

Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to ISO 12813 - Part 1: Test suite structure and test purposes (ISO 13143-1:2020)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 13143-1:2020 sisaldab Euroopa standardi EN ISO 13143-1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 13143-1:2020 consists of the English text of the European standard EN ISO 13143-1:2020.
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 18.11.2020.	Date of Availability of the European standard is 18.11.2020.
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 03.220.20, 35.240.60

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

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 13143-1:2020)**

Perception de 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 13143-1:2020)

Elektronische Gebührenerhebung - Bewertung der
Konformität fahrzeuginterner und straßenseitiger
Ausrüstung nach ISO 12813 - Teil 1: Struktur und
Zweck des Prüfprogrammes (ISO 13143-1:2020)

This European Standard was approved by CEN on 24 October 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.

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, 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 United Kingdom.



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 13143-1:2020) 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 May 2021, and conflicting national standards shall be withdrawn at the latest by May 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 EN ISO 13143-1:2016.

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 13143-1:2020 has been approved by CEN as EN ISO 13143-1:2020 without any modification.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Abbreviated terms	3
5 Test suite structure (TSS)	4
5.1 Structure.....	4
5.2 Reference to conformance test specifications.....	4
5.3 Test purposes (TPs).....	5
5.3.1 TP definition conventions.....	5
5.3.2 TP naming conventions.....	5
5.4 Conformance test report.....	6
Annex A (normative) Test purposes for on-board equipment	7
Annex B (normative) Test purposes for roadside equipment	46
Annex C (normative) Protocol conformance test report proforma for on-board equipment	58
Annex D (normative) Protocol conformance test report proforma for roadside equipment	65
Bibliography	70

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.

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 second edition cancels and replaces the first edition (ISO 13143-1:2016), which has been technically revised.

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

- amendments to reflect changes to the underlying requirements standards, in particular ISO 12813 and ISO 14906;
- amendment of terms to reflect the harmonization of terms across electronic fee collection (EFC) standards.

A list of all parts in the ISO 13143 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

On-board equipment (OBE) that uses satellite-based positioning technology to collect data required for charging for the use of roads operates in an autonomous way (i.e. without relying on dedicated roadside infrastructure). The OBE records the amount of road usage in all toll charging systems it passes through.

This document defines the process and tests for evaluation of OBE and roadside equipment (RSE) for conformity to ISO 12813.

ISO 12813 defines requirements for dedicated short-range communication (DSRC) between OBE and an interrogator for the purpose of checking conformance of road use with a local toll regime. It assumes an electronic fee collection (EFC) services architecture according to ISO 17573-1.

This document 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.

This document is based on:

- ISO 12813,
- the set of DSRC standards defining the communication stack, and
- ISO/IEC 9646.

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 (TPs) for evaluating the conformity of on-board equipment (OBE) and roadside equipment (RSE) to ISO 12813.

It provides a basis for conformance tests for dedicated short-range communication (DSRC) OBE and RSE to support interoperability between different equipment supplied by different manufacturers.

ISO 12813 defines requirements on the compliance check communication (CCC) interface level, but not for the RSE or OBE internal functional behaviour. Consequently, tests regarding OBE and/or RSE functional behaviour remain 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 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO 12813:2019, *Electronic fee collection — Compliance check communication for autonomous systems*

ISO 14816, *Road transport and traffic telematics — Automatic vehicle and equipment identification — Numbering and data structure*

ISO 14906:2018, *Electronic fee collection — Application interface definition for dedicated short-range communication*

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 12834:2003, *Road transport and traffic telematics — Dedicated Short Range Communication (DSRC) — DSRC application layer*

EN 13372:2004, *Road Transport and Traffic Telematics (RTTT) — Dedicated short-range communication — Profiles for RTTT applications*

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

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*

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)*