ETSI ES 203 790 [1], containing:

- a) positive syntactical tests ("Syn" filename prefix of the test case name);
- b) positive semantical tests ("Sem" filename prefix of the test case name);
- c) negative syntactical tests ("NegSyn" filename prefix of the test case name); and
- d) negative semantical tests ("NegSem" filename prefix of the test case name).

The execution order of the TTCN-3 tool conformance test cases is specified in the dependencies section of test purpose descriptions.

Annex A (normative): Description of Test Purposes

A.1 Introduction

A.1.1 Test Purposes (TP)

For each test requirement a Test Purpose (TP) is defined. Test purposes shall be defined in a dedicated test purpose document as well as with TTCN-3 documentation tags in each test case of the ATS. Both documentations shall convey the same information for each test purpose.

A.1.2 Test purpose naming convention

The test purpose naming scheme corresponds to the test case identifier naming scheme and vice-versa.

A.1.3 Test purpose structure

The test purpose structure is according to the test suite structure (TSS).

A.1.4 Test purpose format

In the following, examples for tabular test purpose descriptions are shown that shall be defined in the test purpose document. This representation is a direct mapping of the contents of the document tags in the ATS (such as @purpose, @remark, or @verdict). The tabular descriptions are presented along with their corresponding TTCN-3 documentation tag equivalent. The test purpose reference shall be provided in a machine-readable format.

EXAMPLE:

Test Purpose Id	TP_NegSyn_0501_Identifier
Reference	ETSI ES 201 873-1, clause 5.1
ICS	None
Dependencies	None
Summary	Ensure that when the IUT loads a module containing an identifier named with a keyword then the module is rejected
Expected Output	Rejection as invalid
Notes	

A corresponding TTCN-3 module addressing TP_NegSyn_0501_Identifier is the following:

```

/*****
** @author   STF 521
** @version  0.0.1
** @purpose  1:5.1, Ensure that when the IUT loads a module containing an
              identifier named with a keyword then the module is rejected.
** @verdict  pass Rejection as invalid
*****/

module NegSyn_0501_Identifier_001 {

type component GeneralComp {
}

testcase TC_NegSyn_0501_Identifier_001() runs on GeneralComp {
  var integer component := 1;
}

control{
  execute(TC_NegSyn_0501_Identifier_001());
}
}

```

Test Purpose Id	TP_Syn_0501_Identifier
Reference	ETSI ES 201 873-1, clause 5.1
ICS	None
Dependencies	None
Summary	Ensure that the IUT handles the identifiers case sensitively.
Expected Output	TTCN-3 verdict "pass"
Notes	

A corresponding TTCN-3 module for TP_Syn_0501_Identifier is the following:

```

/*****
** @author   STF 521
** @version  0.0.1
** @purpose  1:5.1, Ensure that the IUT handle the identifiers case sensitively.
** @verdict  pass TTCN-3 verdict
*****/

module Syn_0501_Identifier_001 {

type component IdComp {
  const integer c_int := 0;
}

testcase TC_Syn_0501_Identifier_001() runs on IdComp {
  const integer C_INT := 1;
  if (c_int == 0){
    setverdict(pass);
  }
  else {
    setverdict(fail);
  }
}

control{
  execute(TC_Syn_0501_Identifier_001());
}
}

```

A.2 Test purposes for the TTCN-3 conformance test suite

The TTCN-3 library modules are contained in archive ts_10366302v010101p0.zip which accompanies the present document.

This ATS has been produced using the Testing and Test Control Notation (TTCN) according to ETSI ES 203 790 [1].

History

Document history		
V1.1.1	March 2020	Publication