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Electronic fee collection - Test procedures for user and fixed equipment - Part 1: Description of test procedures (ISO 14907-1:2020)

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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See Eesti standard EVS-EN ISO 14907-1:2020 sisaldab Euroopa standardi EN ISO 14907-1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 14907-1:2020 consists of the English text of the European standard EN ISO 14907-1:2020.
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.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.07.2020.	Date of Availability of the European standard is 01.07.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 35.240.60, 43.040.15

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 14907-1

July 2020

ICS 35.240.60; 43.040.15

Supersedes CEN ISO/TS 14907-1:2015

English Version

Electronic fee collection - Test procedures for user and fixed equipment - Part 1: Description of test procedures (ISO 14907-1:2020)

Perception de télépéage - Procédures d'essais relatifs aux équipements embarqués et aux équipements fixes - Partie 1: Descriptions des procédures d'essais (ISO 14907-1:2020)

Elektronische Gebührenerhebung - Testverfahren für straßenseitige und fahrzeugseitige Einrichtungen - Teil 1: Beschreibung von Testverfahren (ISO 14907-1:2020)

This European Standard was approved by CEN on 17 May 2020.

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.

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Ref. No. EN ISO 14907-1:2020 E

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European foreword

This document (EN ISO 14907-1:2020) 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 January 2021, and conflicting national standards shall be withdrawn at the latest by January 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 14907-1:2015.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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 14907-1:2020 has been approved by CEN as EN ISO 14907-1:2020 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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.

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

This edition cancels and replaces the third edition of ISO/TS 14907-1:2015.

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

— the document has been converted from a Technical Specification to an International Standard;

— the references have been revised.

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.

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Introduction

For an electronic fee collection (EFC) system, approvals and tests are required to determine whether the system (or individual components of the system) conforms to standards and application requirements and to enable parameters such as quality, availability, and maintainability to be measured.

There are complete EFC systems available, including documentation and approvals, and these could already be in operation in some European countries. This document provides a toolbox of tests and procedures for the assessment and proof of such EFC systems that they are suitable for specified EFC applications under specific operational conditions. Dependent on a system to be tested and based on the available documentation and the status of previously performed approvals, this document enables parties involved, e.g. system provider, operators, and test houses, to take into consideration already proven references and to identify such parameters which still have to be tested according to the specified applications.

At the time of publication of this document, the determination of common system requirements for Europe (or any other region) has not been agreed. For this reason, this document does not specify any particular performance requirements, unless these are already determined elsewhere (such as safety or radio regulations), but rather identifies the key parameters which will comprise such requirements. Where reference to an existing test is available, this document provides that reference. This document defines only the test and test procedures, not the benchmark figures that these are to be measured against. Benchmark figures which the systems or components under test can be compared with and validated against might form the subject of a future part of this series of standards. Within the framework of the European Electronic Toll System (EETS), this document could provide inputs for the work of the notified bodies in view to certify the different systems' part of the EETS in particular to check the suitability for use.

This document is furthermore limited to automated (electronic) payment using a standardized dedicated short-range communication (DSRC). The scope of this document does not include manual payment, conventional money transaction, nor payment by means of sticker, vignettes, tickets, or magnetic-stripe cards, etc. The applications to which EFC is related are toll collection, road pricing, parking, and individual traffic information.

This document enables groups of operators to determine common specific performance levels and operating conditions and to enable regional variation where appropriate. It provides operating and environmental parameters (or classes of operating and environmental parameters) within which such systems shall successfully function without impairing interoperability to ensure that the person who specified the system can state their requirements clearly to implementation designers and integrators and to enable the measurement of the performance of such systems.

The following guidelines have been followed when selecting the test procedures for test parameters:

— reference as far as possible to existing standardized test procedures;

— focusing on those tests that are essential to ensure that EFC equipment is able to exchange information and mutually use the exchanged information.

A brief guide describing how to use this document is provided by Annex A.

While this document relates to general test procedures, certain provisions relate specifically to test procedures for certification purposes. Many features of this document are relevant internationally; it is recognized that due to different regulatory requirements outside Europe, extension may be required to make its applicability as comprehensive in non-EU countries, before this International Standard can be reviewed for acceptance as in EU countries.

The ISO/TS 17444 series provides an examination framework for EFC charging performance.

This document relates only to the equipment of the user and the service provider as illustrated in Figure 1.

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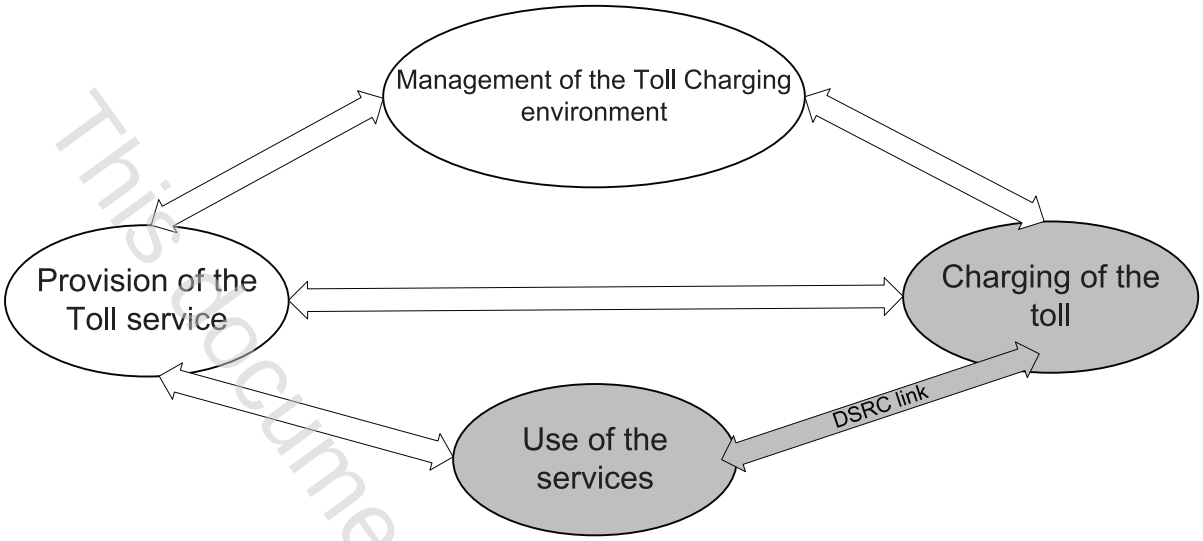


Figure 1 — Conceptual model of EFC

The scope of this document relates solely to OBE and RSE and the DSRC interface between OBE and RSE including its functions to perform the fee collection as illustrated by Figure 2.

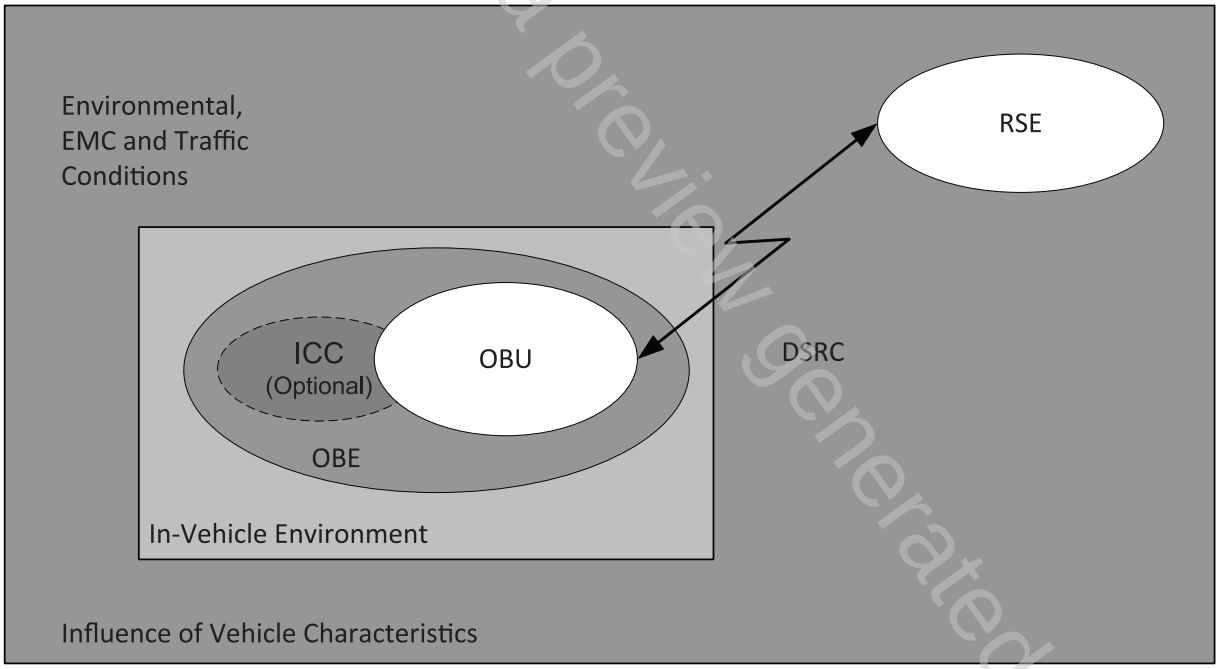


Figure 2 — OBE/RSE interface and associated environments

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

Part 1: Description of test procedures

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1 Scope

This document specifies the test procedures of electronic fee collection (EFC) roadside equipment (RSE) and on-board equipment (OBE) with regard to the conformance to standards and requirements for type approval and acceptance testing which is within the realm of EFC application specifically.

The scope of this document is restricted to systems operating within the radio emission, electromagnetic compatibility (EMC) regulations, traffic, and other regulations of the countries in which they are operated.

This document identifies a set of suitable parameters and provides test procedures to enable the proof of a complete EFC system, as well as components of an EFC system, e.g. OBE, related to the defined requirements of an application. The defined parameter and tests are assigned to the following groups of parameters:

— functionality;

— quality;

— referenced pre-tests.

An overview of the tests and parameters provided by this document is given in 5.1 and 5.2.

This document describes procedures, methods and tools, and a test plan which shows the relation between all tests and the sequence of these tests. It lists all tests that are required to measure the performance of EFC equipment. It describes which EFC equipment is covered by the test procedures; the values of the parameters to be tested are not included. It also describes how the tests are to be performed and which tools and prerequisites are necessary before this series of tests can be undertaken. It is assumed that the security of the system is inherent in the communications and EFC functionality tests, therefore they are not addressed here. All tests in this document provide instructions to evaluate the test results.

This document defines only the tests and test procedures, not the benchmark figures that these are to be measured against. The test procedures defined in this document can be used as input, e.g. by scheme owners, for prototype testing, type approvals, tests of installations and periodic inspections.

Related to a conceptual model of an EFC system, this document relates only to the equipment of the user and the service provider. Any other entities are outside the scope of document.

EFC systems for dedicated short-range communication (DSRC) consist, in principle, of a group of technical components, which in combination fulfil the functions required for the collection of fees by electronic automatic means. These components comprise all, or most, of the following:

— OBE within a vehicle;

— OBE containing the communications and computing sub-functions;

— optional integrated circuit card which may carry electronic money, service rights, and other secured information;

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— communication between OBE and RSE based on DSRC;

— equipment for the fee collection at the RSE containing the communications and computing sub-functions;

— equipment for the enforcement at the roadside;

— central equipment for the administration and operation of the system.

The scope of this document relates solely to OBE and RSE and the DSRC interface between OBE and RSE including its functions to perform the fee collection. All the equipment used for enforcement (e.g. detection, classification, localization, and registration) and central equipment are outside the scope of this document.

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/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ISO/IEC 17065:2012, *Conformity assessment — Requirements for bodies certifying products, processes and services*

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
acceptance testing
examination that a product, process, or service is in conformity with the system specification

3.2
accreditation
third-party *attestation* (3.3) related to a *conformity assessment body* (3.7) conveying formal demonstration of its competence, consistent operation and *impartiality* (3.15) in performing specific conformity assessment activities

[SOURCE: ISO/IEC 17000:2020, 2.4.7]

3.3
attestation
issue of a statement, based on a *decision* (3.8) that fulfilment of *specified requirements* (3.27) has been demonstrated

Note 1 to entry: The resulting statement, referred to in this document as a “statement of conformity”, is intended to convey the assurance that the specified requirements have been fulfilled. Such an assurance does not, of itself, afford contractual or other legal guarantees.

Note 2 to entry: First-party and third-party attestations are distinguished by the terms 2.4.2 to 2.4.7 in ISO/IEC 17000:2020. For second-party attestation, no such term is available.

[SOURCE: ISO/IEC 17000:2020, 2.4.3]

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