
**Electronic fee collection — Evaluation
of equipment for conformity to ISO
17575-1 —**

Part 1:
Test suite structure and test purposes

*Perception du télépéage — Évaluation de la conformité de
l'équipement à l'ISO 17575-1 —*

Partie 1: Structure de la suite d'essais et objectifs des essais





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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Abbreviated terms	4
5 Test suite structure	5
5.1 Structure.....	5
5.2 Reference to conformance test specifications.....	5
5.3 Test purposes (TP).....	6
5.3.1 TP definition conventions.....	6
5.3.2 TP naming conventions.....	6
5.4 Conformance test report.....	7
Annex A (normative) Test purposes (TP) for Front End	8
Annex B (normative) Test purposes (TP) for Back End	93
Annex C (normative) Data structures	97
Annex D (normative) PCTR for Front End	99
Annex E (normative) PCTR for Back End	104
Bibliography	108

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 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

This first edition cancels and replaces ISO/TS 16407-1:2011, which has been technically revised.

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

- this document has been converted from a Technical Specification to an International Standard;
- this document has been amended to reflect changes to the underlying base standards, especially ISO 17575;
- this document contains major changes regarding
 - data element changes introduced by ISO 17575-1 and ISO 17575-3,
 - new test purposes related to protocol version handling and authenticated data elements,
 - removed test purposes related to rules with respect to charging which are not anymore required by ISO 17575-1,
 - revised terms and definitions, and
 - editorial and formal corrections, as well as changes to improve readability.

A list of all parts in the ISO 16407 series can be found on the ISO website.

Introduction

This document, is part of a series of International Standards that supports interoperability of autonomous electronic fee collection (EFC) systems. Autonomous systems use satellite positioning, often combined with additional sensor technologies, such as gyroscopes, odometers and accelerometers, to localize the vehicle and to find its position on a map containing the charged geographic objects, such as charged roads or charged areas. From the charged objects, the vehicle characteristics, the time of day and other data that are relevant for describing road use, the tariff and ultimately, the road usage fee is determined.

Autonomous on-board equipment (OBE) operates without relying on dedicated road-side infrastructure by employing wide-area technologies such as Global Navigation Satellite Systems (GNSS) and Cellular Communications Networks (CN). Therefore, autonomous systems can also be referred to as GNSS/CN systems.

Within the series of EFC standards, this document defines tests for conformity evaluation of Front End and Back End that comply with the requirements towards the charging specified in ISO 17575-1.

This document is based on ISO 17575-1 and the ISO/IEC 9646 series of standards on conformance test methodology.

Electronic fee collection — Evaluation of equipment for conformity to ISO 17575-1 —

Part 1: Test suite structure and test purposes

1 Scope

The ISO 16407 series of standards specifies a suite of tests in order to assess the Front End and Back End behaviour compliancy towards the requirements listed in ISO 17575-1. This document contains the definition of such tests in the form of test purposes, listing the required initial conditions, references and individual steps in a structured textual manner.

Test purposes defined in this document reflect the structural and semantical requirements stated in ISO 17575-1:

- presence/absence of particular data elements;
- semantics related to various data elements:
 - data group General (see ISO 17575-1:2016, 7.3);
 - data group Security (see ISO 17575-1:2016, 7.4);
 - data group Contract (see ISO 17575-1:2016, 7.5);
 - data group Usage (see ISO 17575-1:2016, 7.6);
 - data group Account (see ISO 17575-1:2016, 7.7);
 - data group Versioning (see ISO 17575-1:2016, 7.8).

With regard to the individual data sets and EFC attributes defined in ISO 17575-1, the test purposes have been organized into the test suite groups designated for the Front End and Back End, respectively.

Besides the test purposes, this document also specifies proforma conformance test report templates for both the Front End and Back End test purposes.

For more information regarding the requirements against which the conformance is evaluated in this document, see ISO 17575-1.

Testing of the following behaviours and functionalities is outside of the scope of this document:

- dynamic behaviour, i.e. sequence of messages and triggering events that can be exchanged/happen to fulfil certain charging scenarios;
- profiles and business logic built on top of particular pricing schemas;
- as ISO 17575-1 does not specify any Behaviour Invalid of Front End and Back End, BI test purposes are not applicable for any test purpose group.