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

**Part 1:
Description of test procedures**

*Perception du télépéage — Modes opératoires relatifs aux
équipements embarqués et aux équipements fixes —*

Partie 1: Description des modes opératoires



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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

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

This third edition cancels and replaces the second edition (ISO/TS 14907-1:2010). It also incorporates the Technical Corrigenda ISO/TS 14907-1:2010/Cor.1:2010. The main changes are related to the revision of the references.

ISO/TS 14907 consists of the following parts, under the general title *Electronic fee collection — Test procedures for user and fixed equipment*:

- *Part 1: Description of test procedures*
- *Part 2: Conformance test for the onboard unit application interface*

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 part of ISO/TS 14907 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 part of ISO/TS 14907 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 part of ISO/TS 14907, the determination of common system requirements for Europe (or any other region) has not been agreed. For this reason, this part of ISO/TS 14907 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 part of ISO/TS 14907 provides that reference. This part of ISO/TS 14907 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 Technical Specification. Within the framework of the European Electronic Toll System (EETS), this part of ISO/TS 14907 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 part of ISO/TS 14907 is furthermore limited to automated (electronic) payment using a standardized dedicated short-range communication (DSRC). The scope of this part of ISO/TS 14907 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 part of ISO/TS 14907 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 part of ISO/TS 14907 is provided by [Annex A](#).

While this part of ISO/TS 14907 relates to general test procedures, certain provisions relate specifically to test procedures for certification purposes. Many features of this part of ISO/TS 14907 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.

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

Part 1: Description of test procedures

1 Scope

This part of ISO/TS 14907 specifies the test procedures of 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 part of ISO/TS 14907 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 part of ISO/TS 14907 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 part of ISO/TS 14907 is given in [5.1](#) and [5.2](#).

This part of ISO/TS 14907 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 part of ISO/TS 14907 provide instructions to evaluate the test results.

The test procedures can be used for prototype testing, type approvals, test of installations, and periodic inspections. Thus this part of ISO/TS 14907 defines only the test and test procedures, not the benchmark figures that these are to be measured against.

Related to a conceptual model of an EFC system, this part of ISO/TS 14907 relates only to the equipment of the user and the service provider as illustrated in [Figure 1](#). Any other entities are outside the scope of this part of ISO/TS 14907.

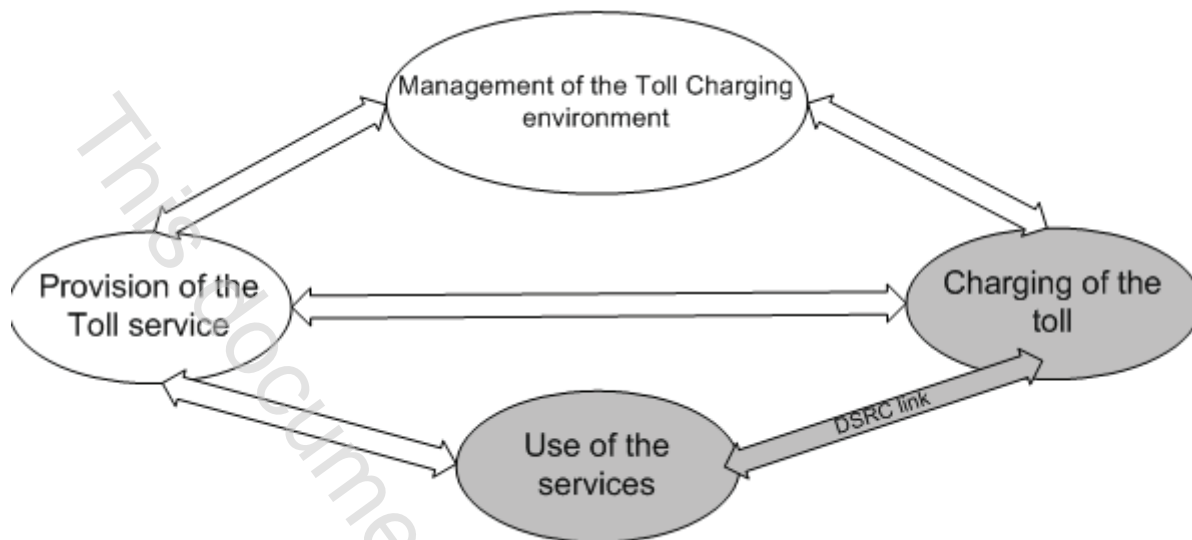


Figure 1 — Conceptual model of EFC

EFC systems for 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 of 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;
- 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 part of ISO/TS 14907 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](#). All the equipment used for enforcement (e.g. detection, classification, localization, and registration) and central equipment are outside the scope of this part of ISO/TS 14907.

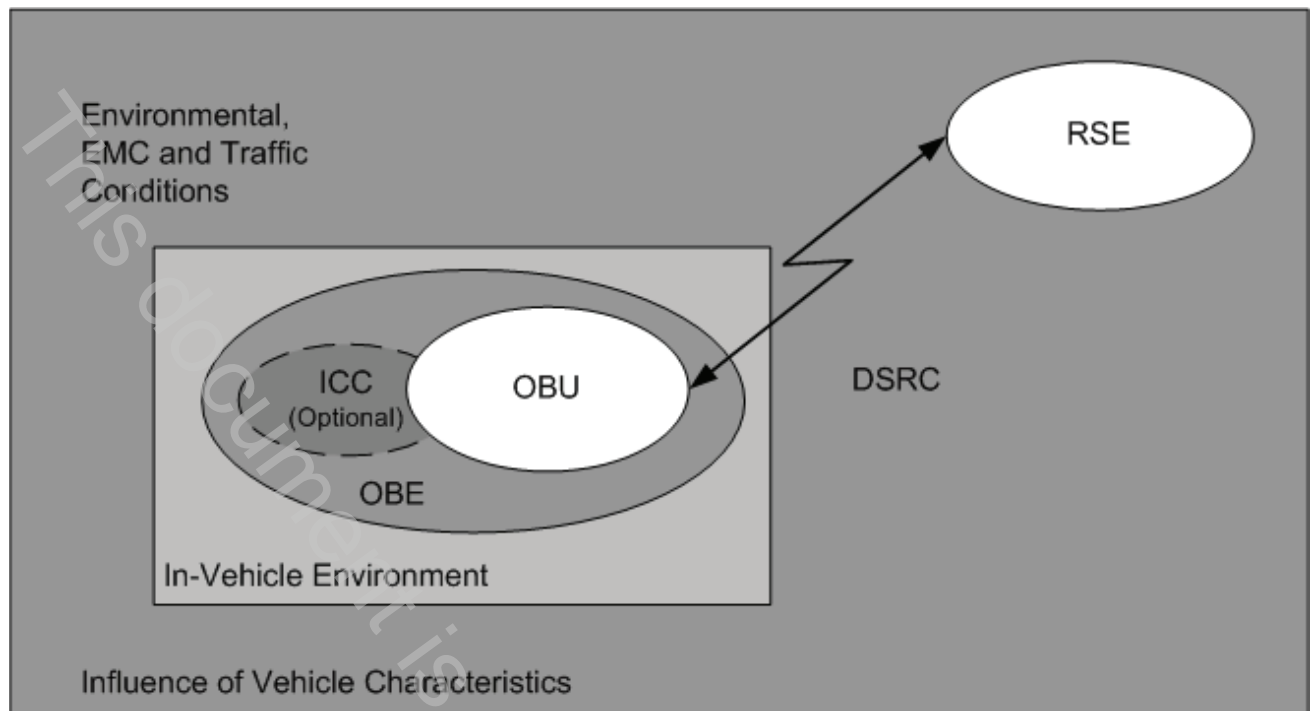


Figure 2 — OBE/RSE interface and associated environments

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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.

3.1

acceptance testing

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

3.2

availability

property of being accessible and useable upon demand by an authorized entity

[SOURCE: ISO 7498-2:1989, 3.3.11]

3.3

certification

procedure by which a party gives written assurance that a product, process, or service conforms to specified requirements