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BSI Standards Publication

Electronic fee collection - Evaluation of equipment for conformity to ISO/TS 17575-2

Part 1: Test suite structure and test purposes (ISO/TR 16401-1:2018)

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National foreword

This Published Document is the UK implementation of CEN ISO/TR 16401-1:2018. It is identical to ISO/TR 16401-1:2018. It supersedes PD CEN ISO/TS 16401-1:2012, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/278, Intelligent transport systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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European Foreword

This document (CEN ISO/TR 16401-1:2018) 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.

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 16401-1:2012.

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

Endorsement notice

The text of ISO/TR 16401-1:2018 has been approved by CEN as CEN ISO/TR 16401-1:2018 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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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 edition of ISO/TR 16401-1 cancels and replaces ISO/TS 16401-1:2012, which has been technically revised.

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

— the document has been converted from a Technical Specification to a Technical Report;

— the terms and definitions have been revised;

— the test purpose naming convention has been changed, i.e. "/" has been replaced by "_";

— editorial corrections, as well as changes to improve readability have been made.

A list of all parts in the ISO/TR 16401 series can be found on the ISO website.

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Introduction

This document is part of a set of 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.

The ISO/TR 16401 series provides tests to assess the Front End Communications API and Front End Application behaviours compliancy towards the requirements listed in ISO 17575-2. This document contains the definition of such tests in the form of test purposes, listing the initial conditions, references and individual steps in a structured textual manner. ISO/TR 16401-2 contains the identical tests written in Testing and Test Control Notation version 3 (TTCN v3).

Autonomous on-board equipment (OBE) operates without relying on dedicated roadside 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.

ISO/TR 16401-1 is based on

— ISO 17575-2, and

— the ISO 9646 family of standards on conformance test methodology.

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TECHNICAL REPORT **ISO/TR 16401-1:2018(E)**

Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-2 —

Part 1: Test suite structure and test purposes

1 Scope

This document covers the test purposes for Front End Communications API covering functionalities related to instance handling, session handling, communication service primitives (i.e. sending/receiving of ADUs) and visible state transitions. It covers EFC communication services described in ISO 17575-2:2016, Clause 5 and PICS proforma in ISO 17575-2:2016, B.2. Claims related to Front End storage capacity are out of scope of this document.

This document covers the test purposes for Front End Application related to session establishment on Back End request and related to session re-establishment when session requested by Back End failed. There are no other claims with respect to Front End Application described in ISO 17575-2.

The underlying communication technology requirements for layer 1 to 4 specified in ISO 17575-2:2016, Clause 6 are out of scope of this document.

Similarly, Back End Communications API is out of scope of this document. According to ISO 17575-2 it is expected that these Front End Communications API will be "reflected" in the BE; however, BE Communications API is out of scope of ISO 17575-2.

Test purposes have been organized into the test suite groups, designated for the Front End Communications API and Front End Application, respectively.

Aside from the test purposes, this document also provides proforma conformance test reports templates for both the Front End and Back End test purposes.

ISO 17575-2 contains more information regarding the requirements against which the conformance is evaluated in this document.

2 Normative references

There are no normative references in this document.

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:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
area charging
charging based on road usage within a given area

[SOURCE: ISO 17575-1:2016, 3.1]

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