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Technical Specification

**Intelligent Transport Systems (ITS);
Road Transport and Traffic Telematics (RTTT);
Test specifications for Dedicated Short
Range Communication (DSRC) transmission equipment;
Part 2: DSRC application layer;
Sub-Part 1: Protocol Implementation Conformance
Statement (PICS) proforma specification**



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Foreword

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

The present document is part 2, sub-part 1 of a multi-part deliverable covering Intelligent Transport Systems (ITS); Road Transport and Traffic Telematics (RTTT); Test specifications for Dedicated ShortRange Communication (DSRC) transmission equipment as identified below as identified below:

Part 1: "DSRC data link layer: medium access and logical link control";

Part 2: "DSRC application layer":

Sub-part 1: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Sub-part 2: "Test Suite Structure and Test Purposes (TSS&TP)";

Sub-part 3: "Abstract Test Suite (ATS) and partial PIXIT proforma".

1 Scope

The present document specifies partial Protocol Implementation Conformance Statement (PICS) proformas for the application layer of CEN DSRC as defined in EN 12834 [1], in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 [4] and ETS 300 406 [5].

This proforma is intended for use by suppliers of equipment which is claimed to conform to the CEN DSRC application layer, as specified in EN 12834 [1].

The present document also contains profile Implementation Conformance Statement (ICS) proformas and profile Requirements Lists for the application layer for use by suppliers of equipment which is claimed to conform to EN 13372 [2], DSRC Profiles for RTTT.

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a telecommunication specification. Such a statement is called an Implementation Conformance Statement (ICS). The present document provides proforma ICS templates, to be filled in by equipment suppliers.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

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For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

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

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] CEN EN 12834 (2003): "Road transport and traffic telematics - Dedicated Short Range Communication (DSRC). DSRC application layer".
- [2] CEN EN 13372 (2004): "Road Transport and Traffic Telematics (RTTT) - Dedicated short-range communication - Profiles for RTTT applications".
- [3] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concept".

- [4] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [5] ETSI ETS 300 406: "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Not applicable.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 12834 [1], EN 13372 [2], ISO/IEC 9646-1 [3], ISO/IEC 9646-7 [4] and the following apply:

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

NOTE: The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

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

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in EN 12834 [1], EN 13372 [2], ISO/IEC 9646-1 [3], ISO/IEC 9646-7 [4] and the following apply:

DSRC	Dedicated Short Range Communication
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
ME	Mobile Equipment
OBU	On Board Unit

NOTE: An alternative descriptor to Mobile Equipment.

PICS	Protocol Implementation Conformance Statement
RL	Requirements List
RSU	Road Side Unit

NOTE: An alternative descriptor to Fixed Equipment.

RTTT	Road Transport and Traffic Telematics
SUT	System Under Test

4 Overview of the templates

The present document contains separate PICS templates for On Board Unit (OBU) and Road Side Unit (RSU). These can be found in annexes A and B respectively.

In addition, the present document contains profile Requirement Lists (RL) and profile-specific ICS proformas for equipment claimed to conform to EN 13372 [2]. Again, these exist for the OBU and for the RSU.

5 Conformance requirement concerning PICS

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

An ICS which conforms to the present document shall be a conforming PICS proforma completed in accordance with the instructions for completion given at the start of each annex.

Annex A (normative): ICS proforma for DSRC application layer for OBU

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 ICS proforma in this annex so that it can be used for its intended purposes and may further publish the completed ICS.

A.1 Guidance for completing the PICS proforma

A.1.1 Purposes and structure

The purpose of this PICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in EN 12834 [1] may provide information about the implementation in a standardized manner.

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

- guidance for completing the PICS proforma;
- identification of the implementation;
- identification of the protocol;
- global statement of conformance;
- PICS proforma tables:
 - Kernels;
 - Initialization Kernel;
 - Transport Kernel;
 - Broadcast Kernel;
 - ASN.1 Data Types.

A.1.2 Abbreviations and conventions

The PICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [4].

Item column

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 [4], 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 a unique group of related optional items and the logic of their selection which is defined immediately following the table.
ci	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 a unique conditional status expression which is defined immediately following the table.

Reference column

The reference column makes reference to EN 12834 [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 [4], 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: As stated in ISO/IEC 9646-7 [4], 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:	5 .. 20
- list of values:	<value1>, <value2>, ..., <valueN>
example:	2, 4, 6, 8, 9
example:	'1101'B, '1011'B, '1111'B
example:	'0A'H, '34'H, '2F'H
- list of named values:	<name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
example:	reject(1), accept(2)
- length:	size (<min size> .. <max size>)
example:	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 proforma 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 1: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 2: 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.1.3 Instructions for completing the PICS proforma

The supplier of the implementation shall complete the PICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in clause A.1.2.

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

A.2 Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should 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 should both be filled in if they are different.

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

A.2.1 Date of the statement

.....

A.2.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version:

.....

A.2.3 System Under Test (SUT) identification

SUT name:

.....
.....

Hardware configuration:

.....
.....
.....

Operating system:

.....

A.2.4 Product supplier

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....
.....

A.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....

A.2.6 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.3 Identification of the protocol

This PICS proforma applies to the following standard:

EN 12834 [1]: "Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC application layer". This PICS proforma applies only for On-Board Units.

A.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No)

NOTE: Answering "No" to this question indicates non-conformance to the protocol 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 proforma.

A.5 Kernels

Table A.1: Kernels

Item	Supported Kernels	Reference	Status	Support
1	Initialization Kernel	5	o.1	
2	Transport Kernel	5	m	
3	Broadcast Kernel	5	o.1	

o..1: It is mandatory to support at least one of these items.

A.6 Initialization Kernel

Prerequisite: A.1/1 -- Initialization Kernel

A.6.1 Procedures

Table A.2: I-Kernel Procedures

Item	Procedures supported	Reference	Status	Support
1	Generation of private random LID	7.3.2	m	
2	Generation of VST with profile and application information	7.3.2	m	
3	Comparison of BeaconID with last received BeaconID	7.3.2	m	
4	Comparison of BST received time with time of last received BST	7.3.2	m	
5	Invalidation of LID	7.3.9	m	
6	Multiple DSRCApplicationEntityIDs in mand or nonmand ApplicationList (multiple applications supported)	7.3.2	o	

A.6.2 PDU

Table A.3: I-Kernel PDUs

Item	PDU	Sending			Receiving		
		Reference	Status	Support	Reference	Status	Support
1	BST	7.3	x		7.3.2	m	
2	VST	7.3.2	m		7.3	n/a	
3	RELEASE	7.3	x		7.3.9	m	

Table A.4: Received BST Parameters

Item	Parameter	Reference	Status	Support
1	rsu	A	m	
2	Time	A	m	
3	Profile	A	m	
4	mandApplications.aid	A	m	
5	mandApplications.eid	A	o	
6	mandApplications.parameter	A	o	
7	nonmandApplications.aid	A	o	
8	nonmandApplications.eid	A	c1	
9	nonmandApplications.parameter	A	c1	
10	profileList	A	m	

c1: IF A.4/7 -- nonmandApplications.aid supported THEN o ELSE n/a

Table A.5: Transmitted VST Parameters

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	profile	A	m	
3	applications.aid	A	m	
4	applications.eid	A	o	
5	applications.parameter	A	o	
6	obeConfiguration	A	m	

A.7 Transport Kernel

A.7.1 Procedures

Table A.6: T-Kernel Procedures

Item	Procedures supported	Reference	Status	Support
1	Management of FlowControl	6.3.1, 6.3.12	m	
2	Management of Mode	6.2.4, 6.3.1, 6.3.12	m	
3	ASN.1 Encoding and Decoding	6.3.2, 6.3.11	m	
4	Application capable of creating T-APDUs which cause max length of LLC frame to be exceeded	6.3.3, 6.3.10	o	
5	Fragmentation and Defragmentation	6.3.3, 6.3.10	c2	
6	Octet Alignment	6.3.4	m	
7	Multiplexing and Demultiplexing	6.3.5, 6.3.9	c3	
8	Concatenation	6.3.7	o	
9	Concatenation with Chaining	6.3.8	o	
10	SDU to PDU – General Procedure	6.3.1	m	
11	PDU to SDU – Delivery of SDU	6.3.12	m	
12	PDU to SDU – Management of EID	6.3.12	m	

c2: IF A.6/4 -- application capable of causing max LLC frame length to be exceeded THEN m ELSE n/a

c3: IF A.2/6 -- multiple applications supported THEN o ELSE n/a

Table A.7: Fragmentation Header

Item	Procedures supported	Reference	Status	Support
1	One octet fragmentation header	6.3.3	m	
2	Two octet fragmentation header	6.3.3	o	
3	Three octet fragmentation header	6.3.3	o	

A.7.2 PDU

Table A.8: T-Kernel PDUs

Item	PDUs implemented	Sending			Receiving		
		Reference	Status	Support	Reference	Status	Support
1	Get-Request	A	o		A	o	
2	Get-Response	A	o		A	o	
3	Set-Request	A	o		A	o	
4	Set-Response	A	o		A	o	
5	Action-Request	A	o		A	o	
6	Action-Response	A	o		A	o	
7	Event-Report-Request	A	o		A	o	
8	Event-Report-Response	A	o		A	o	
9	Initialization-Request	A	x		A	c4	
10	Initialization-Response	A	c4		A	n/a	

c4: IF A.1/1 -- I-Kernel supported THEN m ELSE n/a

Table A.9: Transmitted Get-Request Parameters

Prerequisite: A.8/1 Sending -- Sending of Get-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	accessCredentials	A	o	
4	iid	A	o	
5	attrIdList	A	o	

Table A.10: Received Get-Request Parameters

Prerequisite: A.8/1 Receiving -- Receiving of Get-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	accessCredentials	A	o	
4	iid	A	o	
5	attrIdList	A	o	

Table A.11: Transmitted Get-Response Parameters

Prerequisite: A.8/2 Sending -- Sending of Get-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	attributelist	A	o	
5	ret	A	o	

Table A.12: Received Get-Response Parameters

Prerequisite: A.8/2 Receiving -- Receiving of Get-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	attributelist	A	o	
5	ret	A	o	

Table A.13: Transmitted Set-Request Parameters

Prerequisite: A.8/3 Sending -- Sending of Set-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	mode	A	m	
3	eid	A	m	
4	accessCredentials	A	o	
5	attrList	A	m	
6	iid	A	o	

Table A.14: Received Set-Request Parameters

Prerequisite: A.8/3 Receiving -- Receiving of Set-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	mode	A	m	
3	eid	A	m	
4	accessCredentials	A	o	
5	attrList	A	m	
6	iid	A	o	

Table A.15: Transmitted Set-Response Parameters

Prerequisite: A.8/4 Sending -- Sending of Set-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

Table A.16: Received Set-Response Parameters

Prerequisite: A.8/4 Receiving -- Receiving of Set-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

Table A.17: Transmitted Action-Request Parameters

Prerequisite: A.8/5 Sending -- Sending of Action-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	actionType	A	m	
4	accessCredentials	A	o	
5	actionParameter	A	o	
6	iid	A	o	

Table A.18: Received Action-Request Parameters

Prerequisite: A.8/5 Receiving -- Receiving of Action-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	actionType	A	m	
4	accessCredentials	A	o	
5	actionParameter	A	o	
6	iid	A	o	

Table A.19: Transmitted Action-Response Parameters

Prerequisite: A.8/6 Sending -- Sending of Action-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	responseParameter	A	o	
5	ret	A	o	

Table A.20: Received Action-Response Parameters

Prerequisite: A.8/6 Receiving -- Receiving of Action-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	responseParameter	A	o	
5	ret	A	o	

Table A.21: Transmitted Event-Report-Request Parameters

Prerequisite: A.8/7 Sending -- Sending of Event-Report-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	eventType	A	m	
4	accessCredentials	A	o	
5	eventParameter	A	o	
6	iid	A	o	

Table A.22: Received Event-Report-Request Parameters

Prerequisite: A.8/7 Receiving -- Receiving of Event-Report-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	eventType	A	m	
4	accessCredentials	A	o	
5	eventParameter	A	o	
6	iid	A	o	

Table A.23: Transmitted Event-Report-Response Parameters

Prerequisite: A.8/8 Sending -- Sending of Event-Report-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

Table A.24: Received Event-Report-Response Parameters

Prerequisite: A.8/8 Receiving -- Receiving of Event-Report-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

A.8 Broadcast Kernel

Prerequisite: A.1/3 -- Broadcast Kernel

A.8.1 Procedures

Table A.25: B-Kernel Procedures

Item	Procedures supported	Reference	Status	Support
1	Reception of the BroadcastPool	8.3.2	m	
2	Retrieval of file	8.3.4	m	

A.8.2 PDU

Table A.26: B-Kernel PDUs

Item	PDU	Sending			Receiving		
		Reference	Status	Support	Reference	Status	Support
1	BroadcastData	8.2.1, 8.2.2	x		8.2.1, 8.2.2	m	

A.9 ASN.1 Data Types

A.9.1 Extendable data types

Table A.27: ASN.1 extendable data types

Item	ASN.1 Data elements	Type	Value or size constraint	Limit	Reference	Maximum value or size supported
1	Action-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
2	ActionType	INTEGER	(0..127,...)	No	A	
3	Attributes.attributeld	INTEGER	(0..127,...)	No	A	
4	AttributeldList.INTEGER	INTEGER	(0..127,...)	No	A	
5	Container.Octetstring	OCTET STRING	(SIZE (0..127, ...))	No	A	
6	Container.vector.INTEGER	INTEGER	(0..127,...)	No	A	
7	Dsrc-EID	INTEGER	(0..127, ...)	No	A	
8	DSRCApplicationEntityID	INTEGER	(0..31,...)	No	A	
9	Event-Report-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
10	EventType	INTEGER	(0..127,...)	No	A	
11	FileName.fileID	INTEGER	(0..127,...)	No	A	
12	Get-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
13	Profile	INTEGER	(0..127,...)	No	A	
14	ReturnStatus	INTEGER	(0..127,...)	No	A	
15	Set-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
16	Container	CHOICE	(0..127,...)	No	A	

A.9.2 Extendable lists

Table A.28: ASN.1 extendable lists

Item	ASN.1 Data elements	Type	Size constraint	Limit	Reference	Maximum size supported
1	ApplicationList	SEQUENCE OF	(0..127,...)	No	A	
2	AttributeldList	SEQUENCE OF	(0..127,...)	No	A	
3	AttributeList	SEQUENCE OF	(0..127,...)	No	A	
4	BroadcastPool.content	SEQUENCE OF	(0..127,...)	No	A	
5	BST.profileList	SEQUENCE OF	(0..127,...)	No	A	
6	Directory	SEQUENCE OF	(0..127,...)	No	A	
7	File	SEQUENCE OF	(0..127,...)	No	A	

Annex B (normative): ICS proforma for DSRC application layer for RSU

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 ICS proforma in this annex so that it can be used for its intended purposes and may further publish the completed ICS.

B.1 Guidance for completing the PICS proforma

B.1.1 Purposes and structure

The purpose of this PICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in EN 12834 [1] may provide information about the implementation in a standardized manner.

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

- guidance for completing the PICS proforma;
- identification of the implementation;
- identification of the protocol;
- global statement of conformance;
- PICS proforma tables:
 - Kernels;
 - Initialization Kernel;
 - Transport Kernel;
 - Broadcast Kernel;
 - ASN.1 Data Types.

B.1.2 Abbreviations and conventions

The PICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [4].

Item column

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 [4], 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 a unique group of related optional items and the logic of their selection which is defined immediately following the table.
ci	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 a unique conditional status expression which is defined immediately following the table.

Reference column

The reference column makes reference to EN 12834 [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 [4], 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: As stated in ISO/IEC 9646-7 [4], 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:	5 .. 20
- list of values:	<value1>, <value2>, ..., <valueN>
example:	2, 4, 6, 8, 9
example:	'1101'B, '1011'B, '1111'B
example:	'0A'H, '34'H, '2F'H
- list of named values:	<name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
example:	reject(1), accept(2)
- length:	size (<min size> .. <max size>)
example:	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 proforma 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 1: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 2: 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.

B.1.3 Instructions for completing the PICS proforma

The supplier of the implementation shall complete the PICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in clause B.1.2.

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

B.2 Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should 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 should both be filled in if they are different.

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

B.2.1 Date of the statement

.....

B.2.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version:

.....

B.2.3 System Under Test (SUT) identification

SUT name:

.....
.....

Hardware configuration:

.....
.....
.....

Operating system:

.....

B.2.4 Product supplier

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....
.....

B.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....

B.2.6 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:

.....
.....
.....

B.3 Identification of the protocol

This PICS proforma applies to the following standard:

EN 12834 [1]: "Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC application layer". This PICS proforma applies only for Road-Side Units.

B.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No)

NOTE: Answering "No" to this question indicates non-conformance to the protocol 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 proforma.

B.5 Kernels

Table B.1: Kernels

Item	Supported Kernels	Reference	Status	Support
1	Initialization Kernel	5	o.1	
2	Transport Kernel	5	m	
3	Broadcast Kernel	5	o.1	

o.1: It is mandatory to support at least one of these items.

B.6 Initialization Kernel

Prerequisite: B.1/1 -- Initialization Kernel

B.6.1 Procedures

Table B.2: I-Kernel Procedures

Item	Procedures supported	Reference	Status	Support
1	Transmission of BST	7.3.1	m	
2	Evaluation of VST	7.3.3	m	
3	Release	7.3.8	m	
4	Multiple DSRCApplicationEntityIDs in mand or nonmand ApplicationList (multiple applications supported)	7.3.2	o	

B.6.2 PDU

Table B.3: I Kernel PDUs

Item	PDU	Sending			Receiving		
		Reference	Status	Support	Reference	Status	Support
1	BST	7.3.1	m		7.3.2	n/a	
2	VST	7.3.2	x		7.3.3	m	
3	RELEASE	7.3.8	m		7.3.9	n/a	

Table B.4: Transmitted BST Parameters

Item	Parameter	Reference	Status	Support
1	rsu	A	m	
2	time	A	m	
3	profile	A	m	
4	mandApplications.aid	A	m	
5	mandApplications.eid	A	o	
6	mandApplications.parameter	A	o	
7	nonmandApplications.aid	A	o	
8	nonmandApplications.eid	A	c1	
9	nonmandApplications.parameter	A	c1	
10	profileList	A	m	

c1: IF B.4/7 -- nonmandApplications.aid supported THEN o ELSE x

Table B.5: Received VST Parameters

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	profile	A	m	
3	applications.aid	A	m	
4	applications.eid	A	o	
5	applications.parameter	A	o	
6	obeConfiguration	A	m	

B.7 Transport Kernel

B.7.1 Procedures

Table B.6: T-Kernel Procedures

Item	Procedures supported	Reference	Status	Support
1	Management of FlowControl	6.3.1, 6.3.12	m	
2	Management of Mode	6.3.1, 6.3.12	m	
3	ASN.1 Encoding and Decoding	6.3.2, 6.3.11	m	
4	Application capable of creating T-APDUs which cause max length of LLC frame to be exceeded	6.3.3, 6.3.10	o	
5	Fragmentation and Defragmentation	6.3.3, 6.3.10	c2	
6	Octet Alignment	6.3.4	m	
7	Multiplexing and Demultiplexing	6.3.5, 6.3.9	c3	
8	Concatenation	6.3.7	o	
9	Concatenation with Chaining	6.3.8	o	
10	SDU to PDU – General Procedure	6.3.1	m	
11	PDU to SDU – Delivery of SDU	6.3.12	m	
12	PDU to SDU – Management of EID	6.3.12	m	

c2: IF B.6/4 -- application capable of causing max LLC frame length to be exceeded THEN m ELSE n/a

c3: IF B.2/4 -- multiple applications supported THEN o ELSE n/a

Table B.7: Fragmentation Header

Item	Procedures supported	Reference	Status	Support
1	One octet fragmentation header	6.3.3	m	
2	Two octet fragmentation header	6.3.3	o	
3	Three octet fragmentation header	6.3.3	o	

B.7.2 PDU

Table B.8: T-Kernel PDUs

Item	PDUs implemented	Sending			Receiving		
		Reference	Status	Support	Reference	Status	Support
1	Get-Request	A	o		A	o	
2	Get-Response	A	o		A	o	
3	Set-Request	A	o		A	o	
4	Set-Response	A	o		A	o	
5	Action-Request	A	o		A	o	
6	Action-Response	A	o		A	o	
7	Event-Report-Request	A	o		A	o	
8	Event-Report-Response	A	o		A	o	
9	Initialization-Request	A	c4		A	n/a	
10	Initialization-Response	A	x		A	c4	

c4: IF B.1/1 -- I-Kernel supported THEN m ELSE n/a

Table B.9: Transmitted Get-Request Parameters

Prerequisite: B.8/1 Sending -- Sending of Get-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	accessCredentials	A	o	
4	iid	A	o	
5	attrIdList	A	o	

Table B.10: Received Get-Request Parameters

Prerequisite: B.8/1 Receiving -- Receiving of Get-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	accessCredentials	A	o	
4	iid	A	o	
5	attrIdList	A	o	

Table B.11: Transmitted Get-Response Parameters

Prerequisite: B.8/2 Sending -- Sending of Get-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	attributelist	A	o	
5	ret	A	o	

Table B.12: Received Get-Response Parameters

Prerequisite: B.8/2 Receiving -- Receiving of Get-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	attributelist	A	o	
5	ret	A	o	

Table B.13: Transmitted Set-Request Parameters

Prerequisite: B.8/3 Sending -- Sending of Set-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	mode	A	m	
3	eid	A	m	
4	accessCredentials	A	o	
5	attrList	A	m	
6	iid	A	o	

Table B.14: Received Set-Request Parameters

Prerequisite: B.8/3 Receiving -- Receiving of Set-Request supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	mode	A	m	
3	eid	A	m	
4	accessCredentials	A	o	
5	attrList	A	m	
6	iid	A	o	

Table B.15: Transmitted Set-Response Parameters

Prerequisite: B.8/4 Sending -- Sending of Set-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

Table B.16: Received Set-Response Parameters

Prerequisite: B.8/4 Receiving -- Receiving of Set-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

Table B.17: Transmitted Action-Request Parameters

Prerequisite: B.8/5 Sending -- Sending of Action-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	actionType	A	m	
4	accessCredentials	A	o	
5	actionParameter	A	o	
6	iid	A	o	

Table B.18: Received Action-Request Parameters

Prerequisite: B.8/5 Receiving -- Receiving of Action-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	actionType	A	m	
4	accessCredentials	A	o	
5	actionParameter	A	o	
6	iid	A	o	

Table B.19: Transmitted Action-Response Parameters

Prerequisite: B.8/6 Sending -- Sending of Action-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	responseParameter	A	o	
5	ret	A	o	

Table B.20: Received Action-Response Parameters

Prerequisite: B.8/6 Receiving -- Receiving of Action-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	responseParameter	A	o	
5	ret	A	o	

Table B.21: Transmitted Event-Report-Request Parameters

Prerequisite: B.8/7 Sending -- Sending of Event-Report-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	eventType	A	m	
4	accessCredentials	A	o	
5	eventParameter	A	o	
6	iid	A	o	

Table B.22: Received Event-Report-Request Parameters

Prerequisite: B.8/7 Receiving -- Receiving of Event-Report-Request supported

Item	Parameter	Reference	Status	Support
1	mode	A	m	
2	eid	A	m	
3	eventType	A	m	
4	accessCredentials	A	o	
5	eventParameter	A	o	
6	iid	A	o	

Table B.23: Transmitted Event-Report-Response Parameters

Prerequisite: B.8/8 Sending -- Sending of Event-Report-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

Table B.24: Received Event-Report-Response Parameters

Prerequisite: B.8/8 Receiving -- Receiving of Event-Report-Response supported

Item	Parameter	Reference	Status	Support
1	fill	A	m	
2	eid	A	m	
3	iid	A	o	
4	ret	A	o	

B.8 Broadcast Kernel

Prerequisite: B.1/3 -- Broadcast Kernel

B.8.1 Procedures

Table B.25: B-Kernel Procedures

Item	Procedures supported	Reference	Status	Support
1	Transmission of the BroadcastPool	8.3.1	m	
2	Provision of file	8.3.3	m	

B.8.2 PDU

Table B.26: B-Kernel PDUs

Item	PDU	Sending			Receiving		
		Reference	Status	Support	Reference	Status	Support
1	BroadcastData	8.2.1, 8.2.2	m		8.2.1, 8.2.2	x	

B.9 ASN.1 Data Types

B.9.1 Extendable data types

Table B.27: ASN.1 extendable data types

Item	ASN.1 Data elements	Type	Value or size constraint	Limit	Reference	Maximum value or size supported
1	Action-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
2	ActionType	INTEGER	(0..127,...)	No	A	
3	Attributes.attributeld	INTEGER	(0..127,...)	No	A	
4	AttributeldList.INTEGER	INTEGER	(0..127,...)	No	A	
5	Container.Octetstring	OCTET STRING	(SIZE (0..127, ...))	No	A	
6	Container.vector.INTEGER	INTEGER	(0..127,...)	No	A	
7	Dsrc-EID	INTEGER	(0..127, ...)	No	A	
8	DSRCApplicationEntityID	INTEGER	(0..31,...)	No	A	
9	Event-Report-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
10	EventType	INTEGER	(0..127,...)	No	A	
11	FileName.fileID	INTEGER	(0..127,...)	No	A	
12	Get-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
13	Profile	INTEGER	(0..127,...)	No	A	
14	ReturnStatus	INTEGER	(0..127,...)	No	A	
15	Set-Request.AccessCredentials	OCTET STRING	(SIZE (0..127,...))	No	A	
16	Container	CHOICE	(SIZE (0..127,...))	No	A	

B.9.2 Extendable lists

Table B.28: ASN.1 extendable lists

Item	ASN.1 Data elements	Type	Size constraint	Limit	Reference	Maximum size supported
1	ApplicationList	SEQUENCE OF	(0..127,...)	No	A	
2	AttributeldList	SEQUENCE OF	(0..127,...)	No	A	
3	AttributeList	SEQUENCE OF	(0..127,...)	No	A	
4	BroadcastPool.content	SEQUENCE OF	(0..127,...)	No	A	
5	BST.profileList	SEQUENCE OF	(0..127,...)	No	A	
6	Directory	SEQUENCE OF	(0..127,...)	No	A	
7	File	SEQUENCE OF	(0..127,...)	No	A	

Annex C (normative): Profile Requirement List for RTTT profile of DSRC application layer for OBU

C.1 General

The purpose of this requirement list is to specify the modifications that apply to the status of the items affected in the ICS proforma of each base specifications.

The supplier of a protocol implementation which is claimed to conform to the OBU specific requirements of EN 13372 [2] shall verify that his particular application layer protocol implementation meets the profile RL for this layer. For this, he shall complete a copy of the corresponding layer PICS proforma contained in annex A of the present document, updated with the requirements from this annex.

C.1.1 Profile Requirement List (profile RL)

The profile Requirement List (profile RL) for the application layer as defined in this annex is based on annex A of the present document. For every capability listed in annex A, the profile requirements are expressed by restriction upon allowed support answers in annex A. The profile RL is produced by copying selected tables from annex A, removing the column(s) to be completed by the supplier, and adding a new set of columns giving the new profile requirements, both in terms of the status and allowed values. The tables are referenced by their numbering in annex A.

Profile status column:

The standardized symbols for the status column are as follows:

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 a unique group of related optional items and the logic of their selection which is defined immediately following the table;
ci	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 a unique conditional status expression which is defined immediately following the table or which is defined in the general condition table below.

Reference column:

The reference column gives reference to EN 13372 [2], except where explicitly stated otherwise.

C.2 Identification of the profile

This profile Requirement List applies to the following standard:

EN 13372 [2]: "Road Transport and Traffic Telematics (RTTT) - Dedicated short-range communication - Profiles for RTTT applications". This profile Requirement List applies only for On-Board Units.

C.3 Kernels

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer Kernels.

Table C.1: Table A.1 - Kernels

Item	Supported Kernels	Reference	Status
1	Initialization Kernel	6.4.2	m

C.4 Initialization Kernel

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer Initialization Kernel.

Table C.2: Table A.4 - Received BST Parameters

Item	Parameter	Reference	Status
5	mandApplications.eid	6.3.2	n/a
6	mandApplications.parameter	6.3.2	n/a
8	nonmandApplications.eid	6.3.2	n/a
9	nonmandApplications.parameter	6.3.2	n/a

Table C.3: Table A.5 - Transmitted VST Parameters

Item	Parameter	Reference	Status
4	applications.eid	6.3.2	m
5	applications.parameter	6.3.2	m

C.5 Transport Kernel

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer Transport Kernel.

C.5.1 PDU

Table C.4: Table A.8 - T-Kernel PDUs

Item	PDUs implemented	Sending		Receiving	
		Reference	Status	Reference	Status
1	Get-Request	6.3.2, 6.4.2	x	6.3.2, 6.4.2	o
2	Get-Response	6.3.2, 6.4.2	o	6.3.2, 6.4.2	n/a
3	Set-Request	6.3.2, 6.4.2	x	6.3.2, 6.4.2	o
4	Set-Response	6.3.2, 6.4.2	o	6.3.2, 6.4.2	n/a
5	Action-Request	6.3.2, 6.4.2	x	6.3.2, 6.4.2	o
6	Action-Response	6.3.2, 6.4.2	o	6.3.2, 6.4.2	n/a
7	Event-Report-Request	6.3.2, 6.4.2	x	6.3.2, 6.4.2	m
8	Event-Report-Response	6.3.2, 6.4.2	x	6.3.2, 6.4.2	n/a
9	Initialization-Request	6.3.2, 6.4.2	x	6.3.2, 6.4.2	m
10	Initialization-Response	6.3.2, 6.4.2	m	6.3.2, 6.4.2	n/a

C.6 ASN.1 Data Types

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer ASN.1 Data Types.

C.6.1 Extendable data types

Table C.5: Table A.27 - ASN.1 extendable data types

Item	ASN.1 Data elements	Type	Value or size constraint	Limit	Reference
1	Action-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
2	ActionType	INTEGER	(0..127,...)	127	6.3.2
3	Attributes.attributeld	INTEGER	(0..127,...)	No	6.3.2
4	AttributeldList.INTEGER	INTEGER	(0..127,...)	No	6.3.2
5	Container.octetstring	OCTET STRING	(SIZE (0..127, ...))	No	6.3.2
6	Container.vector.INTEGER	INTEGER	(0..127,...)	No	6.3.2
7	Dsrc-EID	INTEGER	(0..127, ...)	127	6.3.2
8	DSRCApplicationEntityID	INTEGER	(0..31,...)	31	6.3.2
9	Event-Report-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
10	EventType	INTEGER	(0..127,...)	No	6.3.2
11	FileName.fileID	INTEGER	(0..127,...)	127	6.3.2
12	Get-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
13	Profile	INTEGER	(0..127,..)	127	6.3.2
14	ReturnStatus	INTEGER	(0..127,..)	No	6.3.2
15	Set-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
16	Container	CHOICE	(0..127,...)	No	6.3.2

C.6.2 Extendable lists

Table C.6: Table A.28 - ASN.1 extendable lists

Item	ASN.1 Data elements	Type	Size constraint	Limit	Reference
1	ApplicationList	SEQUENCE OF	(0..127,...)	127	6.3.2
2	AttributeldList	SEQUENCE OF	(0..127,...)	127	6.3.2
3	AttributeList	SEQUENCE OF	(0..127,...)	127	6.3.2
4	BroadcastPool.content	SEQUENCE OF	(0..127,...)	127	6.3.2
5	BST.profileList	SEQUENCE OF	(0..127,...)	127	6.3.2
6	Directory	SEQUENCE OF	(0..127,...)	127	6.3.2
7	File	SEQUENCE OF	(0..127,...)	127	6.3.2

Annex D (normative): Profile Requirement List for RTTT profile of DSRC application layer for RSU

D.1 General

The purpose of this requirement list is to specify the modifications that apply to the status of the items affected in the ICS proforma of each base specifications.

The supplier of a protocol implementation which is claimed to conform to the RSU specific requirements of EN 13372 [2] shall verify that his particular application layer protocol implementation meets the profile RL for this layer. For this, he shall complete a copy of the corresponding layer PICS proforma contained in annex B of the present document, updated with the requirements from this annex.

D.1.1 Profile Requirement List (profile RL)

The profile Requirement List (profile RL) for the application layer as defined in this annex is based on annex B of the present document. For every capability listed in annex B, the profile requirements are expressed by restriction upon allowed support answers in annex B. The profile RL is produced by copying selected tables from annex B, removing the column(s) to be completed by the supplier, and adding a new set of columns giving the new profile requirements, both in terms of the status and allowed values. The tables are referenced by their numbering in annex B.

Profile status column:

The standardized symbols for the status column are as follows:

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 a unique group of related optional items and the logic of their selection which is defined immediately following the table;
ci	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 a unique conditional status expression which is defined immediately following the table or which is defined in the general condition table below.

Reference column:

The reference column gives reference to EN 13372 [2], except where explicitly stated otherwise.

D.2 Identification of the profile

This profile Requirement List applies to the following standard:

EN 13372 [2]: "Road Transport and Traffic Telematics (RTTT) - Dedicated short-range communication - Profiles for RTTT applications". This profile Requirement List applies only for Road-Side Units.

D.3 Kernels

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer Kernels.

Table D.1: Table B.1 - Kernels

Item	Supported Kernels	Reference	Status
1	Initialization Kernel	6.4.2	m

D.4 Initialization Kernel

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer Initialization Kernel.

Table D.2: Table B.4 - Transmitted BST Parameters

Item	Parameter	Reference	Status
5	mandApplications.eid	6.3.2	x
6	mandApplications.parameter	6.3.2	x
8	nonmandApplications.eid	6.3.2	x
9	nonmandApplications.parameter	6.3.2	x

Table D.3: Table B.5 - Received VST Parameters

Item	Parameter	Reference	Status
4	applications.eid	6.3.2	m
5	applications.parameter	6.3.2	m

D.5 Transport Kernel

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer Transport Kernel.

D.5.1 PDU

Table D.4: Table B.8 - T-Kernel PDUs

Item	PDUs implemented	Sending		Receiving	
		Reference	Status	Reference	Status
1	Get-Request	6.3.2, 6.4.2	o	6.3.2, 6.4.2	n/a
2	Get-Response	6.3.2, 6.4.2	x	6.3.2, 6.4.2	o
3	Set-Request	6.3.2, 6.4.2	o	6.3.2, 6.4.2	n/a
4	Set-Response	6.3.2, 6.4.2	x	6.3.2, 6.4.2	o
5	Action-Request	6.3.2, 6.4.2	o	6.3.2, 6.4.2	n/a
6	Action-Response	6.3.2, 6.4.2	x	6.3.2, 6.4.2	o
7	Event-Report-Request	6.3.2, 6.4.2	m	6.3.2, 6.4.2	n/a
8	Event-Report-Response	6.3.2, 6.4.2	x	6.3.2, 6.4.2	n/a
9	Initialization-Request	6.3.2, 6.4.2	m	6.3.2, 6.4.2	n/a
10	Initialization-Response	6.3.2, 6.4.2	x	6.3.2, 6.4.2	m

D.6 ASN.1 Data Types

This clause identifies the modifications to the requirements expressed in the PICS proforma specification for application layer ASN.1 Data Types.

D.6.1 Extendable data types

Table D.5: Table B.27 - ASN.1 extendable data types

Item	ASN.1 Data elements	Type	Value or size constraint	Limit	Reference
1	Action-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
2	ActionType	INTEGER	(0..127,...)	127	6.3.2
3	Attributes.attributeld	INTEGER	(0..127,...)	No	6.3.2
4	AttributeldList.INTEGER	INTEGER	(0..127,...)	No	6.3.2
5	Container.octetstring	OCTET STRING	(SIZE (0..127, ...))	No	6.3.2
6	Container.vector.INTEGER	INTEGER	(0..127,...)	No	6.3.2
7	Dsrc-EID	INTEGER	(0..127, ...)	127	6.3.2
8	DSRCApplicationEntityID	INTEGER	(0..31,...)	31	6.3.2
9	Event-Report-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
10	EventType	INTEGER	(0..127,...)	No	6.3.2
11	FileName.fileID	INTEGER	(0..127,...)	127	6.3.2
12	Get-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
13	Profile	INTEGER	(0..127,...)	127	6.3.2
14	ReturnStatus	INTEGER	(0..127,...)	No	6.3.2
15	Set-Request.accessCredentials	OCTET STRING	(SIZE (0..127,...))	No	6.3.2
16	Container	CHOICE	(0..127,...)	No	6.3.2

D.6.2 Extendable lists

Table D.6: Table B.28 - ASN.1 extendable lists

Item	ASN.1 Data elements	Type	Size constraint	Limit	Reference
1	ApplicationList	SEQUENCE OF	(0..127,...)	127	6.3.2
2	AttributeldList	SEQUENCE OF	(0..127,...)	127	6.3.2
3	AttributeList	SEQUENCE OF	(0..127,...)	127	6.3.2
4	BroadcastPool.content	SEQUENCE OF	(0..127,...)	127	6.3.2
5	BST.profileList	SEQUENCE OF	(0..127,...)	127	6.3.2
6	Directory	SEQUENCE OF	(0..127,...)	127	6.3.2
7	File	SEQUENCE OF	(0..127,...)	127	6.3.2

Annex E (normative): Profile specific ICS proforma for RTTT profile of DSRC application layer for OBU

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 ICS proforma in this annex so that it can be used for its intended purposes and may further publish the completed ICS.
--

E.1 Guidance for completing the profile ICS proforma

E.1.1 Purposes and structure

The purpose of this profile ICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in EN 13372 [2] may provide information about the implementation in a standardized manner.

The profile ICS proforma is subdivided into clauses for the following categories of information:

- guidance for completing the ICS proforma;
- identification of the implementation;
- identification of the profile;
- global statement of conformance;
- ICS proforma tables:
 - Profiles.
 - Interlayer relations.

E.1.2 Abbreviations and conventions

The profile ICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [4].

Item column

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 [4], 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.
ci	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.

Reference column

The reference column makes reference to EN 13372 [2], 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 [4], 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: As stated in ISO/IEC 9646-7 [4], 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:	5 .. 20
- list of values:	<value1>, <value2>, ..., <valueN>
example:	2, 4, 6, 8, 9
example:	'1101'B, '1011'B, '1111'B
example:	'0A'H, '34'H, '2F'H
- list of named values:	<name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
example:	reject(1), accept(2)
- length:	size (<min size> .. <max size>)
example:	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 profile ICS proforma 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 1: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 2: 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.

E.1.3 Instructions for completing the profile ICS proforma

The supplier of the implementation shall complete the profile ICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in clause E.1.2.

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

E.2 Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should 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 should both be filled in if they are different.

A person who can answer queries regarding information supplied in the profile ICS should be named as the contact person.

E.2.1 Date of the statement

.....

E.2.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version:

.....

E.2.3 System Under Test (SUT) identification

SUT name:

.....
.....

Hardware configuration:

.....
.....
.....

Operating system:

.....

E.2.4 Product supplier

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....
.....

E.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....

E.2.6 Profile ICS contact person

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

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....
.....

E.3 Identification of the profile

This profile ICS proforma applies to the following standard:

EN 13372 [2]: "Road Transport and Traffic Telematics (RTTT) - Dedicated short-range communication - Profiles for RTTT applications". This profile ICS proforma applies only for On-Board Units.

E.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No)

NOTE: Answering "No" to this question indicates non-conformance to the protocol specification. Non-supported mandatory capabilities are to be identified in the profile ICS, with an explanation of why the implementation is non-conforming, on pages attached to the profile ICS proforma.

E.5 Profiles

Table E.1: ACn protocol procedures

Item	Procedure	Reference	Status	Support
1	BST - profile - number convention	6.3.2	m	

E.6 Interlayer Relations

E.6.1 Receiver

Table E.2: Valid frames

Item	Frame type	Reference	Status	Support
1	Private LID, MAC command Private uplink window allocation	6.4.2	m	
2	Broadcast LID, UI command INIT.request(BST)	6.4.2	m	
3	Private LID, UI command EVENT-REPORT.request(Release)	6.4.2	m	
4	Broadcast LID, UI command SET.request, mode=0	6.4.2	o	
5	Broadcast LID; UI command ACTION.request, mode=0	6.4.2	o	
6	Private LID, UI command SET.request, mode=0	6.4.2	o	
7	Private LID; UI command ACTION.request, mode=0	6.4.2	o	
8	Private LID, ACn command DLL ECHO	6.4.2	o	
9	Private LID, ACn command SET.request, mode=0	6.4.2	o	
10	Private LID, ACn command ACTION.request, mode=0	6.4.2	o	
11	Private LID, ACn command GET.request	6.4.2	o	
12	Private LID, ACn command SET.request, mode=1	6.4.2	o	
13	Private LID, ACn command ACTION.request, mode=1	6.4.2	o	

E.6.2 Transmitter

Table E.3: Allowed frames

Item	Frame type	Reference	Status	Support
1	Private LID, MAC command Private uplink window request	6.4.2	m	
2	Broadcast LID, UI command INIT.response(VST)	6.4.2	m	
3	Private LID, UI command GET.response	6.4.2	o	
4	Private LID, UI command SET.response	6.4.2	o	
5	Private LID; UI command ACTION.response	6.4.2	o	
6	Private LID, ACn response DLL ECHO, f=0	6.4.2	o	
7	Private LID, ACn response No APDU available, f=1	6.4.2	o	
8	Private LID, ACn response Acknowledgement, f=0	6.4.2	o	
9	Private LID, ACn response GET.response, f=1	6.4.2	o	
10	Private LID, ACn response SET.response, f=1	6.4.2	o	
11	Private LID, ACn response ACTION.response, f=1	6.4.2	o	

Annex F (normative): Profile specific ICS proforma for RTTT profile of DSRC application layer for RSU

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--

F.1 Guidance for completing the profile ICS proforma

F.1.1 Purposes and structure

The purpose of this profile ICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in EN 13372 [2] may provide information about the implementation in a standardized manner.

The profile ICS proforma is subdivided into clauses for the following categories of information:

- guidance for completing the ICS proforma;
- identification of the implementation;
- identification of the profile;
- global statement of conformance;
- ICS proforma tables:
 - Profiles.
 - Interlayer relations.

F.1.2 Abbreviations and conventions

The profile ICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [4].

Item column

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 [4], 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.
ci	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.

Reference column

The reference column makes reference to EN 13372 [2], 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 [4], 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: As stated in ISO/IEC 9646-7 [4], 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:	5 .. 20
- list of values:	<value1>, <value2>, ..., <valueN>
example:	2, 4, 6, 8, 9
example:	'1101'B, '1011'B, '1111'B
example:	'0A'H, '34'H, '2F'H
- list of named values:	<name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
example:	reject(1), accept(2)
- length:	size (<min size> .. <max size>)
example:	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 profile ICS proforma 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 1: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 2: 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.

F.1.3 Instructions for completing the profile ICS proforma

The supplier of the implementation shall complete the profile ICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in clause F.1.2.

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

F.2 Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should 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 should both be filled in if they are different.

A person who can answer queries regarding information supplied in the profile ICS should be named as the contact person.

F.2.1 Date of the statement

.....

F.2.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version:

.....

F.2.3 System Under Test (SUT) identification

SUT name:

.....
.....

Hardware configuration:

.....
.....
.....

Operating system:

.....

F.2.4 Product supplier

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....
.....

F.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....

F.2.6 Profile ICS contact person

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

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....
.....
.....

F.3 Identification of the profile

This profile ICS proforma applies to the following standard:

EN 13372 [2]: "Road Transport and Traffic Telematics (RTTT) - Dedicated short-range communication - Profiles for RTTT applications". This profile ICS proforma applies only for Road-Side Units.

F.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No)

NOTE: Answering "No" to this question indicates non-conformance to the protocol specification. Non-supported mandatory capabilities are to be identified in the profile ICS, with an explanation of why the implementation is non-conforming, on pages attached to the profile ICS proforma.

F.5 Profiles

Table F.1: ACn protocol procedures

Item	Procedure	Reference	Status	Support
1	BST - profile - number convention	6.3.2	m	

F.6 Interlayer Relations

F.6.1 Transmitter

Table F.2: Allowed frames

Item	Frame type	Reference	Status	Support
1	Private LID, MAC command Private uplink window allocation	6.4.2	m	
2	Broadcast LID, UI command INIT.request(BST)	6.4.2	m	
3	Private LID, UI command EVENT-REPORT.request(Release)	6.4.2	m	
4	Broadcast LID, UI command SET.request, mode=0	6.4.2	o	
5	Broadcast LID; UI command ACTION.request, mode=0	6.4.2	o	
6	Private LID, UI command SET.request, mode=0	6.4.2	o	
7	Private LID; UI command ACTION.request, mode=0	6.4.2	o	
8	Private LID, ACn command DLL ECHO	6.4.2	o	
9	Private LID, ACn command SET.request, mode=0	6.4.2	o	
10	Private LID, ACn command ACTION.request, mode=0	6.4.2	o	
11	Private LID, ACn command GET.request	6.4.2	o	
12	Private LID, ACn command SET.request, mode=1	6.4.2	o	
13	Private LID, ACn command ACTION.request, mode=1	6.4.2	o	

F.6.2 Receiver

Table F.3: Valid frames

Item	Frame type	Reference	Status	Support
1	Private LID, MAC command Private uplink window request	6.4.2	m	
2	Broadcast LID, UI command INIT.response(VST)	6.4.2	m	
3	Private LID, UI command GET.response	6.4.2	o	
4	Private LID, UI command SET.response	6.4.2	o	
5	Private LID; UI command ACTION.response	6.4.2	o	
6	Private LID, ACn response DLL ECHO, f=0	6.4.2	o	
7	Private LID, ACn response No APDU available, f=1	6.4.2	o	
8	Private LID, ACn response Acknowledgement, f=0	6.4.2	o	
9	Private LID, ACn response GET.response, f=1	6.4.2	o	
10	Private LID, ACn response SET.response, f=1	6.4.2	o	
11	Private LID, ACn response ACTION.response, f=1	6.4.2	o	

History

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