ETSI TS 103 191-1 V1.3.1 (2021-11)

TECHNICAL SPECIFICATION

**Intelligent Transport Systems (ITS);
Testing;
Conformance test specifications for
Facilities layer protocols and communication requirements
for infrastructure services;
Part 1: Test requirements and Protocol Implementation
Conformance Statement (PICS) pro forma**

Reference

RTS/ITS-001943

Keywords

ITS, PICS, testing

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 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

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

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or
other professional standard and applicable regulations.
No recommendation as to products and services or vendors is made or should be implied.
No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.
In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

Contents

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are 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 Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, 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.

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.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Intelligent Transport Systems (ITS).

The present document is part 1 of a multi-part deliverable covering Conformance test specifications for Facilities layer protocols and communication requirements for infrastructure services, as identified below:

Part 1: "Test requirements and Protocol Implementation Conformance Statement (PICS) pro forma";

Part 2: "Test Suite Structure and Test Purposes (TSS & TP)";

Part 3: "Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".

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 Protocol Implementation Conformance Statement (PICS) pro forma for Conformance test specification for MAPEM-SPATEM, IVIM and SREM-SSEM as defined in SAE J2735 [i.3] and ETSI TS 103 301 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [i.2].

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 TS 103 301 (V1.3.1) (02-2020): "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Facilities layer protocols and communication requirements for infrastructure services".

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]   ISO/IEC 9646-1 (1994): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts".

[i.2]   ISO/IEC 9646-7 (1995): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".

[i.3]   SAE J2735 (03-2016): "Dedicated Short Range Communications (DSRC) Message Set Dictionary™".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 103 301 [1], ISO/IEC 9646-1 [i.1] and ISO/IEC 9646-7 [i.2] apply.

3.2 Symbols

Void.

3.3 Abbreviations

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

ATS	Abstract Test Suite
ISO	International Organization for Standardization
ITS	Intelligent Transport Systems
ITS-S	Intelligent Transport Systems-Station
IUT	Implementation Under Test
IVI	Infrastructure to Vehicle Information
IVIM	IVI-message
MAPEM	MapData Messages
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
RTCM	Radio Technical Commission for Maritime services
RTCMEM	RTCM Message
SAE	Society of Automotive Engineers
SPATEM	Signal Phase And Timing Message
SREM	Signal Request Message
SSEM	Signal Response Message
SUT	System Under Test
TP	Test Purpose
TS	Technical Specification
TSS	Test Suite Structure

4 Conformance requirement concerning PICS

The PICS pro forma to be filled in by a supplier shall be as shown in annex A.

Annex A (normative):
MAPEM-SPATEM, IVIM SREM-SSEM and RTCMEM PICS pro forma

A.1   Partial cancellation of copyright

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the MAPEM-SPATEM, IVIM, SREM-SSEM and RTCMEM PICS pro forma in this annex so that it can be used for its intended purposes and may further publish the completed MAPEM-SPATEM, IVIM, SREM-SSEM and RTCMEM PICS.

A.2   Guidance for completing the PICS pro forma

A.2.1   Purposes and structure

The purpose of this PICS pro forma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in ETSI TS 103 301 [1] may provide information about the implementation in a standardized manner.

The PICS pro forma is subdivided into clauses for the following categories of information:

- guidance for completing the PICS pro forma;

- identification of the implementation;

- identification of the ETSI TS 103 301 [1];

- global statement of conformance;

- PICS pro forma tables.

A.2.2   Abbreviations and conventions

The PICS pro forma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [i.2].

The item column contains a number which identifies the item in the table.

Item description column

The item description column describes in free text each respective item (e.g. parameters, timers, etc.). It implicitly means "is <item description> supported by the implementation?".

Status column

The following notations, defined in ISO/IEC 9646-7 [i.2], are used for the status column:

   m   mandatory - the capability is required to be supported.

   o   optional - the capability may be supported or not.

   n/a   not applicable - in the given context, it is impossible to use the capability.

   x   prohibited (excluded) - there is a requirement not to use this capability in the given context.

o.i   qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.

c.i   conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table.

i   irrelevant (out-of-scope) - capability outside the scope of the reference specification. No answer is requested from the supplier.

NOTE 1: This use of "i" status is not to be confused with the suffix "i" to the "o" and "c" statuses above.

Reference column

The reference column makes reference to ETSI TS 103 301 [1], except where explicitly stated otherwise.

Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [i.2], are used for the support column:

Y or y   supported by the implementation.

N or n   not supported by the implementation.

N/A, n/a or - no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status).

NOTE 2: As stated in ISO/IEC 9646-7 [i.2] support for a received PDU requires the ability to parse all valid parameters of that PDU. Supporting a PDU while having no ability to parse a valid parameter is non-conformant. Support for a parameter on a PDU means that the semantics of that parameter are supported.

Values allowed column

The values allowed column contains the type, the list, the range, or the length of values allowed. The following notations are used:

- range of values: <min value> .. <max value>

EXAMPLE 1: 5 .. 20

- list of values: <value1>, <value2>, ..., <valueN>

EXAMPLE 2: 2 , 4, 6, 8, 9

EXAMPLE 3: '1101'B, '1011'B, '1111'B

EXAMPLE 4: '0A'H, '34'H, '2F'H

- list of named values: <name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)

EXAMPLE 5: reject(1), accept(2)

- length: size (<min size> .. <max size>)

EXAMPLE 6: size (1 .. 8)

Values supported column

The values supported column shall be filled in by the supplier of the implementation. In this column, the values or the ranges of values supported by the implementation shall be indicated.

References to items

For each possible item answer (answer in the support column) within the PICS pro forma a unique reference exists, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table. If there is more than one support column in a table, the columns are discriminated by letters (a, b, etc.), respectively.

EXAMPLE 7: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 8: A.6/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table 6 of annex A.

Prerequisite line

A prerequisite line takes the form: Prerequisite: <predicate>.

A prerequisite line after a clause or table title indicates that the whole clause or the whole table is not required to be completed if the predicate is FALSE.

A.2.3 Instructions for completing the PICS pro forma

The supplier of the implementation shall complete the PICS pro forma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided.

If necessary, the supplier may provide additional comments in space at the bottom of the tables or separately.

More detailed instructions are given at the beginning of the different clauses of the PICS pro forma.

A.3 Identification of the implementation

A.3.1 Introduction

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) shall be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information shall both be filled in if they are different.

A person who can answer queries regarding information supplied in the PICS shall be named as the contact person.

A.3.2 Date of the statement

....

A.3.3 Implementation Under Test (IUT) identification

IUT name:

....

....

IUT version:

....

A.3.4　System Under Test (SUT) identification

SUT name:

....

....

Hardware configuration:

....

....

....

Operating system:

....

A.3.5　Product supplier

Name:

....

Address:

....

....

....

Telephone number:

....

Facsimile number:

....

E-mail address:

....

Additional information:

....

....

....

A.3.6 Client (if different from product supplier)

Name:

....

Address:

....

....

....

Telephone number:

....

Facsimile number:

....

E-mail address:

....

Additional information:

....

....

A.3.7 PICS contact person

(A person to contact if there are any queries concerning the content of the PICS)

Name:

....

Telephone number:

....

Facsimile number:

....

E-mail address:

....

Additional information:

....

....

....

A.4   Identification of the protocol

This PICS pro forma applies to the following standard: ETSI TS 103 301 [1].

A.5   Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No)   ....

NOTE: Answering "No" to this question indicates non-conformance to the MAPE-SPATE, IVI,SRE-SSE and
           RTCM standard specification. Non-supported mandatory capabilities are to be identified in the PICS,
           with an explanation of why the implementation is non-conforming, on pages attached to the PICS pro
           forma.

A.6   Tables

A.6.1   Generic

Unless stated otherwise, the column references of all tables below indicate the clause/table numbers of ETSI
TS 103 301 [1].

Table A.1: ITS Security mode

Item	Type	Reference	Status	Support
1	ITS-S security mode enabled	4.5.1, 11	m	
2	Short range communication profile	5.4.3.2, 6.4.3.2, 7.4.3.1, 8.4.3.2, 9.4.3.2	o	

A.6.2   MAPEM/SPATEM

Table A.2: Functions

Item	Type	Reference	Status	Support
1	MAPEM generation	6.4.2	m	
2	MAPEM reception	6.4.2	m	
3	SPATEM generation	5.4.2	m	
4	SPATEM reception	5.4.2	m	

A.6.3   IVIM

Table A.3: Functions

Item	Type	Reference	Status	Support
1	IVIM generation	7.4.2	m	
2	IVIM update	7.4.2	m	
3	IVIM cancellation	7.4.2	m	
4	IVIM negation	7.4.2	m	
5	IVIM reception	7.4.2	m	

Table A.4: Timing requirements

Item	Name of field	Reference	Default value	Status	Support
1	Maximum time interval between IVIM generation	Table 16	10 s	m	
2	Minimum time interval between IVIM generation	Table 16	4 s	m	

A.6.4 SREM/SSEM

Table A.5: Functions

Item	Type	Reference	Status	Support
1	SREM generation	8.4.2	m	
2	SREM reception	8.4.2	m	
3	SSEM generation	8.4.2	m	
4	SSEM reception	8.4.2	m	

A.6.5 RTCMEM

Table A.6: Functions

Item	Type	Reference	Status	Support
1	RTCMEM generation	9.4.2	m	
2	RTCMEM reception	9.4.2	m	

History

Document history		
V1.1.1	September 2015	Publication
V1.2.1	March 2017	Publication
V1.3.1	November 2021	Publication