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Standards

Standard Recommendation  
S.R. CEN ISO/TS 13140-2:2012

# Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to ISO/TS 13141 - Part 2: Abstract test suite (ISO 13140-2:2012)

## S.R. CEN ISO/TS 13140-2:2012

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English Version

**Electronic fee collection - Evaluation of on-board and roadside  
equipment for conformity to ISO/TS 13141 - Part 2: Abstract test  
suite (ISO 13140-2:2012)**

Perception du télépéage - Évaluation des équipements  
embarqués et en bord de route quant à la conformité avec  
l'ISO/TS 13141 - Partie 2: Suite d'essai abstraite (ISO  
13140-2:2012)

Elektronische Gebührenerhebung - Bewertung der  
Konformität von On Board Ausrüstungen und  
straßenseitigen Ausrüstungen mit CEN ISO/TS 13141 - Teil  
2: Abstrakte Prüfreihe (ISO 13140-2:2012)

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## **Foreword**

This document (CEN ISO/TS 13140-2:2012) has been prepared by Technical Committee CEN/TC 278 "Road transport and traffic telematics", the secretariat of which is held by NEN, in collaboration with Technical Committee ISO/TC 204 "Intelligent transport systems".

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**Electronic fee collection — Evaluation of  
on-board and roadside equipment for  
conformity to ISO/TS 13141 —**

Part 2:  
**Abstract test suite**

*Perception du télépéage — Évaluation des équipements embarqués et  
en bord de route quant à la conformité avec l'ISO/TS 13141 —*

*Partie 2: Suite d'essai abstraite*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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

ISO/TS 13140-2 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 278, *Road transport and traffic telematics*, in collaboration with Technical Committee ISO/TC 204, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO/TS 13140 consists of the following parts, under the general title *Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to ISO/TS 13141*:

- *Part 1: Test suite structure and test purposes*
- *Part 2: Abstract test suite*

## Introduction

ISO/TS 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/TS 13141:2010.

Within the set of EFC standards this part of ISO/TS 13140 defines the process and tests for conformity evaluation of OBE and roadside equipment (RSE) that comply with the requirements in ISO/TS 13141:2010.

This part of ISO/TS 13140 is intended to

- assess OBE and RSE capabilities,
- assess OBE and RSE behaviour,
- serve as a guide for OBE 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 (for example between equipment manufacturers and test houses).

This part of ISO/TS 13140 is based on

- ISO/TS 13141:2010,
- the set of dedicated short range communication (DSRC) standards defining the communication stack, and
- ISO 9646.

This part of ISO/TS 13140 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.

**S.R. CEN ISO/TS 13140-2:2012**

# Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to ISO/TS 13141 —

## Part 2: Abstract test suite

### 1 Scope

This part of ISO/TS 13140 specifies the abstract test suite (ATS) to evaluate the conformity of on-board equipment (OBE) and roadside equipment (RSE) to ISO/TS 13141:2010.

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

**NOTE** The OBE and RSE are subject to additional testing in order to ascertain that they fulfil the essential radio requirements as set out in European Directives, a pre-requisite for CE marking and placing on the European market. They are also likely to be subject to additional testing of physical, environmental endurance, quality assurance and control at manufacturing, charge point integration, as part of factory, site and system acceptance testing. The definition of these tests is outside the scope of this part of ISO/TS 13140.

### 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.

ISO/IEC 9646-3:1998, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 3: The Tree and Tabular Combined Notation (TTCN)*

ISO/TS 13141:2010, *Electronic fee collection — Localisation augmentation communication for autonomous systems*

### 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 (RSE) application process entity

[ISO 14906:2011, definition 3.1]

**NOTE** The access credentials carry 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.

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