ETSI TS 103 191-3 V1.2.1 (2017-03)

Intelligent Transport Systems (ITS);
Testing;
Conformance test specifications for
Facilities layer protocols and communication requirements
for infrastructure services;
Part 3: Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)

Reference
RTS/ITS-00177

Keywords
ATS, ITS, PIXIT, testing

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Contents

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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 3 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)".

The development of ITS test specifications follows the guidance provided in the ETSI EG 202 798 [i.1]. Therefore, the ATS documentation outlined in the present document is also based on the guidance provided in ETSI EG 202 798 [i.1].

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 contains the Abstract Test Suite (ATS) 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.7].

The objective of the present document is to provide a basis for conformance tests for MAPEM-SPATEM, IVIM and SREM-SSEM equipment giving a high probability of interoperability between different manufacturers' equipment.

The ISO standards for the methodology of conformance testing (ISO/IEC 9646-1 [i.4] and ISO/IEC 9646-2 [i.5]) as well as the ETSI rules for conformance testing (ETSI ETS 300 406 [i.8]) are used as a basis for the test methodology.

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 (2016-03): "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".

[3] ETSI TS 103 191-1 (V1.2.1): "Intelligent Transport Systems (ITS); Facilities layer protocols and communication requirements for infrastructure services; Part 1: Test requirements and Protocol Implementation Conformance Statement (PICS) pro forma".

[4] ETSI TS 103 191-2 (V1.2.1): "Intelligent Transport Systems (ITS); Testing; Conformance test specifications for Facilities layer protocols and communication requirements for infrastructure services; Part 2: Test Suite Structure and Test Purposes (TSS & TP)".

[5] ETSI TS 102 894-2 (V1.2.1): "Intelligent Transport Systems (ITS); Users and applications requirements; Part 2: Applications and facilities layer common data dictionary".

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 EG 202 798 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Framework for conformance and interoperability testing".

[i.2] ETSI TS 103 096-3 (V1.3.1): "Intelligent Transport Systems (ITS); Testing; Conformance test specifications for ITS Security; Part 3: Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".

[i.3] ETSI TR 103 099 (V1.4.1): "Intelligent Transport Systems (ITS); Architecture of conformance validation framework".

[i.4] ISO/IEC 9646-1 (1994): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework - Part 1: General concepts".

[i.5] ISO/IEC 9646-2 (1994): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 2: Abstract Test Suite specification".

[i.6] ISO/IEC 9646-6 (1994): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 6: Protocol profile test specification".

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

[i.8] ETSI ETS 300 406 (1995): "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[i.9] ETSI ES 201 873-1 (V4.5.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 1: TTCN-3 Core Language".

[i.10] ETSI ES 201 873-7 (V4.5.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 7: Using ASN.1 with TTCN-3".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given SAE J2735 [1], ISO/IEC 9646-1 [i.4] and in ISO/IEC 9646-7 [i.7] apply.

3.2 Abbreviations

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

ASN	Abstract Syntax Notation
ATM	Abstract Test Method
ATS	Abstract Test Suite
BI	Invalid Syntax or Behaviour Tests
BV	Valid Behaviour Tests
ES	ETSI Standard
IS	Infrastructure Services
ISO	International Organization for Standardization
ITS	Intelligent Transport Systems
IUT	Implementation Under Test
IVI	Infrastructure to Vehicle Information
IVIM	IVI-Message
MAPEM	MapData Messages
MSD	MesSage Dissemination
MSP	Message Processing
MTC	Main Test Component
PCTR	Protocol Conformance Test Report
PICS	Protocol Implementation Conformance Statement
PIXIT	Partial Protocol Implementation eXtra Information for Testing
PX	Pixit

RLT	Road and Lane topology
SAE	Society of Automotive Engineers
SAP	Service Access Point
SCS	System Conformance Statement
SCTR	System Conformance Test Report
SPATEM	Signal Phase And Timing Messages
SREM	Signal Request Message
SSEM	Signal Response Message
SUT	System Under Test
TC	Test Case
TLC	Traffic Light Control
TLM	Traffic Light Manoeuvre
TP	Test Purposes
TSS	Test Suite Structure
TTCN	Testing and Test Control Notation

4 Abstract Test Method (ATM)

4.1 Abstract protocol tester

The abstract protocol tester used by this test suite is described in figure 1. The test system simulates valid and invalid protocol behaviour, and analyses the reaction of the IUT.

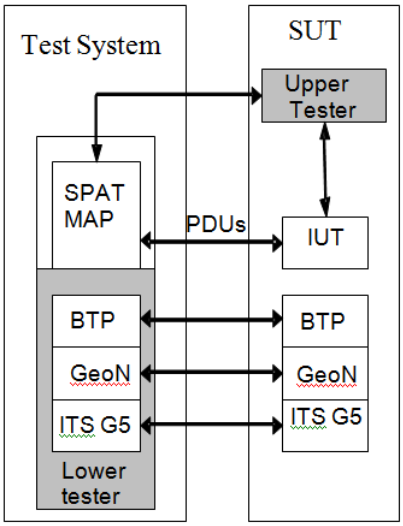

Figure 1: Abstract protocol tester - MAPEM SPATEM case

4.2 Test Configuration

This test suite uses a unique test configuration in order to cover the different test scenarios. In this configuration, the tester simulates one ITS station implementing the MAPEM SPATEM protocol.

4.3 Test architecture

The present document implements the general TTCN-3 test architecture described in ETSI EG 202 798 [i.1], clauses 6.3.2 and 8.3.1.

Figure 2 shows the test architecture used in for the MAPEM SPATEM ATS case. The MAPEM SPATEM test component requires using only the Main Test Component (MTC). The MTC communicates with the MAPEM SPATEM SUT over the MapemSpatemPort. The MapemSpatemPort is used to exchange MAPEM SPATEM protocol messages between the MAPEM SPATEM test component and the MAPEM SPATEM IUT.

NOTE: The same behaviour applies for IVIM and SREM SSEM.

The Upper tester entity in the SUT enables triggering MAPEM SPATEM functionalities by simulating primitives from application. It is required to trigger the MAPEM SPATEM layer in the SUT to send MAPEMs, which are resulting from upper layer primitives. Furthermore, receiving MAPEMs may result for the MAPEM SPATEM layer in sending primitives to the upper layer.

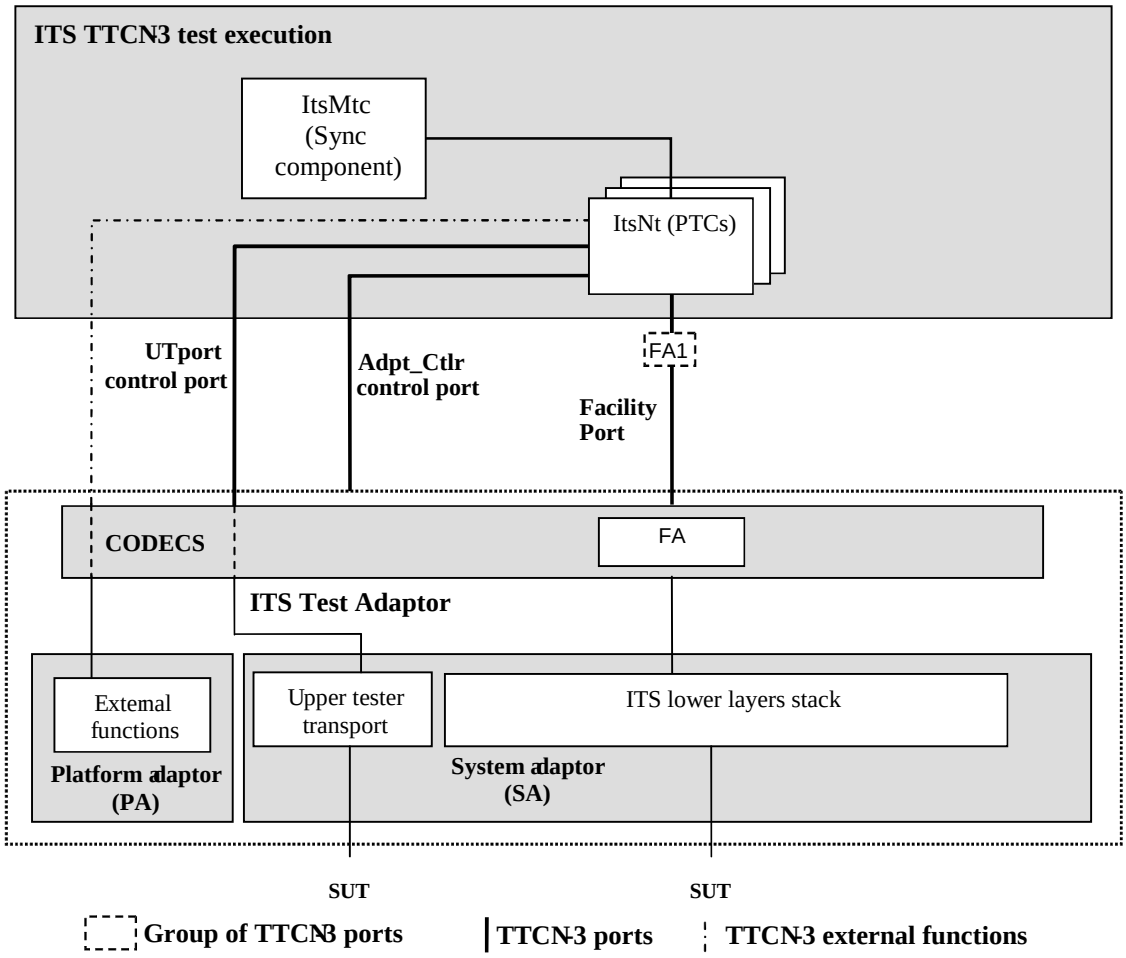

Figure 2: Test system architecture

4.4 Ports and ASPs (Abstract Services Primitives)

4.4.1 Introduction

Two ports are used by the MAPEM SPATEM ATS:

- The mapemSpatemPort, of type MapemSpatemPort.
- The utPort, of type UpperTesterPort.

Two port are used by the IVIM ATS:

- The ivimPort, of type IvimPort.

- The utPort, of type UpperTesterPort.

Two ports are used by the SREM SSEM ATS:

- The sremSsemPort, of type SremSsemPort.
- The utPort, of type UpperTesterPort.

4.4.2 MAPEM SPATEM ATS

4.4.2.1 Primitives of the mapemSpatemPort

Four types of primitives are used in the mapSpatPort:

- The MapemInd primitive used to receive messages of type MapemMsg (MAPEM_PDU + RawData).
- The SpatemInd primitive used to receive messages of type SpatemMsg (SPATEM_PDU + RawData).
- The MapemReq primitive used to send messages of type MAPEM_PDU.
- The SpatemReq primitive used to send messages of type SPATEM_PDU.

These four primitives use the MAPEM type and the SPATEM type, which is declared in the ETSI_TS_103301.asn ASN.1 module, following the ASN.1 definition from SAE J2735 [1].

4.4.2.2 Primitives of the utPort

This port uses six types of primitives:

- The UtInitialize primitive used to initialize IUT.
- The UtMapemSpatemTrigger primitive used to trigger upper layer events in IUT.
- The UtInitializeResult primitive used to receive upper layer result of initialization in IUT.
- The UtMapemSpatemTriggerResult primitive used to receive upper layer result of triggering MAPEM-SPATEM in IUT.
- The UtMapemEventInd primitive used to receive upper layer event of MAPEM_PDU in IUT.
- The UtSpatemEventInd primitive used to receive upper layer event of SPATEM_PDU in IUT.

4.4.3 IVIM ATS

4.4.3.1 Primitives of the ivimPort

Four types of primitives are used in the mapSpatPort:

- The ivimInd primitive used to receive messages of type IvimMsg (IVIM_PDU + RawData).
- The IvimReq primitive used to send messages of type IVIM_PDU.

These two primitives use the IVIM_PDU type, which is declared in the ETSI_TS_103301.asn ASN.1 module contained in the archive ts_10319103v010201p0.zip which accompanies the present document, following the ASN.1 definition from SAE J2735 [1].

4.4.3.2 Primitives of the utPort

This port uses six types of primitives:

- The UtInitialize primitive used to initialize IUT.
- The UtIvimtrigger primitive used to trigger upper layer events in IUT.
- The UtInitializeResult primitive used to receive upper layer result of initialization in IUT.
- The UtIvimTriggerResult primitive used to receive upper layer result of triggering IVIM in IUT.
- The UtIvimEventInd primitive used to receive upper layer event of IVIEM_PDU in IUT.

4.4.4 SSREM SSEM ATS

4.4.4.1 Primitives of the mapemSsemPort

Four types of primitives are used in the mapSpatPort:

- The SremInd primitive used to receive messages of type SremMsg (SSREM_PDU + RawData).
- The SsemInd primitive used to receive messages of type SsemMsg (SSEM_PDU + RawData).
- The SremReq primitive used to send messages of type SSREM_PDU.
- The SsemReq primitive used to send messages of type SSEM_PDU.

These four primitives use the SSREM type and the SSEM type, which is declared in the ETSI_TS_103301.asn ASN.1 module, following the ASN.1 definition from SAE J2735 [1].

4.4.4.2 Primitives of the utPort

This port uses six types of primitives:

- The UtInitialize primitive used to initialize IUT.
- The UtSremSsemTrigger primitive used to trigger upper layer events in IUT.
- The UtInitializeResult primitive used to receive upper layer result of initialization in IUT.
- The UtSremSsemTriggerResult primitive used to receive upper layer result of triggering SSREM-SSEM in IUT.
- The UtSremEventInd primitive used to receive upper layer event of SSREM_PDU in IUT.
- The UtSsemEventInd primitive used to receive upper layer event of SSEM_PDU in IUT.

4.5 Executing CA tests in secured mode

All the CA tests, with the execption of the SSP tests, can be executed with security enabled or with security disabled. The choice of running the CA tests in secured or non-secured mode has no impact on the result of the CA tests because the test verdicts assess CA protocol behaviour only.

The SSP tests can only be executed in secured mode.

The choice of running the CA tests in secured or non-secured mode can be controlled via the test suite parameter PICS_IS_IUT_SECURED, see table A.4/1 in ETSI TS 103 191-1 [3].

Before running the CA tests in secured mode, the following steps need to be executed:

- security certificates need to be generated for the tester as well as for the IUT, see ETSI TS 103 096-3 [i.2], clause 5.3.2.5;

- security certificates need to be installed onto the IUT, see ETSI TS 103 096-3 [i.2] clause 5.3.2.6;
- in case of usage of the ETSI test adapter, the following test adapter parameters need to be configured:

Table 0

Test adapter parameter	Default value	Comment
TsSecuredRootPath	data/certificates	The path to the location where all certificates (tester and IUT certificates) are installed
TsSecuredConfigId	void	Name of the subfolder in TsSecuredRootPath in order to organize multiple IUTs
UtSecuredMode	FALSE	To use upper-tester interface in non-secured mode

4.6 ETSI test adapter

All information of the ETSI test adapter is described in ETSI TR 103 099 [i.3].

5 Untestable Test Purposes

Table 1 gives a list of TPs, which are not implemented in the ATS due to the chosen ATM or other restrictions.

Table 1: Untestable TPs

Test purpose	Reason
TP_IS_TLM_SEC_SND_BV_01	Issues in ETSI TS 103 301 [2]
TP_IS_TLM_SSP_SND_BV_01	
TP_IS_TLM_SSP_SND_BV_02	
TP_IS_TLM_SSP_SND_BV_03	
TP_IS_TLM_SSP_RCV_BV_04	
TP_IS_TLM_SSP_RCV_BV_05	
TP_IS_TLM_SSP_SND_BV_06	
TP_IS_TLM_SSP_SND_BV_07	
TP_IS_TLM_SSP_SND_BO_08	
TP_IS_TLM_SSP_SND_BV_09	

6 ATS conventions

6.1 Introduction

The ATS conventions are intended to give a better understanding of the ATS but they also describe the conventions made for the development of the ATS. These conventions shall be considered during any later maintenance or further development of the ATS.

The ATS conventions contain two clauses, the testing conventions and the naming conventions. The testing conventions describe the functional structure of the ATS. The naming conventions describe the structure of the naming of all ATS elements.

To define the ATS, the guidelines of ETSI ETS 300 406 [i.8] were considered.

6.2 Testing conventions

6.2.1 Testing states

6.2.1.1 Initial state

All test cases start with the function f_prInitialState. This function brings the IUT in an "initialized" state by invoking the upper tester primitive UtInitialize.

6.2.1.2 Final state

All test cases end with the function f_poDefault. This function brings the IUT back in an "idle" state. As no specific actions are required for the idle state in SAE J2735 [1], the function f_ poDefault does not invoke any action.

As necessary, further actions may be included in the f_poDefault function.

6.2.2 Message types - ASN.1 definitions

ASN.1 definitions from SAE J2735 [1] and ETSI TS 103 301 [2] are directly imported in TTCN-3 using the ASN.1 import method specified in ETSI ES 201 873-7 [i.10].

The following example shows the TTCN-3 import statement used to import ASN.1 definitions in the TTCN-3 modules:

```
import from DSRC language "ASN.1:1997" all;
```

Generic ASN.1 definitions (message header, station Id, etc.), are defined in the Common Data Dictionary ETSI TS 102 894-2 [5] ASN.1 module. Thus the MAPEM SPATEM ASN.1 modules shall import these definitions from the Common Data Dictionary ETSI TS 102 894-2 [5] ASN.1 module.

6.3 Naming conventions

6.3.1 Introduction

This test suite follows the naming convention guidelines provided in the ETSI EG 202 798 [i.1].

6.3.2 General guidelines

The naming convention is based on the following underlying principles:

- in most cases, identifiers should be prefixed with a short alphabetic string (specified in table 2) indicating the type of TTCN-3 element it represents;
- suffixes should not be used except in those specific cases identified in table 2;
- prefixes and suffixes should be separated from the body of the identifier with an underscore ("_");

EXAMPLE 1: `c_sixteen, t_wait`.

- only module names, data type names and module parameters should begin with an upper-case letter. All other names (i.e. the part of the identifier following the prefix) should begin with a lower-case letter;
- the start of second and subsequent words in an identifier should be indicated by capitalizing the first character. Underscores should not be used for this purpose.

EXAMPLE 2: `f_initialState`.

Table 2 specifies the naming guidelines for each element of the TTCN-3 language indicating the recommended prefix, suffixes (if any) and capitalization.

Table 2: ETSI TTCN-3 generic naming conventions

Language element	Naming convention	Prefix	Example identifier
Module	Use upper-case initial letter	none	IPv6Templates
Group within a module	Use lower-case initial letter	none	messageGroup
Data type	Use upper-case initial letter	none	SetupContents
Message template	Use lower-case initial letter	m_	m_setupInit
Message template with wildcard or matching expression	Use lower-case initial letters	mw_	mw_anyUserReply
Signature template	Use lower-case initial letter	s_	s_callSignature
Port instance	Use lower-case initial letter	none	signallingPort
Test component instance	Use lower-case initial letter	none	userTerminal
Constant	Use lower-case initial letter	c_	c_maxRetransmission
Constant (defined within component type)	Use lower-case initial letter	cc_	cc_minDuration
External constant	Use lower-case initial letter	cx_	cx_macId
Function	Use lower-case initial letter	f_	f_authentication()
External function	Use lower-case initial letter	fx_	fx_calculateLength()
Altstep (incl. Default)	Use lower-case initial letter	a_	a_receiveSetup()
Test case	Use ETSI numbering	TC_	TC_COR_0009_47_ND
Variable (local)	Use lower-case initial letter	v_	v_macId
Variable (defined within a component type)	Use lower-case initial letters	vc_	vc_systemName
Timer (local)	Use lower-case initial letter	t_	t_wait
Timer (defined within a component)	Use lower-case initial letters	tc_	tc_authMin
Module parameters for PICS	Use all upper case letters	PICS_	PICS_DOOROPEN
Module parameters for other parameters	Use all upper case letters	PX_	PX_TESTER_STATION_ID
Formal Parameters	Use lower-case initial letter	p_	p_macId
Enumerated Values	Use lower-case initial letter	e_	e_syncOk

6.3.3 ITS specific TTCN-3 naming conventions

Next to such general naming conventions, table 3 shows specific naming conventions that apply to the ITS TTCN-3 test suite.

Table 3: ITS specific TTCN-3 naming conventions

Language element	Naming convention	Prefix	Example identifier
ITS Module	Use upper-case initial letter	Its"IUTname"_	ItsMapemSpatem_
Module containing types and values	Use upper-case initial letter	Its"IUTname"_TypesAndValues	ItsMapemSpatem_TypesAndValues
Module containing Templates	Use upper-case initial letter	Its"IUTname"_Templates	ItsMapemSpatem_Templates
Module containing test cases	Use upper-case initial letter	Its"IUTname"_TestCases	ItsMapemSpatem_TestCases
Module containing functions and external functions	Use upper-case initial letter	Its"IUTname"_Functions	ItsMapemSpatem_Functions
Module containing main component definitions components, ports and message definitions	Use upper-case initial letter	Its"IUTname"_TestSystem	ItsMapemSpatem_TestSystem
Module containing the control part	Use upper-case initial letter	Its"IUTname"_TestControl	ItsMapemSpatem_TestControl

6.3.4 Usage of Log statements

All TTCN-3 log statements use the following format using the same order:

- Three asterisks.
- The TTCN-3 test case or function identifier in which the log statement is defined.
- One of the categories of log: INFO, WARNING, ERROR, PASS, FAIL, INCONC, TIMEOUT.
- Free text.
- Three asterisks.

EXAMPLE 1:
```
log("*** " & testcasename() & ": INFO: No more IVIM shall be set.
***");
```

Furthermore, the following rules are applied for the all ATS:

- Log statements are used in the body of the functions, so that invocations of functions are visible in the test logs.
- All TTCN-3 setverdict statements are combined (as defined in ETSI ES 201 873-1 [i.9]) with a log statement following the same above rules (see example 2).

EXAMPLE 2:
```
setverdict(pass, "*** " & testcasename() & ": PASS: Expected IVIM
received ***").
```

6.3.5 Test Case (TC) identifier

Table 4 shows the test case naming convention, which follows the same naming convention as the test purposes.

Table 4: TC naming convention

Identifier	TP_<root>_<gr>_<x>_<nn>		
	<root> = root	IS_TLM	
	<gr> = group	MSGF	Message Format
		EVGN	Event Generation
		COMM	Communication
	<x> = type of testing	BV	Valid Behaviour tests
		BO	Invalid Syntax or Behaviour Tests
	<nn> = sequential number		01 to 99
	<root> = root	IS_RLT	
	<gr> = group	MSGF	Message Format
		EVGN	Event Generation
		COMM	Communication
	<x> = type of testing	BV	Valid Behaviour tests
		BO	Invalid Syntax or Behaviour Tests
	<nn> = sequential number		01 to 99
	<root> = root	IS_IVI	
	<gr> = group	MSGF	Message Format
		EVGN	Event Generation
		EVUP	Event Update
		EVTR	Event Termination
		GFQ	Generation Frequency
		COMM	Communication
	<x> = type of testing	BV	Valid Behaviour tests
		BO	Invalid Syntax or Behaviour Tests
		TI	Timer
	<nn> = sequential number		01 to 99
	<root> = root	IS_TLC	
	<gr> = group	MSGF	Message Format
		EVGN	Event Generation
		COMM	Communication
	<x> = type of testing	BV	Valid Behaviour tests
		BI	Invalid Syntax or Behaviour Tests
	<nn> = sequential number		01 to 99

EXAMPLE: TP identifier: TP_IS_RLT_MSGF_BV_01
TC identifier: TC_IS_RLT_MSGF_BV_01

Annex A (normative): TTCN-3 library modules

A.1 Electronic annex, zip file with TTCN-3 code

This test suite has been produced using the Testing and Test Control Notation (TTCN) according to ETSI ES 201 873-1 [i.9].

SAE J2735 [1], ETSI TS 103 301 [2], ETSI TS 103 191-1 [3] and ETSI TS 103 191-2 [4] have been applied to develop this test suite.

This test suite has been compiled error-free using two different commercial TTCN-3 compilers.

The TTCN-3 library modules, which form parts of the present document, are contained in the archive ts_10319103v010201p0.zip which accompanies the present document.

Annex B (normative): Partial PIXIT pro forma

B.1 Partial cancellation of copyright

B.2 Introduction

The PIXIT pro forma is based on ISO/IEC 9646-6 [i.6].

B.3 Identification summary

The Identification summary shall be as specified in table B.1.

Table B.1 Identification summary

PIXIT Number:	
Test Laboratory Name:	
Date of Issue:	
Issued to:	

B.4 ATS summary

The ATS summary shall be as specified in table B.2.

Table B.2 ATS summary

Protocol Specification:	SAE J2735 [1]
Protocol to be tested:	MAPEM-SPATEM, IVIM & SREM-SSEM Messages
ATS Specification:	ETSI TS 103 191-3
Abstract Test Method:	Clause 4

B.5 Test laboratory

The Test laboratory info shall be specified as in table B.3.

Table B.3 Test laboratory info

Test Laboratory Identification:	
Test Laboratory Manager:	
Means of Testing:	
SAP Address:	

B.6 Client identification

The Client identification shall be specified as in table B.4.

Table B.4 Client identification

Client Identification:	
Client Test manager:	
Test Facilities required:	

B.7 SUT

SUT shall be specified as in table B.5.

Table B.5 SUT

Name:	
Version:	
SCS Number:	
Machine configuration:	
Operating System Identification:	
IUT Identification:	
PICS Reference for IUT:	
Limitations of the SUT:	
Environmental Conditions:	

B.8 Protocol layer information

B.8.1 Protocol identification

Protocol identification shall be as specified in table B.6.

Table B.6 Protocol identification

Name:	SAE J2735 [1], ETSI TS 103 301 [2]
Version:	
PICS References:	ETSI TS 103 191-1 [3]

B.8.2 IUT information

B.8.2.1 MAPEM/SPATEM

MAPEM/SPATEM PIXITs shall be as in table B.7.

Table B.7: MAPEM SPATEM PIXITs

Identifier	Description	
PX_MSG_ISSUE_REVISION	**Comment**	MsgCount of MAPEM sent by tester
	Type	MsgCount
	Default value	10
PX_INTERSECTIONSTATE_REVISION	**Comment**	Revision in IntersectionState of SPATEM sent by tester
	Type	MsgCount
	Default value	20
PX_INTERSECTION_ID	**Comment**	Id of Intersection of SPATEM sent by tester
	Type	IntersectionId
	Default value	'ABAB'O
PX_SIGNAL_GROUP_ID	**Comment**	SignalGroup of MovementState of SPATEM sent by tester
	Type	SignalGroupId
	Default value	128

B.8.2.2 IVIM

IVIM PIXITs shall be as in table B.8.

Table B.8: IVIM PIXITs

Identifier	Description	
PX_PROVIDER	**Comment**	Provider description of tester
	Type	Provider

	Default value	{
		countryCode := '0000000000'B,
		providerIdentifier := 0
		}

B.8.2.3 SREM/SSEM

SREM/SSEM PIXITs shall be as in table B.9.

Table B.9: SREM/SSEM PIXITs

Identifier	Description	
PX_BASICVEHICLEROLE	**Comment**	Used by tester in SREM trigger request
	Type	BasicVehicleRole
	Default value	emergency
PX_REQUESTIMPORTANCELEVEL	**Comment**	Used by tester in SREM trigger request
	Type	RequestImportanceLevel
	Default value	requestImportanceLevel13
PX_SECOND	**Comment**	Used in SREM and SSEM sent by tester
	Type	DSecond
	Default value	0
PX_STATUS	**Comment**	Used in SSEM sent by tester
	Type	IntersectionStatusObject
	Default value	'1 000'

B.8.2.4 Generic

Generic PIXITs shall be as in table B.10.

Table B.10: Generic PIXITs

Identifier	Description	
PX_IUT_STATION_ID	**Comment**	Station Id sent by the IUT
	Type	Integer
	Default value	1
PX_IUT_STATION_TYPE	**Comment**	Station Type sent by the IUT
	Type	Integer
	Default value	1
PX_TESTER_STATION_ID	**Comment**	Station Id sent by the tester
	Type	Integer
	Default value	111 111
PX_TESTER_STATION_TYPE	**Comment**	Station Type sent by the tester
	Type	Integer
	Default value	1
PX_TS_LATITUDE	**Comment**	The Latitude of the tester (microdegrees)
	Type	Integer
	Default value	436 175 790
PX_TS_LONGITUDE	**Comment**	The Longitude of the tester (microdegrees)
	Type	Integer
	Default value	70 546 480
PX_TIME_DELTA	**Comment**	Tolerance to be applied when checking timestamps (ms)
	Type	Integer
	Default value	1 000
PX_GNSS_SCENARIO_SUPPORT	**Comment**	Does the IUT support GNSS scenarios?
	Type	Boolean
	Default value	FALSE
PX_CERT_FOR_TS	**Comment**	The certificate identifier that the tester (TS) shall use in case of secured IUT
	Type	Charstring
	Default value	"CERT_TS_A_AT"

Annex C (normative): PCTR pro forma

C.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 PCTR pro forma in this annex so that it can be used for its intended purposes and may further publish the completed PCTR.

C.2 Introduction

The PCTR pro forma is based on ISO/IEC 9646-6 [i.6].

C.3 Identification summary

C.3.1 Protocol conformance test report

A protocol conformance test report shall be as in table C.1.

Table C.1 Protocol conformance test report

PCTR Number:	
PCTR Date:	
Corresponding SCTR Number:	
Corresponding SCTR Date:	
Test Laboratory Identification:	
Test Laboratory Manager:	
Signature:	

C.3.2 IUT identification

An IUT shall be identified as specified in table C.2.

Table C.2 IUT identification

Name:	
Version:	
Protocol specification:	
PICS:	
Previous PCTR if any:	

C.3.3 Testing environment

The testing environment shall be as specified in table C.3.

Table C.3 Testing environment

PIXIT Number:	
ATS Specification:	
Abstract Test Method:	
Means of Testing identification:	
Date of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

C.3.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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C.3.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the PCTR, for example, to note disagreement between the two parties.

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C.4 IUT Conformance status

This IUT has or has not been shown by conformance assessment to be non-conforming to the specified protocol specification.

Strike the appropriate words in this sentence. If the PICS for this IUT is consistent with the static conformance requirements (as specified in clause C.3 in the present document) and there are no "FAIL" verdicts to be recorded (in clause C.6 in the present document) strike the words "has or", otherwise strike the words "or has not".

C.5 Static conformance summary

The PICS for this IUT is or is not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in this sentence.

C.6 Dynamic conformance summary

The test campaign did or did not reveal errors in the IUT.

Strike the appropriate words in this sentence. If there are no "FAIL" verdicts to be recorded (in clause C.6 of the present document) strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

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C.7 Static conformance review report

If clause C.3 indicates non-conformance, this clause itemizes the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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C.8 Test campaign report

Table C.4: MAPEM and SPATEM test cases

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in clause C.7)
TC_IS_RLT_MSGF_BV_01	Yes/No	Yes/No		
TC_IS_RLT_EVGN_BV_01	Yes/No	Yes/No		
TC_IS_RLT_EVGN_BV_02	Yes/No	Yes/No		
TC_IS_RLT_COMM_BV_01	Yes/No	Yes/No		
TC_IS_RLT_COMM_BV_02_01	Yes/No	Yes/No		
TC_IS_RLT_COMM_BV_02_02	Yes/No	Yes/No		
TC_IS_RLT_COMM_BV_03	Yes/No	Yes/No		
TC_IS_TLM_MSGF_BV_01	Yes/No	Yes/No		
TC_IS_TLM_EVGN_BV_01	Yes/No	Yes/No		
TC_IS_TLM_EVGN_BV_02	Yes/No	Yes/No		
TC_IS_TLM_EVGN_BV_03	Yes/No	Yes/No		
TC_IS_TLM_EVGN_BV_04	Yes/No	Yes/No		
TC_IS_TLM_COMM_BV_01	Yes/No	Yes/No		
TC_IS_TLM_COMM_BV_02_01	Yes/No	Yes/No		
TC_IS_TLM_COMM_BV_02_02	Yes/No	Yes/No		
TC_IS_TLM_COMM_BV_03	Yes/No	Yes/No		
TC_IS_TLM_MSGF_BV_02	Yes/No	Yes/No		

Table C.5: IVIM test cases

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in clause C.7)
TC_IS_IVI_MSGF_BV_01	Yes/No	Yes/No		
TC_IS_IVI_EVGN_BV_01	Yes/No	Yes/No		
TC_IS_IVI_EVGN_BV_02	Yes/No	Yes/No		
TC_IS_IVI_EVGN_BV_03	Yes/No	Yes/No		
TC_IS_IVI_EVGN_BV_04	Yes/No	Yes/No		
TC_IS_IVI_EVGN_BV_05	Yes/No	Yes/No		
TC_IS_IVI_EVTR_BV_01	Yes/No	Yes/No		
TC_IS_IVI_EVTR_BV_02	Yes/No	Yes/No		
TC_IS_IVI_GFQ_TI_01	Yes/No	Yes/No		
TC_IS_IVI_GFQ_TI_02	Yes/No	Yes/No		
TC_IS_IVI_COMM_BV_01_01	Yes/No	Yes/No		
TC_IS_IVI_COMM_BV_01_02	Yes/No	Yes/No		
TC_IS_IVI_COMM_BV_02	Yes/No	Yes/No		
TC_IS_IVI_EVUP_BV_01	Yes/No	Yes/No		
TC_IS_IVI_EVUP_BV_02	Yes/No	Yes/No		
TC_IS_IVI_EVUP_BV_03	Yes/No	Yes/No		
TC_IS_IVI_EVUP_BV_04	Yes/No	Yes/No		
TC_IS_IVI_EVUP_BV_05	Yes/No	Yes/No		
TC_IS_IVI_EVRP_BV_01	Yes/No	Yes/No		
TC_IS_IVI_EVRP_BV_02	Yes/No	Yes/No		
TC_IS_IVIM_MSP_BV_01	Yes/No	Yes/No		

Table C.6: SSREM and SSEM test cases

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in clause C.7)
TC_IS_RLT_MSGF_BV_01	Yes/No	Yes/No		
TC_IS_TLC_MSGF_BV_02	Yes/No	Yes/No		
TC_IS_TLC_MSGF_BV_03	Yes/No	Yes/No		
TC_IS_TLC_MSGF_BV_04	Yes/No	Yes/No		
TC_IS_TLC_EVGN_BV_01	Yes/No	Yes/No		
TC_IS_TLC_EVGN_BV_02	Yes/No	Yes/No		
TC_IS_TLC_EVUP_BV_01	Yes/No	Yes/No		
TC_IS_TLC_COMM_BV_01_01	Yes/No	Yes/No		
TC_IS_TLC_COMM_BV_01_02	Yes/No	Yes/No		

C.9 Observations

Additional information relevant to the technical content of the PCTR is given here.

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History

Document history		
V1.1.1	September 2015	Publication
V1.2.1	March 2017	Publication