

# SVENSK STANDARD

## SS-EN ISO 13143-1:2016



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### **Vägtrafikinformatik – Elektronisk vägavgiftsupptagning – Utvärdering av överensstämmelse gentemot ISO 12813 för fordons- och vägsidesutrustning – Del 1: Testsvit och testsyften (ISO 13143-1:2016)**

### **Electronic fee collection – Evaluation of on-board and roadside equipment for conformity to ISO 12813 – Part 1: Test suite structure and test purposes (ISO 13143-1:2016)**

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The European Standard EN ISO 13143-1:2016 has the status of a Swedish Standard. This document contains the official English version of EN ISO 13143-1:2016.

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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 ISO 13143-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2016

ICS 03.220.20; 35.240.60

Supersedes CEN ISO/TS 13143-1:2011

English Version

**Electronic fee collection - Evaluation of on-board and  
roadside equipment for conformity to ISO 12813 - Part 1:  
Test suite structure and test purposes (ISO 13143-1:2016)**

Perception du télépéage - Évaluation des équipements  
embarqués et en bord de route quant à la conformité  
avec l'ISO 12813 - Partie 1: Structure de suite d'essais  
et buts des essais (ISO 13143-1:2016)

Elektronische Gebührenerhebung -  
Konformitätsbeurteilung von bordeigenen und  
straßenseitigen Ausrüstungen nach ISO/TS 12813 -  
Teil 1: Struktur und Zweck des Prüfprogramms (ISO  
13143-1:2016)

This European Standard was approved by CEN on 6 December 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.

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

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

**SS-EN ISO 13143-1:2016 (E)**

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## **European foreword**

This document (EN ISO 13143-1:2016) has been prepared by Technical Committee ISO/TC 204 “Intelligent transport systems” in collaboration with 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 June 2017, and conflicting national standards shall be withdrawn at the latest by June 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 supersedes CEN ISO/TS 13143-1:2011.

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.

### **Endorsement notice**

The text of ISO 13143-1:2016 has been approved by CEN as EN ISO 13143-1:2016 without any modification.

## SS-EN ISO 13143-1:2016 (E)

### Introduction

ISO 17575 is part of a set of standards that supports interoperability of autonomous EFC-systems. It defines the EFC context data, their charge reports and their use of communication infrastructure.

The set of standards also supports short-range communication links in the context of autonomous electronic fee collection (EFC) on-board equipment (OBE) to enable spot checks for the enforcement process. The application interface is defined in ISO 12813:2015.

Within the set of EFC standards, this document defines the process and tests for conformity evaluation of OBE and roadside equipment (RSE) that comply with the requirements in ISO 12813:2015.

This document is intended to

- assess OBU and RSE capabilities,
- assess OBU and RSE behaviour,
- serve as a guide for OBU and RSE conformance evaluation and type approval,
- achieve comparability between the results of the corresponding tests applied in different places at different times, and
- facilitate communication between parties.

This document is based on

- ISO 12813:2015,
- the set of dedicated short-range communication (DSRC) standards defining the communication stack, and
- ISO/IEC 9646.

This document is based on using the tree and tabular combined notation (TTCN) that is a standardized language suitable for specification of test cases and steps for assessment of protocol and application behaviour. The TTCN language is also supported by modern automated tools that accelerate software design, implementation and testing.



# Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to ISO 12813 —

## Part 1: Test suite structure and test purposes

### 1 Scope

This document specifies the test suite structure (TSS) and test purposes (TP) to evaluate the conformity of on-board units (OBU) and roadside equipment (RSE) to ISO 12813:2015.

It provides a basis for conformance tests for dedicated short-range communication (DSRC) equipment (on-board units and roadside units) to enable interoperability between different equipment supplied by different manufacturers.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 12813:2015, *Electronic fee collection — Compliance check communication for autonomous systems*

ISO 14906:1/Amd 1:2015, *Electronic fee collection — Application interface definition for dedicated short-range communication / Amendment 1*

ISO/TS 14907-2:2016, *Electronic fee collection — Test procedures for user and fixed equipment — Part 2: Conformance test for the on-board unit application interface*

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

EN 15876-1:2016, *Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to EN 15509 — Part 1: Test suite structure and test purposes*

ETSI/TS 102 486-2-2 V1.2.1 (2008-10), *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.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

## SS-EN ISO 13143-1:2016 (E)

### 3.1 access credentials

trusted attestation or secure module that establishes the claimed identity of an object or application

Note 1 to entry: Access credentials carry information needed to fulfil access conditions in order to perform the operation on the addressed element in the OBE. Access credentials can carry passwords, as well as cryptography-based information such as authenticators.

[SOURCE: EN 15509:2014, 3.1]

### 3.2 attribute

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

[SOURCE: ISO 17575-1:2016, 3.2]

### 3.3 authentication

security mechanism allowing verification of the provided identity

[SOURCE: EN 301 175]

### 3.4 authenticator

data, possibly encrypted, that is used for authentication

[SOURCE: EN 15509:2014, 3.3]

### 3.5 cryptography

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

[SOURCE: EN 15509:2014, 3.6]

### 3.6 data group

class of closely related attributes

[SOURCE: ISO 17575-1:2016, 3.10]

### 3.7 Element

<DSRC> directory containing application information in the form of attributes

[SOURCE: ISO 14906:2011, 3.11 modified]

### 3.8 implementation conformance statement

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

[SOURCE: ISO/TS 14907-2:2016, 3.16]

### 3.9 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/TS 19015:2000, 3.20]

**3.10**  
**on-board equipment**  
**OBE**

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

**3.11**  
**on-board unit**  
**OBU**

single electronic unit on-board a vehicle for performing specific EFC functions and for communication with external systems

**3.12**  
**roadside equipment**  
**RSE**

equipment located along the road, either fixed or mobile

[SOURCE: ISO/TS 19299:2015, 3.34]

**3.13**  
**tester**

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

[SOURCE: EN 15876-1:2016, 3.12]

**3.15**  
**transaction**

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

[SOURCE: ISO 17575-1:2016, 3.21]

## 4 Abbreviated terms

AC_CR	Access Credentials
ADU	Application Data Unit
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)
B-Kernel	Broadcast Kernel
BST	Beacon Service Table (ISO 14906)
BV	Behaviour Valid (i.e. Valid Behaviour tests)
cf	Confirm
DLC	Data link Control
DSRC	Dedicated Short-Range Communication (ISO 14906)
DUT	Device Under Test (ISO/TS 14907-2)