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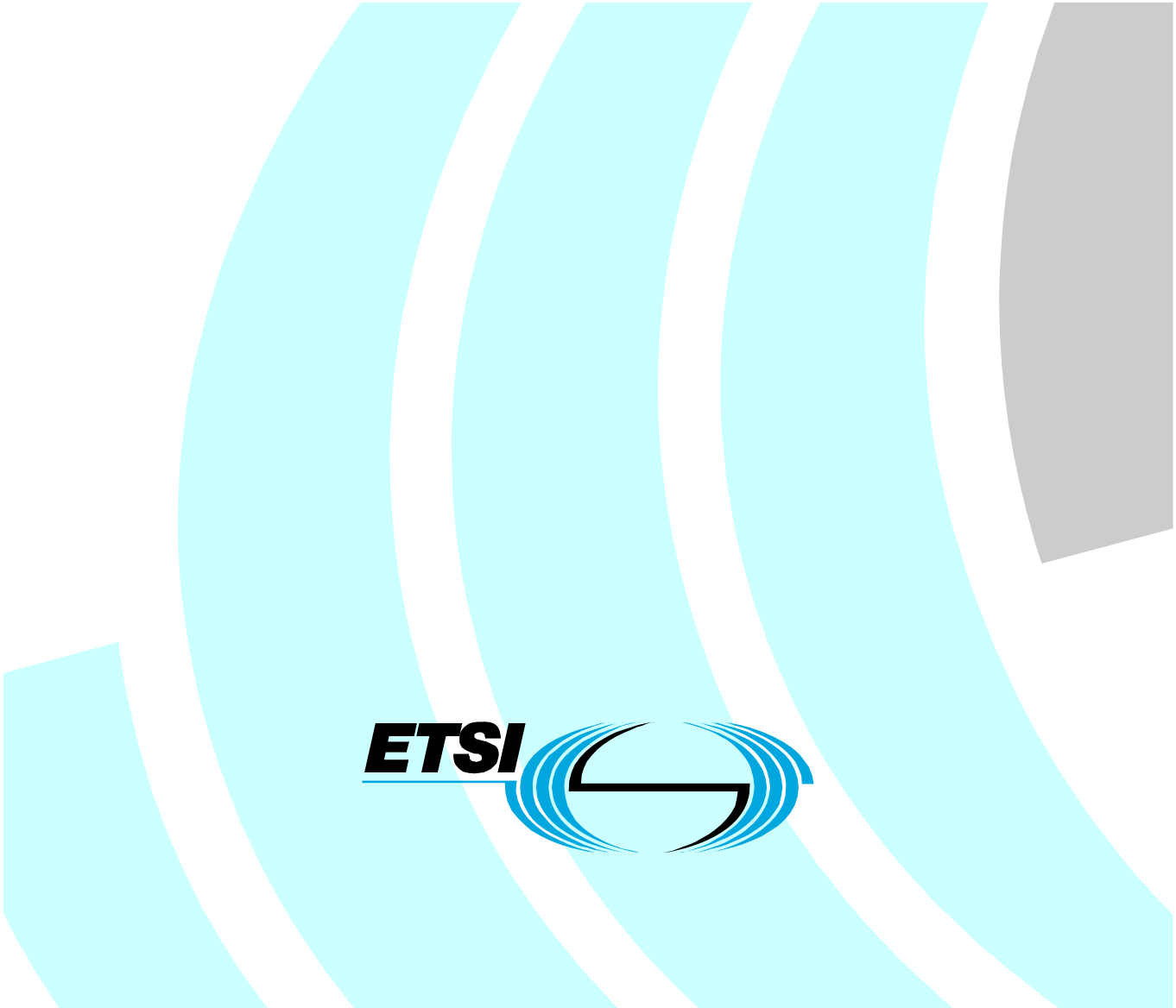
Technical Specification

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



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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 2 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:

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 contains the Test Suite Structure (TSS) and Test Purposes (TP) to test the Dedicated Short Range Communication (DSRC); Application layer.

The objective of this test specification is to provide a basis for conformance tests for DSRC equipment giving a high probability of inter-operability between different manufacturer's equipment.

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [5] and ISO/IEC 9646-2 [6]) as well as the ETSI rules for conformance testing (ETS 300 406 [4]) are used as a basis for the test methodology.

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.

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

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 12253 (2003): "Road transport and traffic telematics - Dedicated short-range communication - Physical layer using microwave at 5,8 GHz".

[3] CEN EN 13372 (2003): "Road transport and traffic telematics (RTTT) - Dedicated short-range communication - Profiles for RTTT".

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

[5] ISO/IEC 9646-1 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[6] ISO/IEC 9646-2 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".

[7] ISO/IEC 9646-6 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".

[8] ISO/IEC 9646-7 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statement".

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 ISO/IEC 9646-7 [8], EN 12253 [2], EN 12834 [1] and EN 13372 [3] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ISO/IEC 9646-1 [5], ISO/IEC 9646-6 [7], ISO/IEC 9646-7 [8] and EN 12834 [1] and the following apply:

PrWRq MAC frame Private Window Request

4 Test Suite Structure (TSS)

4.1 Structure

Figure 1 shows the Application Test Suite Structure (TSS) including its subgroups defined for the conformance testing.

Group	Type of SUT	behaviour
Application Layer - T-Kernel	On Board Unit	Valid behaviour
		Invalid behaviour
	Road Side Unit	Valid behaviour
		Invalid behaviour
Application Layer - I-Kernel	On Board Unit	Valid behaviour
		Invalid behaviour
	Road Side Unit	Valid behaviour
		Invalid behaviour

Figure 1: TSS for DSRC Application

4.2 Test groups

The test groups are organized in three groups. The first is designed for the application T-kernel testing. The second is designed for Application I-kernel testing and the third is designed for Application B-kernel testing.

4.3 Type of SUT test groups

The type of SUT test groups are organized in two groups. The first is designed for the On Board Unit testing and the second is designed for Road Side Unit testing.

4.4 Behaviour test groups

4.4.1 Valid Behaviour (BV) tests

This test sub group shall verify that the IUT reacts in conformity with the EN, after receipt or exchange of a valid Protocol Data Units (PDUs). Valid PDUs means that the exchange of messages and the content of the exchanged messages are considered as valid.

4.4.2 Invalid Behaviour (BI) tests

This test sub group shall verify that the IUT reacts in conformity with the EN, after receipt of a syntactically invalid PDU.

5 Test Purposes (TP)

5.1 Introduction

5.1.1 TP definition conventions

The TPs are defined following particular rules as shown in table 1.

Table 1: TP definition rules

TP Id according to the TP naming conventions	Title
	Reference
	PICS selection
	TC reference
	Initial condition
	Stimulus and Expected Behaviour

TP Id	The TP Id is a unique identifier. It shall be specified according to the TP naming conventions defined in the clause below.
Title	Short description of test purpose objective.
Reference	The reference should contain the references of the subject to be validated by the actual TP (specification reference, clause, paragraph).
PICS selection	Reference to the PICS statement involved for selection of the TP. Contains a Boolean expression. Only those PICS statements are shown that are explicitly related to the test.
TC reference	Shows the reference number of the related Test Case in the ATS.
Initial condition	The condition defines in which initial state the IUT has to be to apply the actual TP.
Stimulus and Expected Behaviour	Definition of the events the tester performs, and the events that are expected from the IUT to conform to the base specification.

5.1.2 TP naming conventions

The identifier of the TP is built according to table 2.

Table 2: TP naming convention

Identifier:	**TP/<layer>/<sut>/<x>-<nn>**		
	<layer>	AL-T	Application Layer - T-Kernel
		AL-I	Application Layer - I-Kernel
	<sut> = type of SUT	OBU	On Board Unit
		RSU	Road Side Unit
	x = Type of testing	BV	Valid Behaviour Tests
		BI	Invalid Behaviour Tests
	<nn> = sequential number	(01-99)	Test Purpose Number

5.1.3 Sources of TP definitions

All TPs are specified according to EN 12834 [1].

5.2 Application T-kernel test purposes for On Board Unit

5.2.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the IUT in relation to syntactically and contextual correct behaviour of the test system.

Test purposes:

TP/AL-T/OBU/BV/01	**Verify that the OBU can receive GET.request and manage GET.response, with LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS selection:	Table A.1/1 AND Table A.8/1 AND Table A.8/2 AND Table A.11/5 AND Table E.2/11 AND Table E.3/9
	TC reference:	TC_AL_T_OBU_BV_01
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends GET.request with FlowControl=7, requesting retrieval of data available in the IUT without late response. 2. Verify IUT provides the data requested in step 1 in a GET-Response with proper ReturnStatus.	

TP/AL-T/OBU/BV/02	**Verify that the OBU can receive SET.request with mode=1 and manage SET.response, with LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/3 AND Table A.8/4 AND Table A.15/4 AND Table E.2/12 AND Table E.3/10
	TC reference:	TC_AL_T_OBU_BV_02
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SET.request with mode=1 and FlowControl=7, requesting storage of data=DATA in the IUT. 2. Verify proper ReturnStatus indicated in the SET-Response.	

TP/AL-T/OBU/BV/03	**Verify that the OBU can receive SET.request with mode=1 and GET.request, and manage SET.response and GET.response, with LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/1 AND Table A.8/2 AND Table A.8/3 AND Table A.8/4 AND Table A.11/5 AND Table A.15/4 AND Table E.2/11 AND Table E.2/12 AND Table E.3/9 AND Table E.3/10
	TC reference:	TC_AL_T_OBU_BV_03
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SET.request with mode=1 and FlowControl=7, requesting storage of data=DATA1 in the attribute given by EID=EID1 and attributeId=attributeID1 in the IUT. 2. Verify proper ReturnStatus indicated in the SET-Response. 3. Tester sends GET.request in order to retrieve the data sent in step 1. 4. Verify proper ReturnStatus indicated in the GET-Response. 5. Verify that the data retrieved in step 3 is identical to the data sent in step 1. 6. Tester sends SET.request with mode=1 and FlowControl=7, requesting storage of data=DATA2 in the attribute given by EID=EID1 and attributeId=attributeID1 in the IUT. 7. Verify proper ReturnStatus indicated in the SET-Response. 8. Tester sends GET.request in order to retrieve the data sent in step 6. 9. Verify proper ReturnStatus indicated in the GET-Response. 10. Verify that the data retrieved in step 8 is identical to the data sent in step 6.	

TP/AL-T/OBU/BV/04	**Verify that the OBU can receive SET.request with mode=0 and GET.request and GET.response, with LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/1 AND Table A.8/2 AND Table A.8/3 AND Table E.2/9 AND Table E.2/11 AND Table E.3/6 AND Table E.3/10
	TC reference:	TC_AL_T_OBU_BV_04
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SET.request with mode=0 and FlowControl=4, requesting storage of DATA1 in the attribute given by EID=EID1 and attributeId=attributeID1 of the IUT. 2. Verify proper operation of IUT by retrieval of EID=EID1, attributeId=attributeID1 using GET.request. 3. Tester sends SET.request with mode=0 and FlowControl=4, requesting storage of DATA2 in the attribute given by EID=EID1 and attributeId=attributeID1 in the IUT. 4. Verify proper operation of IUT by retrieval of EID=EID1, attributeId=attributeID1 using GET.request.	

TP/AL-T/OBU/BV/05	**Verify that the OBU can receive SET.request with mode=0 and GET.request and GET.response, with LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/1 AND Table A.8/2 AND Table A.8/3 AND Table E.3/6 AND Table E.2/11 AND Table E.3/9
	TC reference:	TC_AL_T_OBU_BV_05
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SET.request with mode=0 and FlowControl=1, requesting storage of DATA1 in the data element given by EID=EID1 and attributeId=attributeID1 of the IUT. 2. Verify proper operation of IUT by retrieval of EID=EID1, attributeId=attributeID1 using GET.request. 3. Tester sends SET.request with mode=0 and FlowControl=1, requesting storage of DATA2 in the data element given by EID=EID1 and attributeId=attributeID1 in the IUT. 4. Verify proper operation of IUT by retrieval of EID=EID1, attributeId=attributeID1 using GET.request.	

TP/AL-T/OBU/BV/06	**Verify that the OBU can receive SET.request with mode=0 and with LID=broadcast after initialization,and GET.request and manage GET.response, with private LID**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/1 AND Table A.8/2 AND Table A.8/3 AND Table E.3/4 AND Table E.2/11 AND Table E.3/9
	TC reference:	TC_AL_T_OBU_BV_06
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SET.request with mode=0, FlowControl=1 and LID=broadcast, requesting storage of data=DATA1 in the IUT. 2. Tester sends GET.request in order to retrieve the data sent in step 1. 3. Verify that the data retrieved in step 2 is identical to the data sent in step 1. 4. Tester sends SET.request with mode=0 and FlowControl=1 and LID=broadcast, requesting storage of data=DATA2 in the IUT. 5. Tester sends GET.request in order to retrieve the data sent in step 4. 6. Verify that the data retrieved in step 5 is identical to the data sent in step 4.	

TP/AL-T/OBU/BV/07	**Verify that the OBU can receive SET.request with mode=0 and with LID=broadcast without initialization, and GET.request and manage GET.response, with private LID**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.2/5 AND Table A.3/3 AND Table A.8/1 AND Table A.8/2 AND Table A.8/3 AND Table C.4/7 AND Table E.3/4 AND Table E.2/11 AND Table E.3/9
	TC reference:	TC_AL_T_OBU_BV_07
	Initial condition:	OBU not in sleep mode and not yet initialized.
	Stimulus and Expected Behaviour: 1. Tester sends SET.request with mode=0, FlowControl=1 and LID=broadcast, requesting storage of data=DATA1 in the IUT. 2. Perform initialization with the IUT. 3. Tester sends GET.request in order to retrieve the data sent in step 1. 4. Verify that the data retrieved in step 2 is identical to the data sent in step 1. 5. Tester sends RELEASE command. 6. Tester immediately, i.e. before beacon time-out,sends SET.request with mode=0, FlowControl=1 and LID=broadcast, requesting storage of data=DATA2 in the IUT. 7. Repeat step 2 after beacon time-out. 8. Tester sends GET.request in order to retrieve the data sent in step 6. 9. Verify that the data retrieved in step 8 is identical to the data sent in step 6.	

TP/AL-T/OBU/BV/08	**Verify that the OBU can receive ACTION.request with mode=1 and manage ACTION.response, with LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/5 AND Table A.8/6 AND Table E.2/13 AND Table E.3/11
	TC reference:	TC_AL_T_OBU_BV_08
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends ACTION.request with mode=1 and FlowControl=7. 2. Verify proper operation of IUT by checking the ACTION.response.	

TP/AL-T/OBU/BV/09	**Verify that the OBU can receive ACTION.request with mode=0 and LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/5 AND Table E.2/10
	TC reference:	TC_AL_T_OBU_BV_09
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends ACTION.request with mode=0 and FlowControl=4. 2. Verify proper operation of IUT by human observation of IUT behaviour.	
NOTE: The applicant shall declare the SET_MMI ACTION type if possible, that allows human observation of command execution.		

TP/AL-T/OBU/BV/10	**Verify that the OBU can receive ACTION.request with mode=0 and LID=private**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/5 AND Table E.2/7
	TC reference:	TC_AL_T_OBU_BV_10
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends ACTION.request with mode=0 and FlowControl=1. 2. Verify proper operation of IUT by human observation of IUT behaviour.	
NOTE: The applicant shall declare the SET_MMI ACTION type if possible, that allows human observation of command execution.		

TP/AL-T/OBU/BV/11	**Verify that the OBU can receive ACTION.request with mode=0 with LID=broadcast after initialization**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.8/5 AND Table E.2/5
	TC reference:	TC_AL_T_OBU_BV_11
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends ACTION.request with mode=0, FlowControl=1 and LID=broadcast. 2. Verify proper operation of IUT by human observation of IUT behaviour.	
NOTE: The applicant shall declare the SET_MMI ACTION type if possible, that allows human observation of command execution.		

TP/AL-T/OBU/BV/12	**Verify that the OBU can receive and manage ACTION.request with mode=0 and with LID=broadcast without initialization**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.8/5 ANDTable E.2/5
	TC reference:	TC_AL_T_OBU_BV_12
	Initial condition:	OBU not in sleep mode and not yet initialized.
	Stimulus and Expected Behaviour: 1. Tester sends ACTION.request with mode=0, FlowControl=1 and LID=broadcast. 2. Verify proper operation of IUT by human observation of IUT behaviour.	
NOTE: The applicant shall declare the SET_MMI ACTION type if possible, that allows human observation of command execution.		

TP/AL-T/OBU/BV/13	**Verify that the OBU can receive and manage non-fragmented APDUs with random PDU number**	
	Reference:	EN 12834 [1] clauses 6.3.3
	PICS Selection:	Table A.1/1 AND ((Table E.2/11 AND Table E.3/9) OR (Table E.2/12 AND Table E.3/10) OR (Table E.2/13 AND Table E.3/11))
	TC reference:	TC_AL_T_OBU_BV_13
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SERVICE.request with mode=1 and FlowControl=7 with a random choice of PDU number in the allowed range of 2 through 31. 2. Verify IUT correctly replies with SERVICE.response. 3. Repeat steps 1 and 2 until all allowed values of the PDU number field are tested.	
NOTE: SERVICE shall be out of GET, SET, ACTION, as declared by the applicant.		

TP/AL-T/OBU/BV/14	**Verify that the OBU can receive and manage multiplexed APDUs from two different applications**	
	Reference:	EN 12834 [1] clauses 6.3.5 and 6.3.9
	PICS Selection:	Table A.1/1 AND Table A.2/6 AND Table A.6/7 ((Table E.2/11 AND Table E.3/9) OR (Table E.2/12 AND Table E.3/10) OR (Table E.2/13 AND Table E.3/11))
	TC reference:	TC_AL_T_OBU_BV_14
	Initial condition:	OBU already initialized for two applications #A and #B, waiting to be served by tester. It is allowed to be #A = #B, i.e. APDUs related only to a single type of application, but using different EIDs.
	Stimulus and Expected Behaviour: 1. Tester sends SERVICE.request (#a) with mode=1 and FlowControl=7 for #A. 2. Verify IUT correctly responds with SERVICE.response (#a). 3. Tester sends SERVICE.request (#b) with mode=1 and FlowControl=7 for #B. 4. Verify IUT correctly responds SERVICE.response (#b). 5. Tester sends SERVICE.request (#c) with mode=1 and FlowControl=7 for #A. 6. Verify IUT correctly responds SERVICE.response (#c). 7. Tester sends SERVICE.request (#d) with mode=1 and FlowControl=7 for #B. 8. Verify IUT correctly responds SERVICE.response (#d).	
NOTE: SERVICE shall be out of GET, SET, ACTION, as declared by the applicant. EID=0 is not allowed as basic EID of an application, however it might be used in addition to the two other EIDs!		

TP/AL-T/OBU/BV/16	**Verify that the OBU can receive and manage concatenated and chained APDUs from a single application**	
	Reference:	EN 12834 [1] clauses 6.3.8
	PICS Selection:	Table A.1/1 AND Table A.6/9 AND ((Table E.2/11 AND Table E.3/9) OR (Table E.2/12 AND Table E.3/10) OR (Table E.2/13 AND Table E.3/11))
	TC reference:	TC_AL_T_OBU_BV_16
	Initial condition:	OBU already initialized for test application, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends concatenated T-APDUs with mode=1 and FlowControl=7. 2. Verify IUT correctly replies concatenated responses	
NOTE: APDUs to be chained shall be out of GET, SET, ACTION, EVENT-REPORT as declared by the applicant.		

5.2.2 BI test purposes

Test subgroup objective:

- to check the behaviour of the of the IUT in response to invalid messages and behaviour from the test tool.

Test purposes:

TP/AL-T/OBU/BI/01	**Verify that the OBU can receive and manage PDUs addressed to the Broadcast Kernel in case the OBU only supports the Initialization Kernel and the Transport Kernel**	
	Reference:	EN 12834 [1] clause 6.3.3 and Annex A
	PICS Selection:	Table A.1/1 AND NOT Table A.1/3 AND Table E.2/11 AND Table E.3/9 AND Table E.2/12 AND Table E.3/10
	TC reference:	TC_AL_T_OBU_BI_01
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends a GET.request to retrieve EID=EID1 and attributeId=attributeID1. 2. Verify proper ReturnStatus indicated in the GET.response. 3. Verify that the data retrieved in step 2 is as defined. 4. Tester sends SET.request () with mode=1 and FlowControl=7 with private LID and with the PDU number set to the illegal value of 0 in order to set data=DATA2 in the attribute given by EID=EID1 and attributeId=attributeID1. 5. Observe whether IUT prompts the command with any kind of error status. 6. Tester sends a GET.request to retrieve EID=EID1 and attributeId=attributeID1. 7. Verify that the data retrieved in step 7 is equal to the data retrieved in step 1. 8. Repeat steps 4. through 7. with the PDU number set to the illegal value of 1.	

TP/AL-T/OBU/BI/02	**Verify that the OBU can receive and manage PDUs addressed to the Broadcast Kernel in case the OBU only supports the Initialization Kernel and the Transport Kernel**	
	Reference:	EN 12834 [1] clause 6.3.3 and Annex A
	PICS Selection:	Table A.1/1 AND NOT Table A.1/3 AND Table A.7/1
	TC reference:	TC_AL_T_OBU_BI_02
	Initial condition:	OBU awake but not yet.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request with the PDU number set to 0, allocating N5 public uplink windows. 2. Verify that the IUT does not send PrWRq. 3. Repeat steps 1. and 2. with the PDU number set to 1.	

TP/AL-T/OBU/BI/03	**Verify that the OBU can receive and manage non-fragmented PDUs with wrong fragment counter value**	
	Reference:	EN 12834 [1] clause 6.3.3
	PICS Selection:	Table A.1/1 AND Table A.7/1 ((Table E.2/11 AND Table E.3/9) OR (Table E.2/12 AND Table E.3/10) OR (Table E.2/13 AND Table E.3/11))
	TC reference:	TC_AL_T_OBU_BI_03
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SERVICE.request with mode=1 and FlowControl=7 with the fragment counter set to any value different to 0. 2. Verify IUT does not respond with SERVICE.response. 3. Repeat steps 1. and 2. for all missing possible wrong values of the fragment counter, except for the correct value 0. 4. Repeat step 1 with correct value of fragment counter. 5. Verify IUT correctly responds.	
NOTE: SERVICE shall be out of SET, GET, ACTION, as declared by the applicant.		

TP/AL-T/OBU/BI/04	**Verify that the OBU can receive and manage non-fragmented PDUs with wrong fragment counter value**	
	Reference:	EN 12834 [1] clause 6.3.3
	PICS Selection:	Table A.1/1 AND Table A.7/1
	TC reference:	TC_AL_T_OBU_BI_04
	Initial condition:	OBU awake but not yet initialized.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request with the fragment counter set to any value different to 0, allocating N5 public uplink windows. 2. Verify IUT does not respond with PrWRq. 3. Repeat steps 1. and 2. for all missing possible wrong values of the fragment counter, except for the correct value 0. 4. Repeat step 1 with correct value of fragment counter. 5. Verify IUT correctly responds with PrWRq.	

TP/AL-T/OBU/BI/06	**Verify that the OBU can receive and manage concatenated and chained APDUs from a single application with chaining error**	
	Reference:	EN 12834 [1] clauses 6.3.8
	PICS Selection:	Table A.1/1 AND Table A.6/9 AND Table A.11/5 AND Table A.15/4 AND Table A.19/5 ((Table E.2/11 AND Table E.3/9) OR (Table E.2/12 AND Table E.3/10) OR (Table E.2/13 AND Table E.3/11))
	TC reference:	TC_AL_T_OBU_BI_06
	Initial condition:	OBU already initialized for test application, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends SERVICE.request (not applicable at IUT) concatenated and chained with SERVICE.request (applicable at IUT) with FlowControl=7. 2. Verify IUT correctly replies with SERVICE.response (ReturnStatus with a status other than noError, accessDenied or chainingError) concatenated with SERVICE.response (ReturnStatus(chainingError)).	
NOTE: SERVICE shall be out of SET, GET, ACTION, as declared by the applicant.		

5.3 Application T-kernel test purposes for Road Side Unit

5.3.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the IUT in relation to syntactically and contextual correct behaviour of the test system.

Test purposes:

TP/AL-T/RSU/BV/01	**Verify that the RSU can receive and manage non-fragmented APDUs with random PDU number**	
	Reference:	EN 12834 [1] clauses 6.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.7/1
	TC reference:	TC_AL_T_RSU_BV_01
	Initial condition:	RSU ready for normal operation sending BST on request.
	Stimulus and Expected Behaviour: 1. Tester receives valid BST. 2. Tester sends valid VST with random PDU number. 3. Verify IUT acknowledges VST with privately addressed request. 4. Repeat steps 1. through 3. until all allowed values of the PDU number field are tested.	

5.3.2 BI test purposes

Test subgroup objective:

- to check the behaviour of the of the IUT in response to invalid messages and behaviour from the test tool.

Test purposes:

TP/AL-T/RSU/BI/01	**Verify that the RSU can manage PDUs addressed to the Broadcast Kernel in case the RSU only supports the Initialization Kernel and the Transport Kernel**	
	Reference:	EN 12834 [1] clause 6.3.3
	PICS Selection:	Table B.1/1 AND NOT Table B.1/3 AND Table B.7/1
	TC reference:	TC_AL_T_RSU_BI_01
	Initial condition:	RSU is running a single test application, sending on request BST with FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester sends INITIALizaTION.response with the PDU number set to 0. 3. Verify IUT does not accept the response by sending any further privately addressed frame to this OBU. 4. Repeat steps 1 through 3 with the PDU number set to 1 in step 2.	

TP/AL-T/RSU/BI/02	**Verify that the RSU can manage PDUs addressed to the Broadcast Kernel in case the RSU only supports the Initialization Kernel and the Transport Kernel**	
	Reference:	EN 12834 [1] clause 6.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND NOT Table B.1/3 AND Table B.7/1 AND ((Table F.2/11 AND Table F.3/9) OR (Table F.2/12 AND Table F.3/10) OR (Table F.2/13 AND Table F.3/11))
	TC reference:	TC_AL_T_RSU_BI_02
	Initial condition:	RSU is running a single test application, awaiting a L7 SERVICE.response TSPX_APDU_7a_EIDa_rsp upon requested command. Proper reception of the SERVICE.response will cause transmission of the next L7 SERVICE.request. TSPX_APDU_7b_EIDa_req. Alternatively the original request will be repeated by the RSU layer 7 after the next BST sent with FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives SERVICE.request. 2. Tester sends SERVICE.response with the PDU number set to 0. 3. Verify IUT does not accept the response by sending the next SERVICE.request to this OBU. 4. Repeat steps 1 through 3 with the PDU number set to 1 in step 2.	
NOTE: SERVICE shall be out of GET, SET, ACTION, as declared by the applicant.		

TP/AL-T/RSU/BI/03	**Verify that the RSU can receive and manage non-fragmented PDUs with wrong fragment counter value**	
	Reference:	EN 12834 [1] clause 6.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.7/1 AND ((Table F.2/11 AND Table F.3/9) OR (Table F.2/12 AND Table F.3/10) OR (Table F.2/13 AND Table F.3/11))
	TC reference:	TC_AL_T_RSU_BI_03
	Initial condition:	RSU is running a single test application. RSU is awaiting a non-fragmented SERVICE.response from the tester upon request. Upon reception of the response, RSU will send next non-fragmented SERVICE.request. Alternatively the original request will be repeated by the RSU layer 7 after the next BST with FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives SERVICE.request. 2. Tester sends SERVICE.response with the fragment counter set to 1. 3. Verify IUT does not accept the response by sending the next SERVICE.request to this OBU. 4. Repeat steps 1. through 3. for all missing possible wrong values of the fragment counter, except for the correct value 0.	
NOTE: SERVICE shall be out of GET, SET, ACTION, as declared by the applicant.		

5.4 Application I-kernel test purposes for On Board Unit

5.4.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the IUT in relation to syntactically and contextual correct behaviour of the test system.

Test purposes:

TP/AL-I/OBU/BV/01	**Verify that the OBU can receive and manage INITIALizaTION.request (BST)**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.3/1 AND Table A.3/2
	TC reference:	TC_AL_I_OBU_BV_01
	Initial condition:	OBU not in sleep mode and not yet initialized.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with FlowControl=2 with proper setting of all BST parameters such, that Initialization of the IUT is expected. 2. Verify IUT responds with INITIALizaTION.response (VST). 3. Tester immediately sends any further private command to this IUT. 4. Tester immediately sends the next BST. 5. Verify IUT does not request a private uplink window.	

TP/AL-I/OBU/BV/02	**Verify that the OBU can receive and manage EVENT-REPORT.request (RELEASE) with mode=0**	
	Reference:	EN 12834 [1] clauses 6.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.2/5 AND Table A.3/3 AND Table A.8/7
	TC reference:	TC_AL_I_OBU_BV_02
	Initial condition:	OBU already initialized, waiting to be served by tester.
	Stimulus and Expected Behaviour: 1. Tester sends EVENT-REPORT.request (RELEASE) with mode=0 and FlowControl=1. 2. Tester immediately sends empty ECHO command to this IUT. 3. Verify IUT no more responds to the tester.	

TP/AL-I/OBU/BV/03	**Verify that the OBU can read and manage the BeaconID contained in the BST**
	Reference: EN 12834 [1] clause 7.3.2 and Annex A
	PICS Selection: Table A.1/1 AND Table A.2/3 AND Table A.4/1
	TC reference: TC_AL_I_OBU_BV_03
	Initial condition: OBU not in sleep mode and not yet initialized.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with mode=1 and FlowControl=2 and BeaconID.manufacturerid = manufacturerID1 and BeaconID.individualid = individualID1, and with proper setting of all other BST parameters such, that Initialization of the IUT is expected. 2. Verify IUT initializes with INITIALizaTION.response (VST). 3. Tester finalizes initialization by sending any further privately addressed frame to the IUT. 4. Verify that IUT responds correctly. 5. Tester sends INITIALizaTION.request (BST) with mode=1 and FlowControl=2 and BeaconID.manufacturerid = manufacturerID2 and BeaconID.individualid = individualID1. 6. Verify IUT initializes with INITIALizaTION.response (VST) and new private LID. 7. Tester finalizes initialization by sending any further privately addressed frame to the IUT. 8. Tester sends INITIALizaTION.request (BST) with mode=1 and FlowControl=2 and BeaconID.manufacturerid = manufacturerID2 and BeaconID.individualid = individualID2. 9. Verify IUT initializes with INITIALizaTION.response (VST) and new private LID.

TP/AL-I/OBU/BV/04	**Verify that the OBU can read and manage time of reception of BST contained it the parameter Time of the BST**
	Reference: EN 12834 [1] clause 7.3.2 and Annex A
	PICS Selection: Table A.1/1 AND Table A.2/4 AND Table A.4/2
	TC reference: TC_AL_I_OBU_BV_04
	Initial condition: OBU not in sleep mode and not yet initialized.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with mode=1 and FlowControl=2 and Time = Tref such, that Initialization of the IUT is expected. 2. Verify IUT initializes with INITIALizaTION.response (VST). 3. Tester finalizes initialization by sending any further privately addressed frame to the IUT. 4. Verify that IUT responds properly. 5. Tester sends INITIALizaTION.request (BST) with mode=1 and FlowControl=2 and Time = Tref+256 s. 6. Verify IUT initializes with INITIALizaTION.response (VST). 7. Tester finalizes initialization by sending any further privately addressed frame to the IUT. 8. Verify that IUT responds properly.

TP/AL-I/OBU/BV/05	**Verify that the OBU can manage profile selection**	
	Reference:	EN 12834 [1] clauses 7.3.2 and Annex A EN 12253 [2] clause 5.3
	PICS Selection:	Table A.1/1 AND Table A.4/3 AND Table A.4/10 AND Table A.5/2 AND NOT Table E.1/1
	TC reference:	TC_AL_I_OBU_BV_05
	Initial condition:	OBU not in sleep mode and not yet initialized. Profiles #A and #B shall be supported in the OBU. Profiles #C and #D shall not be supported in the OBU.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1and BST.profile=#A and BST.profileList being empty. 2. Verify IUT initializes with INITIALizaTION.response (VST) using profile #A. 3. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID2 and BST.profile=#B and BST.profileList being empty. 4. Verify IUT initializes with INITIALizaTION.response (VST) using profile #B. 5. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1 and BST.profile=#C and BST.profileList containing the value #A. 6. Verify IUT initializes with INITIALizaTION.response (VST) using profile #A. 7. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID2 and BST.profile=#C and BST.profileList containing the value #B. 8. Verify IUT initializes with INITIALizaTION.response (VST) using profile #B. 9. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1 and BST.profile=#A and BST.profileList containing the value #C. 10. Verify IUT initializes with INITIALizaTION.response (VST) using profile #A. 11. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID2 and BST.profile=#B and BST.profileList containing the value #C. 12. Verify IUT initializes with INITIALizaTION.response (VST) using profile #B. 13. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1 and BST.profile=#C and BST.profileList containing the values #D in the first entry and #A in the second entry. 14. Verify IUT initializes with INITIALizaTION.response (VST) using profile #A. 15. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID2 and BST.profile=#C and BST.profileList containing the values #D in the first entry and #B in the second entry. 16. Verify IUT initializes with INITIALizaTION.response (VST) using profile #B.	

TP/AL-I/OBU/BV/07	**Verify that the OBU can manage applications**	
	Reference:	EN 12834 [1] clauses 7.3.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.2/2 AND Table A.2/6 AND Table A.4/4 AND Table A.4/7 AND Table A.5/3 AND Table A.5/4 AND Table A.5/5 Table C.2/5 AND Table C.2/6 AND Table C.3/4 AND Table C.3/5
	TC reference:	TC_AL_I_OBU_BV_07
	Initial condition:	OBU not in sleep mode and not yet initialized. The application type aid=#A shall be supported by the OBU, and the application type aid=#B shall not be supported in the OBU.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1 and BST.mandApplications.aid=#A and BST.nonmandApplications being empty. 2. Verify IUT initializes with INITIALizaTION.response (VST) offering details of the supported application in VST.applications.ApplicationContextMark. 3. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID2 and BST.mandApplications.aid=#A and BST.nonmandApplications.aid=#B. 4. Verify IUT initializes with INITIALizaTION.response (VST) offering details of the supported application in VST.applications.ApplicationContextMark. 5. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1 and BST.mandApplications.aid=#B and BST.nonmandApplications.aid=#A. 6. Verify IUT initializes with INITIALizaTION.response (VST) offering details of the supported application in VST.applications.ApplicationContextMark.	

TP/AL-I/OBU/BV/09	**Verify that the OBU can manage profile selection**	
	Reference:	EN 12834 [1] clauses 7.3.2 and Annex A EN 13372 [3] clause 8 EN 12253 [2] clause 5.3
	PICS Selection:	Table A.1/1 AND Table A.4/3 AND Table A.4/10 AND Table A.5/2 AND Table E.1/1
	TC reference:	TC_AL_I_OBU_BV_09
	Initial condition:	OBU not in sleep mode and not yet initialized. Profiles 0 and 1 shall be supported in the OBU. Profile #C shall not be supported in the OBU.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1 and BST.**profile=0** and BST.profileList being empty. 2. Verify IUT initializes with INITIALizaTION.response (VST) using profile 0. 3. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID2 and BST.**profile=0** and BST.profileList containing the values 1 and #C. 4. Verify IUT initializes with INITIALizaTION.response (VST) using profile 0. 5. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID1 and BST.**profile=1** and BST.profileList being empty. 6. Verify IUT initializes with INITIALizaTION.response (VST) using profile 1. 7. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BeaconID2 and BST.**profile=1** and BST.profileList containing the values 0 and #C. 8. Verify IUT initializes with INITIALizaTION.response (VST) using profile 1.	

5.4.2 BI test purposes

Test subgroup objective:

- to check the behaviour of the of the IUT in response to invalid messages and behaviour from the test tool.

Test purposes:

TP/AL-I/OBU/BI/01	**Verify that the OBU can manage profile selection**	
	Reference:	EN 12834 [1] clauses 7.3.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.2/6 AND Table A.4/3 AND Table A.5/2
	TC reference:	TC_AL_I_OBU_BI_01
	Initial condition:	OBU not in sleep mode and not yet initialized. The profiles #C and #D shall not be supported in the OBU.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BST.profile=#C and BST.profileList being empty. 2. Verify IUT does not initialize with INITIALizaTION.response (VST). 3. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BST.profile=#D and BST.profileList being empty. 4. Verify IUT does not initialize with INITIALizaTION.response (VST).	

TP/AL-I/OBU/BI/02	**Verify that the OBU can manage applications**	
	Reference:	EN 12834 [1] clauses 7.3.2 and Annex A
	PICS Selection:	Table A.1/1 AND Table A.2/6 AND Table A.4/4 AND Table A.4/7 AND Table A.5/3 AND Table C.2/5 AND Table C.2/6 AND Table C.2/8 AND Table C.2/9 AND Table C.3/4 AND Table C.3/5
	TC reference:	TC_AL_I_OBU_BI_02
	Initial condition:	OBU not in sleep mode and not yet initialized. The applications aid=#A and aid=#B shall not be supported in the OBU.
	Stimulus and Expected Behaviour: 1. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BST.mandApplications.aid=#A and BST.nonmandApplications being empty. 2. Verify IUT does not initialize with INITIALizaTION.response (VST). 3. Tester sends INITIALizaTION.request (BST) with FlowControl=2 and BST.mandApplications.aid=#B and BST.nonmandApplications.aid=#A. 4. Verify IUT does not initialize with INITIALizaTION.response (VST).	

5.5 Application I-kernel test purposes for Road Side Unit

5.5.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the IUT in relation to syntactically and contextual correct behaviour of the test system.

Test purposes:

TP/AL-I/RSU/BV/01	**Verify that the RSU can read and manage profile contained in the VST**	
	Reference:	EN 12834 [1] clauses 6.2, 7.3.2, 7.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.3/2 AND Table B.5/2
	TC reference:	TC_AL_I_RSU_BV_01
	Initial condition:	RSU is running a single test application, transmitting on request INITIALizaTION.request (BST) with FlowControl=2, LID=broadcast, changing BST.profile in every next BST, offering at least the two profiles 0 and 1.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request with BST.profile set to the first value. The BST.ProfileList may exist. 2. Tester is responding with INITIALizaTION.response (VST), with profile offered by RSU, using the correct ApplicationList. 3. Verify IUT acknowledges initialization of OBU by sending any privately addressed command different to RELEASE. 4. Repeat steps 1. through 3. for the next profile with new private LID.	

TP/AL-I/RSU/BV/02	**Verify that the RSU can read applications contained in the VST**	
	Reference:	EN 12834 [1] clauses 6.2 7,.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.3/2 AND Table B.5/3
	TC reference:	TC_AL_I_RSU_BV_02
	Initial condition:	RSU is running a single test application, transmitting on request INITIALizaTION.request (BST) with FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester is responding with INITIALizaTION.response (VST), with ApplicationList. 3. containing a single entry: aid = valid, eid = valid, parameter = valid. 4. Verify IUT acknowledges initialization of OBU by sending any privately addressed command different to RELEASE.	
NOTE: The term "valid" means, that the value is supported at the RSU.		

TP/AL-I/RSU/BV/03	**Verify that the RSU can read and manage EIDs of applications contained in the VST**	
	Reference:	EN 12834 [1] clauses 6.2, 7.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.3/2 AND Table D.3/5
	TC reference:	TC_AL_I_RSU_BV_03
	Initial condition:	RSU is running a single test application, transmitting on request INITIALizaTION.request (BST) with FlowControl=2, LID=broadcast, offering a single type of application and supporting a single context of this application.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester is responding with INITIALizaTION.response (VST), requiring the offered application context with EID=1. 3. Verify IUT does acknowledge initialization of OBU by sending any privately addressed command different to RELEASE. 4. Repeat steps 1. and 2. for all values of EID in the range from 2 to 127, each time with new private LID.	

TP/AL-I/RSU/BV/04	**Verify that the RSU can read and manage multiple applications in VST**	
	Reference:	EN 12834 [1] clauses 6.2, 7.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.2/4 AND Table B.3/2 and Table D.3/4 AND Table D.3/5
	TC reference:	TC_AL_I_RSU_BV_02
	Initial condition:	RSU is running two test applications, transmitting on request INITIALizaTION.request (BST) with FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester is responding with INITIALizaTION.response (VST), with new private LID and with ApplicationList containing a two entries: 1) entry: aid=valid, eid = valid, parameter: Context = valid. 2) entry: aid=valid, eid = other valid, parameter: Context = other valid. 3. Verify IUT acknowledges initialization of OBU by accessing one of the applications identified in step 2 above.	
NOTE: The term "valid" means, that the value is supported at the RSU.		

5.5.2 BI test purposes

Test subgroup objective:

- to check the behaviour of the of the IUT in response to invalid messages and behaviour from the test tool.

Test purposes:

TP/AL-I/RSU/BI/01	**Verify that the RSU can read and manage the ApplicationList contained in the VST**	
	Reference:	EN 12834 [1] clauses 6.2, 7.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.5/3
	TC reference:	TC_AL_I_RSU_BI_01
	Initial condition:	RSU is running test application, transmitting on request INITIALizaTION.request (BST) with FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester is responding with INITIALizaTION.response (VST), with ApplicationList containing a single entry: aid = invalid, parameter Context = valid. 3. Verify IUT does not acknowledge initialization of OBU by sending a privately addressed frame to it other than the RELEASE command. 4. Observe, whether IUT sends allowed EVENT-REPORT.request (RELEASE).	
NOTE: The term "valid" means, that the value is supported at the RSU. The term "invalid" means that the value is not supported at the RSU.		

TP/AL-I/RSU/BI/02	**Verify that the RSU can read and manage wrong EID=0 of non-system applications contained in the VST**	
	Reference:	EN 12834 [1] clauses 6.2, 7.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table D.3/4
	TC reference:	TC_AL_I_RSU_BI_02
	Initial condition:	RSU is running a single test application, not a system application, transmitting on request INITIALizaTION.request (BST) with mode=1 and FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester is responding with INITIALizaTION.response (VST), with ApplicationList containing a single entry: aid = valid and not equal to aid=0, parameter = valid, EID=0. 3. Verify IUT does not acknowledge initialization of OBU by sending a privately addressed frame to it other than the RELEASE command.	

TP/AL-I/RSU/BI/03	**Verify that the RSU can read and manage wrong profile contained in the VST**	
	Reference:	EN 12834 [1] clauses 6.2, 7.3.2, 7.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.5/2
	TC reference:	TC_AL_I_RSU_BI_03
	Initial condition:	RSU is running a single test application, transmitting on request INITIALizaTION.request (BST) with mode=1 and FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester is responding with INITIALizaTION.response (VST), with profile not supported by RSU. 3. Verify IUT does not acknowledge initialization of OBU by sending a privately addressed frame to it other than the RELEASE command.	

TP/AL-I/RSU/BI/04	**Verify that the RSU can read and manage the ApplicationList contained in the VST**	
	Reference:	EN 12834 [1] clauses 6.2, 7.3.3 and Annex A
	PICS Selection:	Table B.1/1 AND Table B.5/3
	TC reference:	TC_AL_I_RSU_BI_01
	Initial condition:	RSU is running test application, transmitting on request INITIALizaTION.request (BST) with FlowControl=2, LID=broadcast.
	Stimulus and Expected Behaviour: 1. Tester receives INITIALizaTION.request. 2. Tester is responding with INITIALizaTION.response (VST), with ApplicationList containing a two entries: 1) entry: aid=invalid, eid = valid, parameter: Context = valid. 2) entry: aid=valid, eid = other valid, parameter: Context = valid. 3. Verify IUT acknowledges initialization of OBU by performing the application as indicated in the second entry of the previous step.	
NOTE: The term "valid" means that the value is supported at the RSU. The term "invalid" means that the value is not supported at the RSU.		

Annex A (informative): Test coverage matrix

A.1 Introduction

The following tables show the test purposes coverage with respect to:

a) relevant clauses in the base standard; and

b) PICS statements.

There is one table for OBU and one table for RSU.

The tables are ordered by base standard clauses. When no other indication is given, it is assumed that the referenced clause contains one testable statement. Otherwise, the referenced statement is identified by the order of sentences, list items, or rules specified in the clause.

A.2 OBU test coverage matrix

Base standard clause	PICS reference	Test purpose
Foreword	None	Nothing to be tested
1 Scope	None	Nothing to be tested
2 Normative References	None	Nothing to be tested
3 Terms and Definitions	None	Nothing to be tested
4 Abbreviations	None	Nothing to be tested
5 Initialization Kernel mandatory, if B-Kernel is not existent	Table A.1 - Item 1 Table C.1	Explicit tests: TP/AL-I/OBU/BV/xx TP/AL-I/OBU/BI/xx Implicit tests: TP/AL-T/OBU/BV/xx TP/AL-T/OBU/BI/xx
5 Transport Kernel mandatory	Table A.1 - Item 2	Explicit tests: TP/AL-T/OBU/BV/xx TP/AL-T/OBU/BI/xx
5 Broadcast Kernel mandatory if I-Kernel is not existent	Table A.1 - Item 3	B-Kernel only maintained for backwards compatibility with ENV, No implementation known. No TPs specified
6.1 T-Kernel architectural requirements • T-K service primitives	None	Not explicitly testable. See below for details of services and service primitives
6.1 T-Kernel architectural requirements • T-APDUs	Table A.8 - all items Table C.4 - all items	See below for details
6.1 T-Kernel architectural requirements • T-K protocol	Table A.6 - all items	See below for details
6.1 T-Kernel architectural requirements • LLC-services to be used	Table A.6 - Item 1	See below for details

Base standard clause	PICS reference	Test purpose
6.2.1 GET Service functional description	None	Service used in the following TPs: TP/AL-T/OBU/BV/01 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BV/04 TP/AL-T/OBU/BV/05 TP/AL-T/OBU/BV/06 TP/AL-T/OBU/BV/07 TP/AL-T/OBU/BV/13 TP/AL-T/OBU/BV/14 TP/AL-T/OBU/BV/16 TP/AL-T/OBU/BI/01 TP/AL-T/OBU/BI/03 TP/AL-T/OBU/BI/06
6.2.1 SET Service functional description	None	Service used in the following TPs: TP/AL-T/OBU/BV/02 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BV/04 TP/AL-T/OBU/BV/05 TP/AL-T/OBU/BV/06 TP/AL-T/OBU/BV/07 TP/AL-T/OBU/BV/13 TP/AL-T/OBU/BV/14 TP/AL-T/OBU/BV/16 TP/AL-T/OBU/BI/01 TP/AL-T/OBU/BI/03 TP/AL-T/OBU/BI/06
6.2.1 ACTION Service functional description	None	Service used in the following TPs: TP/AL-T/OBU/BV/08 TP/AL-T/OBU/BV/09 TP/AL-T/OBU/BV/10 TP/AL-T/OBU/BV/11 TP/AL-T/OBU/BV/12 TP/AL-T/OBU/BV/13 TP/AL-T/OBU/BV/14 TP/AL-T/OBU/BV/16 TP/AL-T/OBU/BI/03 TP/AL-T/OBU/BI/06
6.2.1 EVENT-REPORT Service functional description	None	Service used in the following TPs: TP/AL-I/OBU/BV/02 TP/AL-T/OBU/BV/07 TP/AL-T/OBU/BV/16
6.2.1 INITIALizaTION Service functional description	None	Service implicitly used in all TPs not related to the B-Kernel. Explicitly used in the following TPs: TP/AL-I/OBU/BV/01 TP/AL-I/OBU/BV/03 TP/AL-I/OBU/BV/04 TP/AL-I/OBU/BV/05 TP/AL-I/OBU/BV/07 TP/AL-I/OBU/BI/01 TP/AL-I/OBU/BI/02
6.2.2 GET.request service primitive / PDU	Table A.8 - Item 1	Transmission: No TPs specified. Implementations are according to EN 13372 [3]; see below. Reception: TP/AL-T/OBU/BV/01 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BV/04 TP/AL-T/OBU/BV/05 TP/AL-T/OBU/BV/06 TP/AL-T/OBU/BV/07

Base standard clause	PICS reference	Test purpose
6.2.2 GET.request service primitive / PDU	Table C.4 - A.8 Item 1	Transmission N.A., RSU test Reception: TP/AL-T/OBU/BV/01 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BV/04 TP/AL-T/OBU/BV/05 TP/AL-T/OBU/BV/06 TP/AL-T/OBU/BV/07
6.2.2 GET.indication service primitive	None	Not directly testable
6.2.2 GET.response service primitive / PDU	Table A.8 - Item 2 Table C.4 - Item 2	Transmission: TP/AL-T/OBU/BV/01 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BV/04 TP/AL-T/OBU/BV/05 TP/AL-T/OBU/BV/06 TP/AL-T/OBU/BV/07
6.2.2 GET.confirm service primitive	None	Not directly testable
6.2.2 SET.request service primitive / PDU	Table A.8 - Item 3	Transmission: No TPs specified. Implementations are according to EN 13372 [3]; see below. Reception TP/AL-T/OBU/BV/02 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BV/04 TP/AL-T/OBU/BV/05 TP/AL-T/OBU/BV/06 TP/AL-T/OBU/BV/07
6.2.2 SET.request service primitive / PDU	Table C.4 - A.8 Item 3	Transmission N.A., RSU test Reception: TP/AL-T/OBU/BV/02 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BV/04 TP/AL-T/OBU/BV/05 TP/AL-T/OBU/BV/06 TP/AL-T/OBU/BV/07
6.2.2 SET.indication service primitive	None	Not directly testable
6.2.2 SET.response service primitive / PDU	Table A.8 - Item 4 Table C.4 - Item 4	Transmission: TP/AL-T/OBU/BV/02 TP/AL-T/OBU/BV/03
6.2.2 SET.confirm service primitive	None	Not directly testable
6.2.2 ACTION.request service primitive / PDU	Table A.8 - Item 5	Transmission: No TPs specified. Implementations are according to EN 13372 [3]; see below Reception: TP/AL-T/OBU/BV/08 TP/AL-T/OBU/BV/09 TP/AL-T/OBU/BV/10 TP/AL-T/OBU/BV/11 TP/AL-T/OBU/BV/12
6.2.2 ACTION.request service primitive / PDU	Table C.4 - A.8 Item 5	Transmission N.A., RSU test Reception: TP/AL-T/OBU/BV/08 TP/AL-T/OBU/BV/09 TP/AL-T/OBU/BV/10 TP/AL-T/OBU/BV/11 TP/AL-T/OBU/BV/12
6.2.2 ACTION.indication service primitive	None	Not directly testable
6.2.2 ACTION.response service primitive / PDU	Table A.8 - Item 6 Table C.4 - Item 6	Transmission: TP/AL-T/OBU/BV/08
6.2.2 ACTION.confirm service primitive	None	Not directly testable

Base standard clause	PICS reference	Test purpose
6.2.2 EVENT-REPORT.request service primitive / PDU	Table A.8 - Item 7	Transmission: No TPs specified. Implementations are according to EN 13372 [3]; see below Reception:
6.2.2 EVENT-REPORT.request service primitive / PDU	Table C.4 - A.8 Item 7	Transmission N.A., RSU test Reception: TP/AL-T/OBU/BV/07 TP/AL-I/OBU/BV/02
6.2.2 EVENT-REPORT.indication service primitive	None	Not directly testable
6.2.2 EVENT-REPORT.response service primitive / PDU	Table A.8 - Item 8	No TPs specified., as the only event RELEASE is using mode=0.
6.2.2 EVENT-REPORT.response service primitive / PDU	Table C.4 - A.8 Item 8	N.A.
6.2.2 EVENT-REPORT.confirm service primitive	None	Not directly testable
6.2.2 INITIALizaTION.request service primitive / PDU	Table A.8 - Item 9 Table C.4 - A.8 Item 9	Transmission N.A., RSU test Reception: See INITIALizaTION service
6.2.2 INITIALizaTION.indication service primitive	None	Not directly testable
6.2.2 INITIALizaTION.response service primitive / PDU	Table A.8 - Item 10 Table C.4 - Item 10	Transmission: See INITIALizaTION service
6.2.2 INITIALizaTION.confirm service primitive	None	Not directly testable
6.2.3 Handling of Mode parameter	Table A.6 - Item 2	Implicitly tested in all TPs
6.2.3 GET.req for sending	Table A.9	N.A. for EN 13372 [3]
6.2.3 GET.req. fill	Table A.10 - Item 1	No explicit test
6.2.3 GET.req. eid	Table A.10 - Item 2	See Get service
6.2.3 GET.req. accessCredentials	Table A.10 - Item 3	No TPs specified
6.2.3 GET.req. iid	Table A.10 - Item 4	Never used. No TPs specified
6.2.3 GET.req. attrIdList	Table A.10 - Item 5	See GET service
6.2.3 GET.rsp. fill	Table A.11 - Item 1	No explicit test
6.2.3 GET.rsp. eid	Table A.11 - Item 2	See GET service
6.2.3 GET.rsp. iid	Table A.11 - Item 3	Never used. No TPs specified
6.2.3 GET.rsp. attributelist	Table A.11 - Item 4	See GET service
6.2.3 GET.rsp. ret	Table A.11 - Item 5	TP/AL-T/OBU/BV/01 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BI/06
6.2.3 GET.rsp for receiving	Table A.12	N.A. for EN 13372 [3]
6.2.3 SET.req for sending	Table A.13	N.A. for EN 13372 [3]
6.2.3 SET.req. fill	Table A.14 - Item 1	No explicit test
6.2.3 SET.req. mode	Table A.14 - Item 2	See SET service
6.2.3 SET.req. eid	Table A.14 - Item 3	See SET service
6.2.3 SET.req. accessCredentials	Table A.14 - Item 4	No TPs specified
6.2.3 SET.req. attributelist	Table A.14 - Item 5	See SET service
6.2.3 SET.req. iid	Table A.14 - Item 6	Never used. No TPs specified
6.2.3 SET.rsp. fill	Table A.15 - Item 1	No explicit test
6.2.3 SET.rsp. eid	Table A.15 - Item 2	See SET service
6.2.3 SET.rsp. iid	Table A.15 - Item 3	Never used. No TPs specified
6.2.3 SET.rsp. ret	Table A.15 - Item 4	TP/AL-T/OBU/BV/02 TP/AL-T/OBU/BV/03 TP/AL-T/OBU/BI/06
6.2.3 SET.rsp for receiving	Table A.16	N.A. for EN 13372 [3]
6.2.3 ACTION.req for sending	Table A.17	N.A. for EN 13372 [3]
6.2.3 ACTION.req. mode	Table A.18 - Item 1	See ACTION service
6.2.3 ACTION.req. eid	Table A.18 - Item 2	See ACTION service
6.2.3 ACTION.req. actionType	Table A.18 - Item 3	See ACTION service
6.2.3 ACTION.req. accessCredentials	Table A.18 - Item 4	No TPs specified
6.2.3 ACTION.req. actionParameter	Table A.18 - Item 5	See ACTION service
6.2.3 ACTION.req. iid	Table A.18 - Item 6	Never used. No TPs specified
6.2.3 ACTION.rsp. fill	Table A.19 - Item 1	No explicit test
6.2.3 ACTION.rsp. eid	Table A.19 - Item 2	See ACTION service

Base standard clause	PICS reference	Test purpose
6.2.3 ACTION.rsp. iid	Table A.19 - Item 3	Never used. No TPs specified
6.2.3 ACTION.rsp. responseParameter	Table A.19 - Item 4	See ACTION service
6.2.3 ACTION.rsp. ret	Table A.19 - Item 5	TP/AL-T/OBU/BI/06
6.2.3 ACTION.rsp for receiving	Table A.20	N.A. for EN 13372 [3]
6.2.3 EVENT-REPORT.req for sending	Table A.21	N.A. for EN 13372 [3]
6.2.3 EVENT-REPORT.req. mode	Table A.22 - Item 1	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. eid	Table A.22 - Item 2	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. eventType	Table A.22 - Item 3	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. accessCredentials	Table A.22 - Item 4	No TPs specified
6.2.3 EVENT-REPORT.req. eventParameter	Table A.22 - Item 5	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. iid	Table A.22 - Item 6	Never used. No TPs specified
6.2.3 EVENT-REPORT.rsp. fill	Table A.23 - Item 1	No TPs specified
6.2.3 EVENT-REPORT.rsp. eid	Table A.23 - Item 2	No TPs specified
6.2.3 EVENT-REPORT.rsp. iid	Table A.23 - Item 3	No TPs specified
6.2.3 EVENT-REPORT.rsp. responseParameter	Table A.23 - Item 4	No TPs specified
6.2.3 EVENT-REPORT.rsp for receiving	Table A.24	N.A. for EN 13372 [3]
6.2.4 Service primitive parameter description	None	See above for base standard clause 6.2.3
6.3 Architecture of transfer protocol	None	Nothing testable
6.3.1 SDU to PDU - General Procedure	Table A.6 - Item 10	Implicitly tested in all TPs
6.3.1 SDU to PDU - FlowControl	Table A.6 - Item 1	
6.3.1 SDU to PDU - Management of mode	Table A.6 - Item 2	
6.3.2 Encoding ASN.1	Table A.6 - Item 3	All TPs where PDUs must be encoded/decoded (quoted as referring to Annex A.2)
6.3.3 Fragmentation architecture	Table A.6 - Item 4 Table A.6 - Item 5	No TPs specified with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3 Fragmentation Maximum length of single fragment	None	No TPs specified with fragmentation. Maximum frame length tested in TPs for DLL
6.3.3 Fragmentation Length of subsequent fragments	None	No TPs specified with fragmentation
6.3.3 Fragmentation ordering of bits and octets	None	No TPs specified with fragmentation
6.3.3 Fragmentation Parallel processing of multiple PDUs	None	No TPs specified with fragmentation
6.3.3.1 Fragmentation header position	None	No TPs specified with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3.2 Fragmentation header structure	None	No TPs specified with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs.
6.3.3.3 Fragmentation indicator	None	No TPs specified with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3.4 PDU number of T-APDU	None	TP/AL-T/OBU/BV/13
6.3.3.4 PDU number of fragments of the same T-APDU	None	No TPs specified with fragmentation
6.3.3.4 PDU numbers of B-Kernel	None	Case without fragmentation: TP/AL-T/OBU/BI/01 TP/AL-T/OBU/BI/02

Base standard clause	PICS reference	Test purpose
6.3.3.5 One octet fragmentation header	Table A.7 - Item 1	Case without fragmentation, i.e. only one octet fragmentation header, implicitly tested in all TPs
6.3.3.5 Fragmentation with one octet header	Table A.6 - Item 5 Table A.7 - Item 1	
6.3.3.5 Fragmentation Fragment counter	None	No TPs specified with fragmentation
6.3.3.6 Fragmentation with two octet header	Table A.6 - Item 5 Table A.7 - Item 2	
6.3.3.7 Fragmentation with three octet header	Table A.6 - Item 5 Table A.7 - Item 3	
6.3.4 Octet alignment with fill bits	Table A.6 - Item 6 Table A.5 - Item 1	Implicitly tested in TPs where ASN.1 elements out of the following list are used: ACTION.response EVENT-REPORT.response GET.response SET.response VST
6.3.4 Octet alignment with zero padding	Table A.6 - Item 6	Never applies as octet alignment is implicitly achieved by means of fill bits and proper ASN.1 encoding
6.3.5 Multiplexing	Table A.6 - Item 7	N.A. for OBU.
6.3.6 Flow control	Table A.6 - Item 1	Implicitly tested in all TPs
6.3.7 Concatenation	Table A.6 - Item 8	
6.3.8 Chaining	Table A.6 - Item 9	Receiving: TP/AL-T/OBU/BV/16 TP/AL-T/OBU/BI/06
6.3.9 Demultiplexing	Table A.6 - Item 7	TP/AL-T/OBU/BV/14
6.3.10 Defragmentation Valid behaviour	Table A.6 - Item 5	No TPs specified with fragmentation
6.3.10 Defragmentation One octet header without fragmentation	Table A.7 - Item 1	Implicitly tested in all TPs
6.3.10 Defragmentation Invalid fragmentation header - no fragmentation	Table A.7 - Item 1	TP/AL-T/OBU/BI/02 TP/AL-T/OBU/BI/03 TP/AL-T/OBU/BI/04
6.3.10 Defragmentation in case of concatenation - header handling	Table A.6 - Item 5	Not testable
6.3.11 Decoding	Table A.6 - Item 3	Implicitly tested in all TPs
6.3.11 Decoding trailing bits	Table A.6 - Item 3	Never will apply as octet alignment is implicitly achieved by means of fill bits and proper ASN.1 encoding. Implicitly tested in all TPs
6.3.11 Decoding invalid behaviour	Table A.6 - Item 3	No TPs specified
6.3.12 SDU to PDU - General Procedure (Delivery of SDU to destination)	Table A.6 - Item 11	Implicitly tested in all TPs
6.3.12 PDU to SDU - FlowControl	Table A.6 - Items 1	Implicitly tested in all TPs
6.3.12 PDU to SDU - Management of Mode	Table A.6 - Items 2	Implicitly tested in all TPs
6.3.12 PDU to SDU invalid EID	Table A.6 - Item 11	
6.3.12PDU to SDU info on LID to management	None	No TPs specified. Purpose of requirement unclear
7.1 I-Kernel architecture	None	Tested in terms of related procedures and PDUs
7.1 Unfragmented BST only	None	Not testable, as reception of a fragmented BST is not prohibited
7.2.1 Service Primitives architecture RegisterApplicationRSU	None	N.A., RSU test
7.2.1 Service Primitives architecture RegisterApplicationOBU	None	Not testable. Only presence of an application can be observed. Implicitly done in all TPs addressing EID different to zero
7.2.1 Service Primitives architecture DeegisterApplication	None	Not testable

Base standard clause	PICS reference	Test purpose
7.2.1 Service Primitives architecture NotifyApplicationOBU	None	Not testable
7.2.1 Service Primitives architecture NotifyApplicationRSU	None	N.A., RSU test
7.2.1 Service Primitives architecture EndApplication	None	Not testable
7.2.2 Service Primitives format RegisterApplicationRSU	None	N.A., RSU test
7.2.2 Service Primitives format RegisterApplicationOBU	None	Not testable
7.2.2 Service Primitives format DeregisterApplication	None	Not testable
7.2.2 Service Primitives format NotifyApplicationRSU	None	N.A., RSU test
7.2.2 Service Primitives format NotifyApplicationOBU	None	Not testable
7.2.2 Service Primitives format EndApplication	None	Not testable
7.2.3 Service Primitives parameters AID	None	Not explicitly testable
7.2.3 Service Primitives parameters MandatoryApplication	None	Not explicitly testable
7.2.3 Service Primitives parameters Priority	None	Not explicitly testable
7.2.3 Service Primitives parameters EID	None	Not explicitly testable
7.2.3 Service Primitives parameters Profiles	None	Not explicitly testable
7.2.3 Service Primitives parameters Parameter	None	Not explicitly testable
7.2.3 Service Primitives parameters ObeConfiguration	None	Not explicitly testable
7.2.3 Service Primitives parameters LID	None	Not explicitly testable
7.2.3 Service Primitives parameters RSU	None	Not explicitly testable
7.2.4 Location of services	None	Not testable
7.3.1 Transmission of BST	None	N.A., RSU test
7.3.2 OBU BST PDU	Table A.3 - Item 1	TP/AL-I/OBU/BV/01
7.3.2 OBU VST PDU	Table A.3 - Item 2	TP/AL-I/OBU/BV/01
7.3.2 OBU handling of BST/VST. Generation of random private LID	Table A.2 - Item 1	
7.3.2 OBU generation of VST	Table A.2 - Item 2	TP/AL-I/OBU/BV/01
7.3.2 OBU handling of BST/VST. BeaconID	Table A.2 - Item 3 Table A.4 - Item 1	TP/AL-I/OBU/BV/03
7.3.2 OBU handling of BST/VST. Time or BST reception	Table A.2 - Item 4 Table A.4 - Item 2	TP/AL-I/OBU/BV/04
7.3.2 OBU handling of BST/VST. Mandatory applications	Table A.4 - Item 5 Table A.4 - Item 6	No TPs specified as N.A. for profile standard [3]
7.3.2 OBU handling of BST/VST. Mandatory applications	Table A.2 - Item 6 Table A.4 - Item 4 Table C.2 - A.4 Item 5 Table C.2 - A.4 Item 6 Table A.5 - Item 3 Table C.3 - A.5 Item 4 Table C.3 - A.5 Item 5	TP/AL-I/OBU/BV/07 TP/AL-I/OBU/BI/02
7.3.2 OBU handling of BST/VST. Non-mandatory applications	Table A.2 - Item 6 Table A.4 - Item 7 Table A.4 - Item 8 Table A.4 - Item 9 Table A.5 - Item 3 Table A.5 - Item 4 Table A.5 - Item 5	TP/AL-I/OBU/BV/07 TP/AL-I/OBU/BI/01

Base standard clause	PICS reference	Test purpose
7.3.2 OBU handling of BST/VST. Non-mandatory applications	Table A.2 - Item 6 Table A.4 - Item 7 Table C.2 - A.4 Item 8 Table C.2 - A.4 Item 9 Table A.5 - Item 3 Table C.3 - A.5 Item 4 Table C.3 - A.5 Item 5	TP/AL-I/OBU/BI/02
7.3.2 OBU handling of BST/VST profile	Table A.4 - Item 3 Table A.5 - Item 2	TP/AL-I/OBU/BV/05 TP/AL-I/OBU/BI/01
7.3.2 OBU handling of BST/VST profileList	Table A.4 - Item 10 Table A.5 - Item 2	TP/AL-I/OBU/BV/05
7.3.2 OBU handling of BST/VST. obeConfiguration	Table A.5 - Item 6	Observation of proper obeConfiguration would be possible
7.3.3 RSU handling of VST	None	N.A., RSU test
7.3.4 Register application at RSU	None	N.A., RSU test
7.3.5 Register application at OBU	None	Not testable
7.3.6 Deregister application at OBU	None	Not testable4
7.3.7 Deregister application at RSU	None	N.A., RSU test
7.3.8 Release application at RSU	None	N.A., RSU test
7.3.9 OBU handling of Release	Table A.2 - Item 5 Table A.3 - Item 3	TP/AL-T/OBU/BV/07 TP/AL-I/OBU/BV/02
8.1 B-Kernel architecture	None	No tests for B-Kernel available
8.2.1 Service primitives architecture	Table A.26 - Item 1	No tests for B-Kernel available
8.2.2 Service primitives format	Table A.26 - Item 1	No tests for B-Kernel available
8.2.3 Service primitives parameters	None	No tests for B-Kernel available
8.2.4 Service primitives location	None	No tests for B-Kernel available
8.3.1 RSU transmission of broadcast pool	None	N.A., RSU test
8.3.2 OBU reception of broadcast pool	Table A.25 - Item 1	No tests for B-Kernel available
8.3.3 Provision of Broadcast data at RSU	N.A.	N.A., RSU test
8.3.4 Retrieval of broadcast file at OBU	Table A.25 - Item 2	No tests for B-Kernel available
A.1 ASN.1 module usage	None	Advice on usage of modules can not be used, as module definition in A.2 is erroneous
A.2 ASN.1 module specification	Table A.3, A.4, A.5, A.8 to A.24, A.26, A.27, A.28 Table C.5, C.6	Implicitly tested in all TPs: TP/AL-T/OBU/BV/xx TP/AL-T/OBU/BI/xx TP/AL-I/OBU/BV/xx TP/AL-I/OBU/BI/xx
B.2 Naming and registration	None	To be tested in a specific installation
C Informative annex	None	not testable
D Informative annex	None	not testable

A.3 RSE test coverage matrix

Base starndard clause	PICS reference	Test purpose
1 Scope	None	Nothing to be tested
2 Normative References	None	Nothing to be tested
3 Terms and Definitions	None	Nothing to be tested
4 Abbreviations	None	Nothing to be tested
5 Initialization Kernel mandatory, if B-Kernel is not existent.	Table B.1 - Item 1	Implicitly tested in all TPs for T-Kernel. Explicit tests: TP/AL-I/RSU/BV/xx TP/AL-I/RSU/BI/xx
5 Transport Kernel mandatory	Table B.1 - Item 2	TP/AL-T/RSU/BV/01 TP/AL-T/RSU/BI/01 TP/AL-T/RSU/BI/02 TP/AL-T/RSU/BI/03

Base starndard clause	PICS reference	Test purpose
5 Broadcast Kernel mandatory if I-Kernel is not existent	Table B.1 - Item 3	So far no TPs are available to test the B-Kernel
6.1 T-Kernel architectural requirements • T-K service primitives	None	Not explicitly testable. See below for details of services and service primitives
6.1 T-Kernel architectural requirements • T-APDUs	Table B.8 - all items Table D.4 - all items	See below for details
6.1 T-Kernel architectural requirements • T-K protocol	Table B.6 - all items	See below for details
6.1 T-Kernel architectural requirements • LLC-services to be used	Table B.6 - Item 1	See below for details
6.2.1 GET Service functional description	None	Service used in: TP/AL-T/RSU/BI/02 TP/AL-T/RSU/BI/03
6.2.1 SET Service functional description	None	Service used in: TP/AL-T/RSU/BI/02 TP/AL-T/RSU/BI/03
6.2.1 ACTION Service functional description	None	Service used in: TP/AL-T/RSU/BI/02 TP/AL-T/RSU/BI/03
6.2.1 EVENT-REPORT Service functional description	None	Service used in: TP/AL-T/RSU/BI/01 TP/AL-T/RSU/BI/02 TP/AL-T/RSU/BI/03
6.2.1 INITIALizaTION Service functional description	None	Service implicitly used in all TPs not related to the B-Kernel. Explicitly used in the following TPs: TP/AL-I/RSU/BV/xx TP/AL-I/RSU/BI/xx
6.2.2 GET.request service primitive	Table B.8 - Item 1 Table D.4 - B.8 Item 1	No TPs specified. so far
6.2.2 GET.indication service primitive	None	Not directly testable
6.2.2 GET.response service primitive	Table B.8 - Item 2	Transmission: No TPs specified. Reception: No TPs specified. so far
6.2.2 GET.response service primitive	Table D.4 - B.8 Item 2	Transmission N.A., OBU test
6.2.2 GET.confirm service primitive	None	Not directly testable
6.2.2 SET.request service primitive	Table B.8 - Item 3 Table D.4 - B.8 Item 3	No TPs specified. so far
6.2.2 SET.indication service primitive	None	Not directly testable
6.2.2 SET.response service primitive	Table B.8 - Item 4	Transmission: No TPs specified. Reception: No TPs specified. so far
6.2.2 SET.response service primitive	Table D.4 - B.8 Item 4	Transmission N.A., OBU test
6.2.2 SET.confirm service primitive	None	Not directly testable
6.2.2 ACTION.request service primitive	Table B.8 - Item 5 Table D.4 - B.8 Item 5	No TPs specified. so far
6.2.2 ACTION.indication service primitive	None	Not directly testable
6.2.2 ACTION.response service primitive	Table B.8 - Item 6	Transmission: No TPs specified. Reception: No TPs specified. so far
6.2.2 ACTION.response service primitive	Table D.4 - B.8 Item 6	Transmission N.A., OBU test
6.2.2 ACTION.confirm service primitive	None	Not directly testable
6.2.2 EVENT-REPORT.request service primitive	Table B.8 - Item 7 Table D.4 - B.8 Item 7	No TPs specified

Base starndard clause	PICS reference	Test purpose
6.2.2 EVENT-REPORT.indication service primitive	None	Not directly testable
6.2.2 EVENT-REPORT.response service primitive	Table B.8 - Item 8	No TPs specified
6.2.2 EVENT-REPORT.response service primitive	Table D.4 - B.8 Item 8	N.A.
6.2.2 EVENT-REPORT.confirm service primitive	None	Not directly testable
6.2.2 INITIALizaTION.request service primitive	Table B.8 - Item 9 Table D.4 - B.8 Item 9	See INITIALizaTION service
6.2.2 INITIALizaTION.indication service primitive	None	Not directly testable
6.2.2 INITIALizaTION.response service primitive	Table B.8 - Item 10 Table D.4 - B.8 Item 10	Transmission N.A., OBU test Reception: See INITIALizaTION service
6.2.2 INITIALizaTION.confirm service primitive	None	Not directly testable
6.2.3 GET.req. fill	Table B.9 - Item 1	No explicit test
6.2.3 GET.req. eid	Table B.9 - Item 2	See GET service
6.2.3 GET.req. accessCredentials	Table B.9 - Item 3	No TPs specified
6.2.3 GET.req. iid	Table B.9 - Item 4	Never used. No TPs specified
6.2.3 GET.req. attrIdList	Table B.9 - Item 5	See GET service
6.2.3 GET.req. receiving	Table B.10	N.A. for EN 13372 [3]
6.2.3 GET.rsp. transmitting	Table B.11	N.A. for EN 13372 [3]
6.2.3 GET.rsp. fill	Table B.12 - Item 1	No explicit test
6.2.3 GET.rsp. eid	Table B.12 - Item 2	See GET service
6.2.3 GET.rsp. iid	Table B.12 - Item 3	Never used. No TPs specified
6.2.3 GET.rsp. attributelist	Table B.12 - Item 4	See GET service
6.2.3 GET.rsp. ret	Table B.12 - Item 5	Handling of return value not defined, thus not testable
6.2.3 SET.req. fill	Table B.13 - Item 1	No explicit test
6.2.3 SET.req. mode	Table B.13 - Item 2	See SET service
6.2.3 SET.req. eid	Table B.13 - Item 3	See SET service
6.2.3 SET.req. accessCredentials	Table B.13 - Item 4	No TPs specified
6.2.3 SET.req. attributelist	Table B.13 - Item 5	See SET service
6.2.3 SET.req. iid	Table B.13 - Item 6	Never used. No TPs specified
6.2.3 SET.req. receiving	Table B.14	N.A. for EN 13372 [3]
6.2.3 SET.rsp. transmitting	Table B.15	N.A. for EN 13372 [3]
6.2.3 SET.rsp. fill	Table B.16 - Item 1	No explicit test
6.2.3 SET.rsp. eid	Table B.16 - Item 2	See SET service
6.2.3 SET.rsp. iid	Table B.16 - Item 3	Never used. No TPs specified
6.2.3 SET.rsp. ret	Table B.16 - Item 4	Handling of return value not defined, thus not testable
6.2.3 ACTION.req. mode	Table B.17 - Item 1	See ACTION service
6.2.3 ACTION.req. eid	Table B.17 - Item 2	See ACTION service
6.2.3 ACTION.req. actionType	Table B.17 - Item 3	See ACTION service
6.2.3 ACTION.req. accessCredentials	Table B.17 - Item 4	No TPs specified
6.2.3 ACTION.req. actionParameter	Table B.17 - Item 5	See ACTION service
6.2.3 ACTION.req. iid	Table B.17 - Item 6	Never used. No TPs specified
6.2.3 ACTION.req. receiving	Table B.18	N.A. for EN 13372 [3]
6.2.3 ACTION.rsp. transmitting	Table B.19	N.A. for EN 13372 [3]
6.2.3 ACTION.rsp. fill	Table B.20 - Item 1	No explicit test
6.2.3 ACTION.rsp. eid	Table B.20 - Item 2	See ACTION service
6.2.3 ACTION.rsp. iid	Table B.20 - Item 3	Never used. No TPs specified
6.2.3 ACTION.rsp. responseParameter	Table B.20 - Item 4	See ACTION service
6.2.3 ACTION.rsp. ret	Table B.20 - Item 5	Handling of return value not defined, thus not testable
6.2.3 EVENT-REPORT.req. mode	Table B.21 - Item 1	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. eid	Table B.21 - Item 2	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. eventType	Table B.21 - Item 3	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. accessCredentials	Table B.21 - Item 4	No TPs specified

Base starndard clause	PICS reference	Test purpose
6.2.3 EVENT-REPORT.req. eventParameter	Table B.21 - Item 5	See EVENT-REPORT service
6.2.3 EVENT-REPORT.req. iid	Table B.21 - Item 6	Never used. No TPs specified
6.2.3 EVENT-REPORT.req. receiving	Table B.22	N.A. for EN 13372 [3]
6.2.3 EVENT-REPORT.rsp. transmitting	Table B.23	N.A. for EN 13372 [3]
6.2.3 EVENT-REPORT.rsp. fill	Table B.24 - Item 1	No TPs specified
6.2.3 EVENT-REPORT.rsp. eid	Table B.24 - Item 2	No TPs specified
6.2.3 EVENT-REPORT.rsp. iid	Table B.24 - Item 3	No TPs specified
6.2.3 EVENT-REPORT.rsp. responseParameter	Table B.24 - Item 4	No TPs specified
6.2.4 Service primitive parameter description	None	See above for base standard clause 6.2.3
6.3 Architecture of transfer protocol	None	Nothing testable
6.3.12 SDU to PDU - General Procedure	Table B.6 - Item 10	Implicitly tested in all TPs
6.3.1 SDU to PDU - FlowControl	Table B.6 - Item 1	Implicitly tested in all TPs
6.3.1 SDU to PDU - Management of mode	Table B.6 - Item 2	Implicitly tested in all TPs
6.3.2 Encoding ASN.1	Table B.6 - Item 3	All TPs where PDUs must be encoded/decoded (quoted as referring to clause A.2)
6.3.3 Fragmentation architecture	Table B.6 - Item 4 Table B.6 - Item 5	No TPs specified with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3 Fragmentation Maximum length of single fragment	None	No TPs specified with fragmentation. Maximum frame length tested in TPs for DLL
6.3.3 Fragmentation Length of subsequent fragments	None	No TPs specified with fragmentation
6.3.3 Fragmentation ordering of bits and octets	None	No TPs specified with fragmentation
6.3.3 Fragmentation Parallel processing of multiple PDUs	None	No TPs specified with fragmentation
6.3.3.1 Fragmentation header position	None	No TPs specified with fragmentation with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3.2 Fragmentation header structure	None	No TPs specified with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3.3 Fragmentation indicator	None	No TPs specified with fragmentation. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3.4 PDU number of T-APDU	None	TP/AL-T/RSU/BV/01
6.3.3.4 PDU number of fragments of the same T-APDU	None	No TPs specified with fragmentation
6.3.3.4 PDU numbers of B-Kernel	None	TP/AL-T/RSU/BI/01 TP/AL-T/RSU/BI/02
6.3.3.5 One octet fragmentation header	Table B.7 - Item 1	Case without fragmentation, i.e. only one octet fragmentation header, implicitly tested in all TPs
6.3.3.5 Fragmentation with one octet header	Table B.6 - Item 5 Table B.7 - Item 1	
6.3.3.5 Fragmentation Fragment counter	None	No TPs specified. Correct generation of a one octet fragmentation header implicitly tested in all TPs
6.3.3.6 Fragmentation with two octet header	Table B.6 - Item 5 Table B.7 - Item 2	
6.3.3.7 Fragmentation with three octet header	Table B.6 - Item 5 Table B.7 - Item 3	

Base starndard clause	PICS reference	Test purpose
6.3.4 Octet alignment with fill bits	Table B.6 - Item 6 Table B.5 - Item 1	Implicitly tested in TPs where ASN.1 elements out of the following list are used: GET.request SET.request
6.3.4 Octet alignment with zero padding	Table B.6 - Item 6	Never applies as octet alignment is implicitly achieved by means of fill bits and proper ASN.1 encoding
6.3.5 Multiplexing	Table B.6 - Item 7	No TPs specified
6.3.6 Flow control	Table B.6 - Item 1	Implicitly tested in all TPs
6.3.7 Concatenation	Table B.6 - Item 8	No TPs specified
6.3.8 Chaining	Table B.6 - Item 9	No TPs specified
6.3.9 Demultiplexing	Table B.6 - Item 7	No TPs specified
6.3.10 Defragmentation Valid behaviour	Table B.6 - Item 5	No TPs specified with fragmentation
6.3.10 Defragmentation One octet header without fragmentation	Table B.7 - Item 1	Implicitly tested in all TPs
6.3.10 Defragmentation Invalid fragmentation header - no fragmentation	Table B.7 - Item 1	No TPs specified
6.3.10 Defragmentation in case of concatenation - header handling	Table B.6 - Item 5	Not testable
6.3.11 Decoding	Table B.6 - Item 3	Implicitly tested in all TPs
6.3.11 Decoding trailing bits	Table B.6 - Item 3	Never will apply as octet alignment is implicitly achieved by means of fill bits and proper ASN.1 encoding. Implicitly tested in all TPs
6.3.11 Decoding invalid behaviour	Table B.6 - Item 3	No TPs specified
6.3.12 PDU to SDU - General Procedure (Delivery of SDU to destination)	Table B.6 - Item 11	Implicitly tested in all TPs
6.3.12 PDU to SDU - Flowcontrol	Table B.6 - Item 1	Implicitly tested in all TPs
6.3.12 PDU to SDU - Management of Mode	Table B.6 - Item 2	Implicitly tested in all TPs
6.3.12 PDU to SDU - General Procedure	Table B.6 - Item 11	Implicitly tested in all TPs
6.3.12 PDU to SDU invalid EID	Table B.6 - Item 12	
6.3.12PDU to SDU info on LID to management	None	No TPs specified. Purpose of requirement unclear
7.1 I-Kernel architecture	None	Tested in terms of related procedures and PDUs
7.1 Unfragmented BST only	None	Not testable
7.2.1 Service Primitives architecture RegisterApplicationRSU	None	Not testable. Only presence of an application can be observed in the BST
7.2.1 Service Primitives architecture RegisterApplicationOBU	None	N.A., OBU test
7.2.1 Service Primitives architecture DeegisterApplication	None	Not testable
7.2.1 Service Primitives architecture NotifyApplicationOBU	None	N.A., OBU test
7.2.1 Service Primitives architecture NotifyApplicationRSU	None	Not directly testable. Implicitly tested in every TP with application request to private LID
7.2.1 Service Primitives architecture EndApplication	None	Not testable
7.2.2 Service Primitives format RegisterApplicationRSU	None	Not testable
7.2.2 Service Primitives format RegisterApplicationOBU	None	N.A., OBU test
7.2.2 Service Primitives format DeregisterApplication	None	Not testable
7.2.2 Service Primitives format NotifyApplicationRSU	None	Not testable

Base starndard clause	PICS reference	Test purpose
7.2.2 Service Primitives format NotifyApplicationOBU	None	N.A., OBU test
7.2.2 Service Primitives format EndApplication	None	Not testable
7.2.3 Service Primitives parameters AID	None	Not explicitly testable
7.2.3 Service Primitives parameters MandatoryApplication	None	Not explicitly testable
7.2.3 Service Primitives parameters Priority	None	Not explicitly testable
7.2.3 Service Primitives parameters EID	None	Not explicitly testable
7.2.3 Service Primitives parameters Profiles	None	Not explicitly testable
7.2.3 Service Primitives parameters Parameter	None	Not explicitly testable
7.2.3 Service Primitives parameters ObeConfiguration	None	Not explicitly testable
7.2.3 Service Primitives parameters LID	None	Not explicitly testable
7.2.3 Service Primitives parameters RSU	None	Not explicitly testable
7.2.4 Location of services	None	Not testable
7.3.1 Transmission of BST Mandatory applications	Table B.2 - Item 1 Table B.3 - Item 1 Table B.4 - Item 1 Table B.4 - Item 2 Table B.4 - Item 3 Table B.4 - Item 4 Table B.4 - Item 5 Table B.4 - Item 6 Table B.4 - Item 7 Table B.4 - Item 10	No TPs specified
7.3.1 Transmission of BST Mandatory applications	Table B.2 - Item 1 Table B.3 - Item 1 Table B.4 - Item 1 Table B.4 - Item 2 Table B.4 - Item 3 Table B.4 - Item 4 Table D.2 - B.4 Item 5 Table D.2 - B.4 Item 6 Table B.4 - Item 7 Table B.4 - Item 10	No TPs specified for transmission. See tests below for RSU handling of VST after reception of BST
7.3.1 Transmission of BST Non-mandatory applications	Table B.2 - Item 1 Table B.3 - Item 1 Table B.4 - Item 1 Table B.4 - Item 2 Table B.4 - Item 3 Table B.4 - Item 4 Table B.4 - Item 7 Table B.4 - Item 8 Table D.2 - B.4 Item 8 Table B.4 - Item 9 Table D.2 - B.4 Item 9 Table B.4 - Item 10	No TPs specified
7.3.2 BST/VST handling	None	N.A., OBU test
7.3.3 RSU handling of VST Profile	Table B.2 - Item 2 Table B.3 - Item 2 Table B.5 - Item 2	TP/AL-I/RSU/BV/01 TP/AL-I/RSU/BI/03
7.3.3 RSU handling of VST applications.aid	Table B.2 - Item 2 Table B.3 - Item 2 Table B.5 - Item 3	TP/AL-I/RSU/BV/02 TP/AL-I/RSU/BI/01 TP/AL-I/RSU/BI/04
7.3.3 RSU handling of VST applications.eid	Table B.2 - Item 2 Table B.3 - Item 2 Table B.5 - Item 4 Table D.3 - B.5 Item 4	TP/AL-I/RSU/BV/03 TP/AL-I/RSU/BV/04 TP/AL-I/RSU/BI/02

Base starndard clause	PICS reference	Test purpose
7.3.3 RSU handling of VST applications.parameter	Table B.2 - Item 2 Table B.3 - Item 2 Table B.5 - Item 5 Table D.3 - B.5 Item 5	TP/AL-I/RSU/BV/04
7.3.3 RSU handling of multiple applications in received VST	Table B.2 - Item 2 Table B.2 - Item 4	TP/AL-I/RSU/BV/04
7.3.3 RSU handling of VST obeConfiguration	Table B.3 - Item 2 Table B.5 - Item 6	No TPs specified Could be tested in a specific application context
7.3.4 Register application at RSU	None	Not testable
7.3.5 Register application at OBU	None	N.A., OBU test
7.3.6 Deregister application at OBU	None	N.A., OBU test
7.3.7 Deregister application at RSU	None	Not testable
7.3.8 Release application at RSU	Table B.2 - Item 3 Table B.3 - Item 3	Only observable
7.3.9 OBU handling of Release		N.A., OBU test
8.1 B-Kernel architecture	None	No tests for B-Kernel available
8.2.1 Service primitives architecture	Table B.26 - Item 1	No tests for B-Kernel available
8.2.2 Service primitives format	Table B.26 - Item 1	No tests for B-Kernel available
8.2.3 Service primitives parameters	None	No tests for B-Kernel available
8.2.4 Service primitives location	None	No tests for B-Kernel available
8.3.1 RSU transmission of broadcast pool	Table B.25 - Item 1	No tests for B-Kernel available
8.3.2 OBU reception of broadcast pool	None	N.A., OBU test
8.3.3 Provision of Broadcast data at RSU	Table B.25 - Item 2	No tests for B-Kernel available
8.3.4 Retrieval of broadcast file at OBU	None	N.A., OBU test
A.1 ASN.1 module usage	None	Advice on usage of modules can not be used, as module definition in A.2 is erroneous.
A.2 ASN.1 module specification	Table B.3, B.4, B.5, B.8 to B.24, B.26, B.27, B.28 Table D.5, D.6	Implicitly tested in all TPs: TP/AL-I/RSU/BV/xx TP/AL-I/RSU/BI/xx TP/AL-T/RSU/BV/xx TP/AL-T/RSU/BI/xx
B.2 Naming and registration	None	To be tested in a specific installation
C Informative annex	None	not testable
D Informative annex	None	not testable

History

Document history		
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