

Electronic fee collection - Test procedures for user and fixed equipment - Part 2: Conformance test for the on-board unit application interface (ISO 14907-2:2021)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 14907-2:2021 sisaldab Euroopa standardi EN ISO 14907-2:2021 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 14907-2:2021 consists of the English text of the European standard EN ISO 14907-2:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
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English Version

Electronic fee collection - Test procedures for user and fixed equipment - Part 2: Conformance test for the on-board unit application interface (ISO 14907-2:2021)

Perception du télépéage - Modes opératoires relatifs aux équipements embarqués et aux équipements fixes - Partie 2: Essai de conformité de l'interface d'application de l'unité embarquée (ISO 14907-2:2021)

Elektronische Gebührenerhebung - Testverfahren für straßenseitige und fahrzeugseitige Einrichtungen - Teil 2: Konformitätsprüfungen für die Anwendungsschnittstelle der fahrzeugseitigen Einrichtung (ISO 14907-2:2021)

This European Standard was approved by CEN on 21 January 2021.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 14907-2:2021) 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of an identical text or by endorsement, at the latest by October 2021, and conflicting national standards shall be withdrawn at the latest by October 2021.

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

This document supersedes CEN ISO/TS 14907-2:2016.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 14907-2:2021 has been approved by CEN as EN ISO 14907-2:2021 without any modification.

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 278, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces the third edition (ISO/TS 14907-2:2016), which has been technically revised.

The main changes compared to the previous edition are as follows:

- EFC application interface (i.e. [6.1](#)) has been added;
- the terms have been revised and aligned with ISO/TS 17573-2:2020.

A list of all parts in the ISO 14907 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document describes tests that verify on-board unit (OBU) conformance of functions and data structures implementations for electronic fee collection (EFC) applications.

The purpose of this document is to define tests that:

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

Electronic fee collection — Test procedures for user and fixed equipment —

Part 2:

Conformance test for the on-board unit application interface

1 Scope

This document describes tests which verify on-board unit (OBU) conformance of functions and data structures implementations, as defined in the implementation conformance statement (ICS) based on ISO 14906 for EFC applications.

This document defines tests for assessing OBU conformance in terms of :

- basic dedicated short-range communication (DSRC) L7 functionality,
- EFC application functions,
- EFC attributes (i.e. EFC application information),
- the addressing procedures of EFC attributes and (hardware) components,
- the EFC transaction model, which defines the common elements and steps of any EFC transaction, and
- the behaviour of the interface so as to support interoperability on an EFC-DSRC application interface level.

After the tests of isolated data items and functions ([C.2](#) to [C.4](#)), an example is given for testing a complete EFC transaction ([C.3](#)). Although this document defines examples of test cases for DSRC and EFC functionality (see [Annex C](#)), it does not intend to specify a complete test suite for a certain implementation. To compose a test suite for a specific EFC implementation, the test cases can be modified and new test cases can be defined and added in order for the conformance test suite to be complete. It can be useful to consider the following when defining a complete test suite:

- small range: “exhaustive testing” of critical interoperability/compatibility features,
- large range: testing of boundaries and random values, and
- composite types: testing of individual items in sequence or parallel.

This document does not define tests which assess:

- performance,
- robustness, and
- reliability of an implementation.

NOTE 1 ISO 14907-1 defines test procedures that are aimed at assessing performance, robustness and reliability of EFC equipment and systems.

NOTE 2 The ISO/IEC 10373 series defines test methods for proximity, vicinity, integrated circuit(s) cards and related devices that can be relevant for OBUs which support such cards.

[Annex D](#) provides an informative overview of Japanese on-board equipment (OBE) conformance tests which are based on the ISO 14907 series, in order to illustrate how these can be applied in practice.

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 14906, *Electronic fee collection — Application interface definition for dedicated short-range communication*

EN 12834, *Road transport and traffic telematics — Dedicated Short Range Communication (DSRC) — DSRC application layer*

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:

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

3.1 access credentials

AC_CR

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

[SOURCE: ISO/TS 17573-2:2020, 3.4]

3.2 attribute

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

[SOURCE: ISO/TS 17573-2:2020, 3.13]

3.3 authenticator

data, possibly encrypted, that is used for authentication

[SOURCE: ISO/TS 17573-2:2020, 3.16]

3.4 channel

information transfer path

[SOURCE: ISO/IEC 7498-2:1989, 3.3.13]

3.5 electronic fee collection

EFC

fee collection by electronic means

Note 1 to entry: Fee and toll are synonyms within the context of standardization of EFC in ISO/TC 204.

[SOURCE: ISO/TS 17573-2:2020, 3.70, modified — Note 1 to entry added.]