



**Intelligent Transport Systems (ITS);
RTTT;**

**Test specifications for High Data Rate (HDR) data
transmission equipment operating in the 5,8 GHz ISM band;
Part 2: Application Layer;**

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

Reference

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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 the test specifications for High Data Rate (HDR) Dedicated Short Range Communication (DSRC).

Full details of the entire series can be found in part 2-1 [2].

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1 Scope

The present document contains the Test Suite Structure (TSS) and Test Purposes (TP) to test the Dedicated Short Range Communication (DSRC) High Data Rate (HDR) Application Layer.

The objective of the present document is to provide a basis for conformance tests for DSRC-HDR equipment specified in [1] 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 [3] is 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 specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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

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

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

- [1] ETSI ES 200 674-1: "Intelligent Transport Systems (ITS); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communications (DSRC); Part 1: Technical characteristics and test methods for High Data Rate (HDR) data transmission equipment operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band".
- [2] ETSI TS 102 708-2-1: "Intelligent Transport Systems (ITS); RTTT; Test specifications for High Data Rate (HDR) data transmission equipment operating in the 5,8 GHz ISM band; Part 2: Application Layer; Sub-Part 1: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [3] ISO/IEC 9646-1 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] and [3] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in [1] and [3] apply.

4 Test Suite Structure

4.1 Structure

Table 1 shows the application layer test suite structure (TSS) including its groups defined for the conformance testing.

Table 1: Test suite structure for DSRC-HDR application layer

Group	Type of system under test (SUT)	Behaviour
Kernel unit	On Board Unit	Valid behaviour
	Road Side Unit	Invalid behaviour
Read access	On Board Unit	Valid behaviour
	Road Side Unit	Invalid behaviour
Write access	On Board Unit	Valid behaviour
	Road Side Unit	Invalid behaviour
	Road Side Unit	Valid behaviour
Optional functionality	On Board Unit	Valid behaviour
	Road Side Unit	Invalid behaviour
Security	On Board Unit	Valid behaviour
	On Board Unit	Invalid behaviour
	Road Side Unit	Valid behaviour
	Road Side Unit	Invalid behaviour
Integrity constraints	On Board Unit	Invalid behaviour

4.2 Test groups

There are six test groups defined for the application layer of DSRC-HDR as presented in table 1.

4.3 Type of SUT

Two types of systems under test (SUT) are distinguished, i.e. on board units (OBUs) and road side units (RSUs).

4.4 Behaviour test groups

4.4.1 Valid behaviour tests

Valid behaviour tests shall verify that the IUT reacts in conformity with the base standard [1], after receipt or exchange of valid protocol data units (PDUs). "Valid PDU" means that the exchange of messages and the content of the exchanged messages are considered as valid, i.e. compliant with the base standard.

4.4.2 Invalid behaviour tests

Invalid behaviour tests shall verify that the IUT reacts in conformity with the base standard [1], after receipt of a syntactically invalid protocol data unit (PDU).

5 Test purposes

5.1 Introduction

5.1.1 Definition conventions

Test purposes (TPs) are defined following particular rules as presented in table 2.

Table 2: TP definition rules

TP ID	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 and paragraph).
PICS Selection	Reference to the PICS statement involved for selection of the TP. Contains a Boolean expression. Only those ICS 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 Naming conventions

The identifier of the TP is built according to table 3.

Table 3: TP naming convention

Identifier	TP<sut>/<layer>/<group>/<x>/<n>		
	<sut> = Type of SUT	OBU	On Board Unit
		RSU	Road Side Unit
	<layer>	AL	Application Layer
	<group>	KU	Kernel Unit
		RA	Read Access
		WA	Write Access
		OF	Optional Functionality
		IC	Integrity Constraints
		SC	Security
		x = Type of testing	BV
	BI		Invalid Behaviour Test
<n> = sequential number	>0	<n> = sequential number	
NOTE:	All tests specified in the present document are application layer tests. The term <layer> in the TP identifier is used to have a consistent TP reference covering also the tests on the data link layer provided in a separate part of this multi-part deliverable.		