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Intelligent Transport Systems (ITS);
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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

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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 specification 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).

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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 [1] and ETSI TS 103 301 [2] 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 http://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] SAE J2735 (2015-03): "Dedicated Short Range Communications (DSRC) Message Set Dictionary".

[2] ETSI TS 103 301 (V1.1.1) (2016-11): "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] Void.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in SAE J2735 [1], ISO/IEC 9646-1 [i.1] and ISO/IEC 9646-7 [i.2] apply.

3.2 Abbreviations

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

ATS	Abstract Test Suite
DSRC	Dedicated Short Range Communications
EU	European Union
ICS	Implementation Conformance Statement
ISO	International Organization for Standardization
ITS	Intelligent Transport Systems
IUT	Implementation Under Test
IVI	Infrastructure to Vehicle Information
IVIM	IVI-message
MAPEM	MapData Messages
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
RLT	Road and Lane topology
RSU	Road Side Unit
SAE	Society of Automotive Engineers
SPATEM	Signal Phase And Timing Messages
SREM	Signal Request Message
SSEM	Signal Response Message
SUT	System Under Test
TLC	Traffic Light Control
TLM	Traffic Light Manoeuvre
TP	Test Purpose
TS	Technical Specification
TSS	Test Suite Structure

4 Conformance requirement concerning PICS

If it claims to conform to the present document, the actual PICS pro forma to be filled in by a supplier shall be technically equivalent to the text of the PICS pro forma given in annex A and shall preserve the numbering, naming and ordering of the pro forma items.

An PICS which conforms to the present document shall be a conforming PICS pro forma completed in accordance with the instructions for completion given in clause A.2.

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

A.1 Partial cancellation of copyright

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 SAE J2735 [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 SAE J2735 [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 SAE J2735 [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:

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Hardware configuration:

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Operating system:

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A.3.5 Product supplier

Name:

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Address:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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A.3.6 Client (if different from product supplier)

Name:

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Address:

.....

.....

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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: SAE J2735 [1]: "Dedicated Short Range Communications (DSRC) Message Set Dictionary".

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 and SRE-SSE 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 numbers of SAE J2735 [1] and ETSI TS 103 301 [2].

Table A.1: ITS Security mode

Item	Type	Reference	Status	Support
1	ITS-S security mode enabled	4.5.1, 11	m	

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	

History

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V1.2.1	March 2017	Publication