
**Elektronsko pobiranje pristojbin - Vrednotenje skladnosti opreme v vozilu in v
obcestni napravi s standardom EN 15509 - 1. del: Zgradba preskuševalnega niza in
namen preskušanja**

Electronic fee collection - Conformity evaluation of on-board and roadside equipment to
EN 15509 - Part 1: Test suite structure and test purposes

Elektronische Gebührenerhebung - Konformitätsprüfung von Fahrzeuggeräten und
straßenseitigen Einrichtungen nach EN 15509 - Teil 1: Struktur und Zweck des
Prüfprogramms

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Perception de télépéage - Evaluation de conformité de l'équipement embarqué et de
l'équipement au sol à la EN 15509 - Partie 1: Structure des suites de tests et intention
des tests

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Perception de télépéage - Evaluation de conformité de l'équipement embarqué et de l'équipement au sol à la EN 15509 - Partie 1: Structure des suites de tests et intention des tests

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 278.

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prEN 15876-1:2016 (E)**European foreword**

This document (prEN 15876-1:2016) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15509-1:2010+A1:2012.

This second edition of EN 15876-1 incorporates the following main modifications compared to the previous one:

- amendment of terms, in order to reflect harmonization of terms across electronic fee collection (EFC) standards;
- addition of a new clause (i.e. Clause 5) on conformance;
- amendments to reflect changes to the underlying base standard, with emphasis on backward compatibility with the first edition of this standard.

For the revision of this European Standard, the following principles have been used:

- take into account the evolution of some of the underlying standard, i.e. EN ISO 15509:2014
- maintain compatibility with the previous edition of this European Standard.

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Introduction

CEN/TC 278 has produced a set of standards that support interoperable DSRC-EFC-systems e.g. EN ISO 14906 (a "toolbox" for defining EFC-application transaction) and CEN ISO/TS 14907-2 (EFC application interface conformance tests for On Board Units). However, these standards are only of an enabling nature and do not guarantee unambiguous technical interoperability. Therefore EN 15509, *Electronic fee collection – Interoperability application profile for DSRC* was developed to support technical interoperability between EFC-systems.

This standard defines the test suite structure and the test purposes for conformity evaluation of OBUs and RSE designed for compliance with the requirements set up in EN 15509. A test standard for evaluation of conformity of on-board and roadside equipment is a necessary element for coherent, practical and effective appraisal of products' compliance to EN 15509.

This document forms Part 1 of a two-part standard:

- EN 15876-1, *Electronic fee collection – Evaluation of on-board and roadside equipment for conformity to EN 15509 – Part 1: Test suite structure and test purposes*
- EN 15876-2, *Electronic fee collection – Conformity evaluation of on-board and roadside equipment to EN 15509 – Part 2: Abstract test suites*

Together, the two parts of EN 15876 provide the necessary foundation for implementation of the interoperability requirements as stated in EN 15509:

- industry is provided with an easy-to-use toolbox for product assessment;
- operators can easily assess conformity to EN 15509 and reference to the standard in tendering processes;
- authorities and joint undertakings may reference to the test standard when stating interoperability requirements;
- certification organisations are given an effective tool for certification of products.

prEN 15876-1:2016 (E)**1 Scope**

The objective of this document is to provide a basis for conformance tests for DSRC equipment (on board units and roadside units) to support interoperability between different equipment supplied by different manufacturers.

2 Normative references

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

EN 15509:2014, *Electronic fee collection - Interoperability application profile for DSRC*

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions - Part 1: Country codes (ISO 3166-1:2013)*

EN ISO 14816, *Road transport and traffic telematics - Automatic vehicle and equipment identification - Numbering and data structure (ISO 14816:2005)*

EN ISO 14906:2011, *Electronic fee collection - Application interface definition for dedicated short-range communication (ISO 14906:2011)*

CEN ISO/TS 14907-2:2015, *Electronic fee collection — Test procedures for user and fixed equipment — Part 2: Conformance test for the onboard unit application interface (ISO/TS 14907-2:2015)*

ETSI EN 300 674-1:2004, *Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s / 250 kbit/s) operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band; Part 1: General characteristics and test methods for Road Side Units (RSU) and On-Board Units (OBU)*

ETSI/TS 102 486-1-2:2008, *Intelligent Transport Systems (ITS); Road Transport and Traffic Telematics (RTTT); Test specifications for Dedicated Short Range Communication (DSRC) transmission equipment; Part 1: DSRC data link layer: medium access and logical link control; Sub-Part 2: Test Suite Structure and Test Purposes (TSS&TP)*

ETSI/TS 102 486-2-2:2008, *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)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1**attribute**

addressable package of data consisting of a single data element or structured sequences of data elements

[SOURCE: ISO/FDIS 17575-1:2015]

3.2**authenticator**

data, possibly encrypted, that is used for authentication

[SOURCE: EN 15509:2014, 3.3]

3.3**data group**

class of closely related attributes

[SOURCE: ISO/FDIS 17575-1:2015]

3.4**Element**

DSRC directory containing application information in form of attributes

[SOURCE: EN ISO 14906:2011, 3.11]

3.5**implementation conformance statement**

statement of capabilities and options that have been implemented defining to what extent it is compliant with a given specification

3.6**implementation conformance statement proforma**

document, in the form of a questionnaire, which when completed for an implementation or system becomes an implementation conformance statement (ICS)

[SOURCE: ISO/IEC 9646-1:1994, 3.3.40] [EN 15876-1:2017](#)

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3.7**implementation extra information for testing**

statement containing all of the information related to the implementation under test (IUT) and its corresponding system under test (SUT) which will enable the testing laboratory to run an appropriate test suite against that IUT

[SOURCE: ISO/IEC 19015:2000, 3.20]

3.8**implementation extra information for testing proforma**

document, in the form of a questionnaire, which when completed for an implementation under test (IUT) becomes an implementation extra information for testing (IXIT)"

[SOURCE: ISO/IEC 9646-1:1994, 3.3.42]

3.9**on-board equipment**

all required equipment on-board a vehicle for performing required communication services, such as OBU, cabling, power supply and external antenna

prEN 15876-1:2016 (E)**3.10****on-board unit**

minimum component of an *on-board equipment*, whose functionality always includes at least the support of the DSRC interface

[SOURCE: EN ISO 14906:2011, 3.15]

3.11**roadside equipment**

equipment located along the road, either fixed or mobile

[SOURCE: EN ISO 14906:2011, 3.17]

3.12**tester**

combination of equipment, humans and processes able to perform specified conformance tests

3.13**transaction**

whole of the exchange of information between two physically separated communication facilities

[SOURCE: ISO/FDIS 17575-1:2015]

4 Abbreviations

For the purposes of this document, the following abbreviations apply throughout the document unless otherwise specified.

| | |
|-------|---|
| APDU | Application Protocol Data Unit (ISO 14906) |
| AP | Application Process |
| ASN.1 | Abstract Syntax Notation One (ISO/IEC 8824-1) |
| ATS | Abstract Test Suite |
| BI | Behaviour Invalid (i.e. Invalid Behaviour tests) |
| BST | Beacon Service Table (ISO 14906) |
| BV | Behaviour Valid (i.e. Valid Behaviour tests) |
| DSRC | Dedicated Short-Range communication (ISO 14906) |
| DUT | Device Under Test (CEN ISO/TS 14907-2) |
| EFC | Electronic Fee Collection (ISO 17573) |
| ICS | Implementation Conformance Statement |
| LLC | Logical Link Control (EN 12795) |
| LPDU | LLC Protocol Data Unit (EN 12795) |
| MAC | Medium Access Control (EN 12795) |
| PCTR | Protocol Conformance Test Report |
| PICS | Protocol Implementation Conformance Statement |
| PIXIT | Protocol Implementation eXtra Information for Testing |
| SCTR | System Conformance Test Report |
| TP | Test Purposes |

| | |
|-----|-----------------------------------|
| TSS | Test Suite Structure |
| VST | Vehicle Service Table (ISO 14906) |

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