

# SVENSK STANDARD

## SS-EN 15876-2:2016

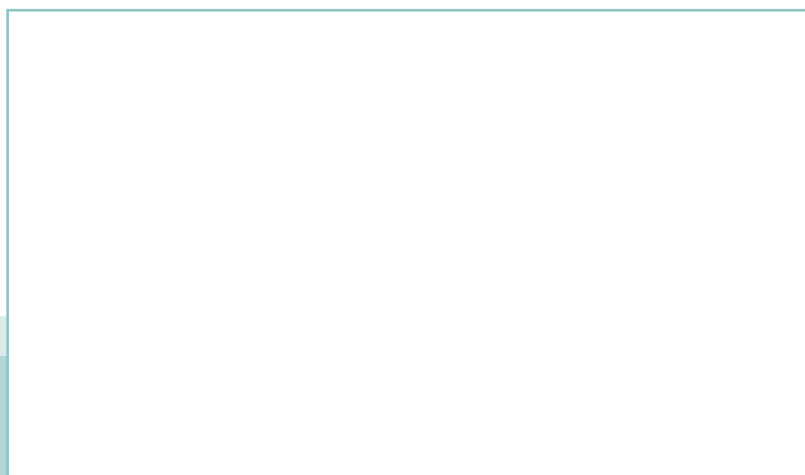


Fastställt/Approved: 2016-11-01  
Publicerad/Published: 2016-11-04  
Utgåva/Edition: 2  
Språk/Language: engelska/English  
ICS: 35.240.60

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### **Vägtrafikinformatik – Elektronisk vägavgiftsupptagning – Utvärdering av överensstämmelse gentemot EN 15509 för fordons- och vägsidesutrustning – Del 2: Abstrakt testsvit**

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



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Europastandarden EN 15876-2:2016 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 15876-2:2016.

Denna standard ersätter SS-EN 15876-2:2011, utgåva 1.

The European Standard EN 15876-2:2016 has the status of a Swedish Standard. This document contains the official English version of EN 15876-2:2016.

This standard supersedes the Swedish Standard SS-EN 15876-2:2011, edition 1.

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Denna standard är framtagen av kommittén för Vägtrafikinformatik, SIS/TK 255.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på [www.sis.se](http://www.sis.se) - där hittar du mer information.



EUROPEAN STANDARD

EN 15876-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2016

ICS 35.240.60

Supersedes EN 15876-2:2011

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 nach EN 15509 - Teil 2: Zusammengefasstes Prüfprogramm

This European Standard was approved by CEN on 5 September 2016.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (EN 15876-2:2016) has been prepared by Technical Committee CEN/TC 278 “Intelligent Transport Systems”, 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 April 2017, and conflicting national standards shall be withdrawn at the latest by April 2017.

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.

This document supersedes EN 15876-2:2011.

This edition incorporates the following main technical changes compared to the previous version:

- amendments to reflect changes to the underlying "requirements standard" (i.e. EN 15509:2014), notably the amended definition of vehicle licence plate number;
- amendments of terms, in order to reflect the harmonization of terms across electronic fee collection (EFC) standards.

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, Former Yugoslav Republic of Macedonia, 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.



## Introduction

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 conformance test for the on-board unit application interface). 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.

This document forms Part 2 of a two-part European Standard:

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

Part 1 of the standard defines the test suite structure and the test purposes for conformity evaluation of OBEs and RSE designed for compliance with the requirements set 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 European Standard (this standard) provides the Abstract Test Suite (ATS), which are translations of the "human-readable" TSS&TP suite into Tree and Tabular Combined Notation (TTCN). The ATS is based on the TTCN test script language that is suitable for implementation in computer-aided test tools and for specification of test cases and steps for assessment of protocol and application behaviour. TTCN is a widespread dedicated test programming language for compliance testing and is standardized in ISO/IEC 9646-3. The TTCN language is supported by modern automated tools that accelerate software design, implementation and testing.

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.

This part of EN 15876 is based on:

- EN 15509:2014,
- the set of dedicated short range communication (DSRC) standards defining the communication stack, and
- ISO/IEC 9646.

## 1 Scope

This European Standard specifies the abstract test suite (ATS) to evaluate the conformity of on-board equipment (OBE) and roadside equipment (RSE) to EN 15509 in accordance with the test suite structure and test purposes defined in EN 15876-1:2016.

The objective of the present document is to provide a basis for conformance tests for DSRC equipment (OBE and RSE) to support interoperability between different equipment supplied by different manufacturers.

## 2 Normative references

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

ETSI/TS 102 486-2-3, V1.2.1 (2008-10), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Test specifications for Dedicated Short Range Communication (DSRC) transmission equipment; Part 2: DSRC application layer; Sub-Part 3: Abstract Test Suite (ATS) and partial PIXIT proforma*

## 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

[ISO 17575-1:2016, 3.1]

### 3.2

#### **authenticator**

data, possibly encrypted, that is used for authentication

[EN 15509:2014, 3.3]

### 3.3

#### **data group**

collection of closely related attributes

[ISO 17575-1:2016, 3.10]

### 3.4

#### **element**

DSRC directory containing application information in form of attributes

[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)

[ISO/IEC 9646-1:1994, 3.3.40]

### 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 19105:2000, 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, modified]

### 3.9

#### **on-board equipment**

all required equipment on-board a vehicle for performing required EFC functions and communication services

### 3.10

#### **roadside equipment**

equipment located along the road, either fixed or mobile

[SOURCE: EN ISO 14906:2011, 3.17]

### 3.11

#### **tester**

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

[EN 15876-1:2016, 3.12]

### 3.12

#### **transaction**

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

[ISO 17575-1:2016, 3.21]

## 4 Abbreviations

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

ADU	Application Data Unit (ISO 14906)
APDU	Application Protocol Data Unit (ISO 14906)
AP	Application Process (ISO 14906)