SLOVENSKI STANDARD
SIST EN 15876-2:2011

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Elektronsko pobiranje pristojbin - Ugotavljanje skladnosti opreme v vozilu in v obcestni napravi s standardom EN 15509 - 2. del: Abstraktni preskuševalni niz

Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to EN 15509 - Part 2: Abstract test suite

Elektronische Gebührenerhebung - Konformitätsprüfung von Fahrzeuggeräten und straßenseitigen Einrichtungen mit der EN 15509 - Teil 2: Spezifikation abstrakter Test Suiten

Perception de télépéage - Évaluation de conformité de l'équipment embarqué et de l'équipement au sol à l'EN 15509 - Partie 2 : Suite d'essais abstraite

Ta slovenski standard je istoveten z: EN 15876-2:2011

ICS:

03.220.20	Cestni transport	Road transport
35.240.60	Uporabniške rešitve IT v transportu in trgovini	IT applications in transport and trade

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 15876-2

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ICS 35.240.60

English Version

Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to EN 15509 - Part 2: Abstract test suite

Perception de télépéage - Evaluation de conformité de l'équipement embarqué et de l'équipement au sol à l'EN 15509 - Partie 2: Suite d'essais abstraite

Elektronische Gebührenerhebung - Konformitätsprüfung von Fahrzeuggeräten und straßenseitigen Einrichtungen mit der EN 15509 - Teil 2: Abstrakte Prüfreihen

This European Standard was approved by CEN on 17 December 2010.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN 15876-2:2011 (E)

Contents

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EN 15876-2:2011 (E)

Foreword

This document (EN 15876-2:2011) 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of an identical text or by endorsement, at the latest by September 2011, and conflicting national standards shall be withdrawn at the latest by September 2011.

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.

CEN/TC 278 (WG 1) 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 the standard profile Electronic fee collection – Interoperable application profile for DSRC (EN 15509) was developed to support technical interoperability between EFC-systems.

To evaluate the conformity of On-Board and Roadside Equipment to EN 15509 a two-part standard has been prepared:

Electronic fee collection – Evaluation of on-board and roadside equipment for conformity to EN 15509:

— *Part 1: Test suite structure and test purposes*

— *Part 2: Abstract test suite*

Part 1 of the 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.

Part 2 of the standard (this standard) provides the Abstract Test Suites (ATS), which are translations of the "human-readable" TSS&TP suite into Tree and Tabular Combined Notation (TTCN). The ATS will be based on the Tree and Tabular Combined Notation test script language that is suitable for implementation in computer-aided test tools. TTCN is a test language that is widespread, dedicated test programming language for compliance testing and is standardized in ISO/IEC 9646-3.

Together, the two parts of the present standard 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 and the United Kingdom.

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EN 15876-2:2011 (E)

1   Scope

This European Standard specifies the Abstract Test Suites (ATSs) to evaluate the conformity of On Board Equipment (OBE) and Roadside Equipment (RSE) to EN 15509.

The objective of the present 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

Not applicable.

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

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.

[EN ISO 14906:2004]

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 (see 3.8) 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]

6

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

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[EN ISO 14906:2004]

3.11
element
in the context of DSRC, directory containing application information in form of *attributes*

[EN ISO 14906:2004]

3.12
implementation conformance statement
statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented

[CEN ISO/TS 14907-2:2006]

3.13
implementation conformance statement pro forma
document, in the form of a questionnaire, which when completed for an implementation or system becomes an implementation conformance statement

[CEN ISO/TS 14907-2:2006]

3.14
implementation extra information for testing
statement made by the supplier or an implementer of a IUT which contains or references all of the information (in addition to that given in the implementation conformance statement) related to the IUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the IUT

[CEN ISO/TS 14907-2:2006]

EN 15876-2:2011 (E)

3.15
implementation extra information for testing pro forma
document, in the form of a questionnaire, which when completed for a DUT becomes an implementation extra information for testing

[CEN/ISO TS 14907-2:2006]

3.16
on-board equipment
equipment located within the vehicle and supporting the information exchange with the *roadside equipment*

NOTE   It is composed of the *on-board unit* and other sub-units whose presence have to be considered optional for the execution of a *transaction*.

[Adapted from EN ISO 14906:2004]

3.17
on-board unit
minimum component of an *on-board equipment*, whose functionality always includes at least the support of the DSRC interface

[EN ISO 14906:2004]

3.18
roadside equipment
equipment located at a fixed position along the road transport network, for the purpose of communication and data exchanges with the *on-board equipment* of passing vehicles

[EN ISO 14906:2004]

3.19
service (EFC)
road transport related facility provided by a *service provider*

NOTE   Normally a type of infrastructure, the use of which is offered to the *user* for which the *User* may be requested to pay.

[Adapted from EN ISO 14906:2004]

3.20
service primitive (communication)
elementary communication service provided by the Application layer protocol to the application processes

NOTE   The invocation of a service primitive by an application process implicitly calls upon and uses services offered by the lower protocol layers.

[EN ISO 14906:2004]

3.21
service provider (EFC)
operator that accepts the user's payment means and in return provides a road-use service to the user

[EN ISO 14906:2004]

3.22
session
exchange of information and interaction occurring at a specific EFC station between the *roadside equipment* and the user/vehicle

[EN ISO 14906:2004]

3.23
transaction
whole of the exchange of information between the *roadside equipment* and the *on-board equipment* necessary for the completion of an EFC operation over the DSRC

[EN ISO 14906:2004]

3.24
transaction model
functional model describing the general structure of Electronic Payment Fee Collection transactions

[EN ISO 14906:2004]

3.25
tester
combination of equipment and processes which is able to perform conformance tests according to this standard

3.26
user
entity that uses transport services provided by the *Service Provider* according to the terms of a *contract*

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[EN ISO 14906:2004]

4   Abbreviations

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

ADU   Application Data Unit

APDU   Application Protocol Data Unit

AP   Application Process

ASN.1   Abstract Syntax Notation One (ISO/IEC 8824-1)

ATS   Abstract Test Suite

BI   Beviour Invalid (i.e. Invalid Behaviour tests)

B-Kernel   Broadcast Kernel

BST   Beacon Service Table

BV   Behaviour Valid (i.e. Valid Behaviour tests)

cf   Confirm

DLC   Data Link Control