TECHNICAL SPECIFICATION

ISO/TS 16407-2

First edition
2012-03-01

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

Part 2:
Abstract test suite

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Perception de télépéage — Évaluation de conformité de l'équipement à l'ISO/TS 17575-1 —

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Partie 2: Suite de test abstraite

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Contents

Page

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

ISO/TS 16407-2 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, in collaboration with Technical Committee CEN/TC 278, *Road transport and traffic telematics*.

ISO/TS 16407 consists of the following parts, under the general title *Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-1*:

⎯ *Part 1: Test suite structure and test purposes*

⎯ *Part 2: Abstract test suite*

Introduction

This part of ISO/IEC 16407 is part of a set of standards that supports interoperability of autonomous EFC-systems, which includes ISO/TS 17575 parts 1 to 4 that define the EFC context data, their charge reports and their use of communication infrastructure.

Within the suite of EFC standards, this conformance evaluation procedure defines the process and tests for conformity evaluation of Front End and Back End that comply with the requirements in ISO/TS 17575-1.

This part of ISO/IEC 16407 is intended to

— assess Front End and Back End capabilities,

— assess Front End and Back End behaviour,

— serve as a guide for Front End and Back End conformance evaluation and type approval,

— achieve comparability between the results of the corresponding tests applied in different places at different times, and

— facilitate communications between parties.

This part of ISO/IEC 16407 is based on

— ISO/TS 17575-1, and

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

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

Part 2:
Abstract test suite

1 Scope

This part of ISO/IEC 16407 specifies the Abstract Test Suite (ATS) to evaluate the conformity of Front End and Back End to ISO/TS 17575-1.

The objective of this part of ISO/IEC 16407 is to provide a basis for conformance tests for the Front End and the Back End in Electronic Fee Collection to enable interoperability between different equipment supplied by different manufacturers.

The present abstract test suite is directly derived from ISO/TS 17575-1.

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2 Normative references (standards.iteh.ai)

The following referenced documents are indispensable for the application 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/TS 17575-1, *Electronic fee collection — Application interface definition for autonomous systems — Part 1: Charging*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
conformance testing
testing the extent to which an IUT is a conforming implementation

[ISO/IEC 9646-1:1994, definition 3.3.23]

3.2
implementation under test
an implementation of one or more OS1 protocols in an adjacent user/provider relationship, being that part of a real open system which is to be studied by testing

[ISO/IEC 9646-1:1994, definition 3.3.43]

3.3
system under test
the real open system in which the IUT resides

[ISO/IEC 9646-1:1994, definition 3.3.103]

3.4
test case
an abstract or executable test case

[ISO/IEC 9646-1:1994, definition 3.3.107]

4   Abbreviations

For the purposes of this document, the following abbreviations apply, unless otherwise specified.

BE   Back End

DUT   Device Under Test

EUT   Equipment Under Test

FE   Front End

IUT   *Implementation under test*

PIXIT   Protocol Implementation Extra Information for Testing

SCS   Semiconductor Characterization System

SUT   *System under test*

TC   *Test case*

5   Abstract Test Method (ATM)

This clause describes the ATM used to test the layers at the FE side and at the BE side.

5.1   Implementations Under Tests

5.1.1   Front-End (FE)

The part(s) of the toll system where usage data for an individual user are collected, processed and delivered to the Back End. The Front End comprises the on-board equipment and optionally a proxy.

5.1.2   Back-End (BE)

Generic name for the computing and communication facilities of the Service Provider and/or the Toll Charger.

5.2   Test architecture

The *implementation under test* is either the FE or the BE. The *System under test* comprises also the communication sub-layer, which is necessary to perform the IUT tests.

The tester executes the TTCN-3 *test case*s of the present Test Specification, running on an emulated communication sub-layer.
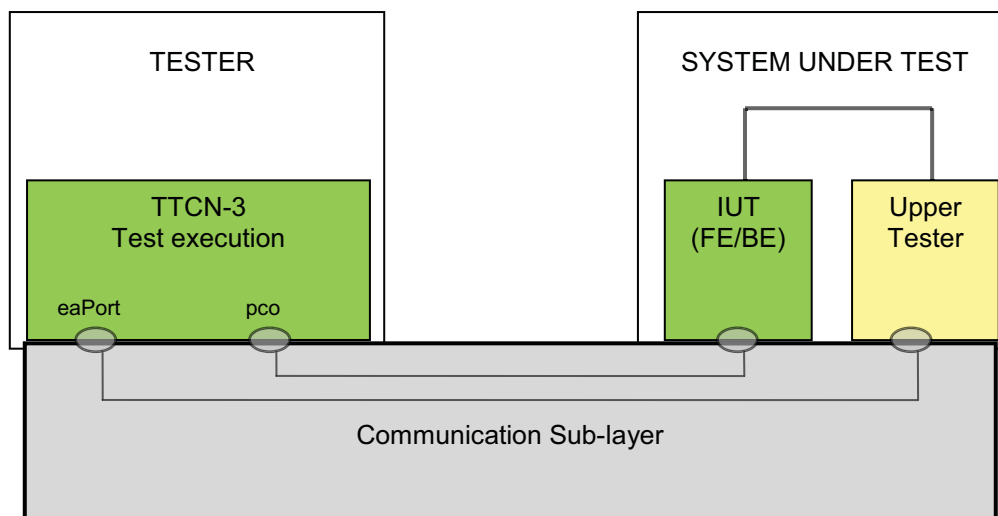
The figure below describes the test architecture.

Figure 1 — Test system architecture

5.3 Protocol Implementation Extra Information for Testing (PIXIT)

The supplier of the Front End and Back End, respectively, is responsible for providing a Protocol Implementation Extra Information for Testing (PIXIT).

The supplier of the Front End and the Back End shall complete a PIXIT; see Annex B for a proforma.

6 Untestable Test Purposes (TP)

This clause gives a list of TPs which are not implemented in the Abstract Test Suite due to the chosen Abstract Test Method or other restrictions.

Table 1 — Untestable TPs

Test purpose	Reason
(empty)	**(empty)**

NOTE   Currently no untestable TPs have been identified.

7 ATS data structures

7.1 ASN.1 description

The ATS is based on the following ASN.1 description:

— ContextDataModule: it provides the ASN.1 description for ContextData, including Iso17575-3 ADU descriptions

— ChargingModule: it provides the ASN.1 description for charging support, including ChargeReport and ChargeReportResponse