



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 15876-1:2010+A1:2012

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

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

Elektronische Gebührenerhebung -
Konformitätsprüfung von
Fahrzeuggeräten und straßenseitigen
Einrichtungen mit der EN 15509 - Teil 1:

04/2012



National Foreword

This European Standard EN 15876-1:2010+A1:2012 was adopted as Luxembourgish Standard ILNAS-EN 15876-1:2010+A1:2012.

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English Version

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

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

Elektronische Gebührenerhebung - Konformitätsprüfung von Fahrzeuggeräten und straßenseitigen Einrichtungen mit der EN 15509 - Teil 1: Prüfreiheitenstruktur und Prüfzweck

This European Standard was approved by CEN on 4 March 2010 and includes Amendment 1 approved by CEN on 4 March 2012.

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Foreword

This document (EN 15876-1:2010+A1:2012) has been prepared by Technical Committee CEN/TC 278 "Road transport and traffic telematics", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

This document includes Amendment 1, approved by CEN on 2012-03-04.

This document supersedes EN 15876-1:2010.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** and **A1**.

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, *Road transport and traffic telematics — 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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard contains the Test Suite Structure (TSS) and Test Purposes (TP) to evaluate the conformity of On Board Units (OBU) and Roadside Equipment (RSE) to EN 15509.

The objective of this document is to provide a basis for conformance tests for DSRC equipment (on board units and roadside units) to enable 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 15509:2007, *Road transport and traffic telematics — 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 3166-1:2006)*

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

EN ISO 14906:2004, *Road transport and traffic telematics — Electronic fee collection — Application interface definition for dedicated short-range communication (ISO 14906:2004)*

CEN ISO/TS 14907-2:2006, *Road transport and traffic telematics — Electronic fee collection — Test procedures for user and fixed equipment — Part 2: Conformance test for the onboard unit application interface (ISO/TS 14907-2:2006)*

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

access credentials

data that is transferred to *on-board equipment (OBE)*, in order to establish the claimed identity of a roadside equipment (RSE) application process entity

[EN ISO 14906:2004]

NOTE The access credentials data carries information needed to fulfil access conditions in order to perform the operation on the addressed element in the OBE. The access credentials can carry passwords as well as cryptographic based information such as authenticators.

3.2

action

function that an application process resident at the *roadside equipment* can invoke in order to make the *on-board equipment* execute a specific operation during the *transaction*

[EN ISO 14906:2004]

3.3

attribute

application information formed by one or by a sequence of data elements, and is managed by different actions used for implementation of a *transaction*

[EN ISO 14906:2004]

3.4

authenticator

data appended to, or a cryptographic transformation of, a data unit that allows a recipient of the data unit to prove the source and/or the integrity of the data unit and protect against forgery

[EN ISO 14906:2004]

3.5

channel

information transfer path

[EN ISO 14906:2004]

3.6

component

logical and physical entity composing an *on-board equipment*, supporting a specific functionality

[EN ISO 14906:2004]

3.7

contract

expression of an agreement between two or more parties concerning the use of the road infrastructure

[EN ISO 14906:2004]

3.8

cryptography

discipline which embodies principles, means, and methods for the transformation of data in order to hide its information content, prevent its undetected modification or/and prevent its unauthorised use

[EN ISO 14906:2004]

3.9

data group

collection of closely related EFC data attributes which together describe a distinct part of an EFC transaction

[EN ISO 14906:2004]

3.10

data integrity

property that data has not been altered or destroyed in an unauthorised manner