BS EN ISO 14907-2:2021

BSI Standards Publication

Electronic fee collection — Test procedures for user and fixed equipment

Part 2: Conformance test for the on-board unit application interface

Documents
Document Sharing Hub

Full document details: BS EN ISO 14907-2:2021

National foreword

This British Standard is the UK implementation of EN ISO 14907-2:2021. It is identical to ISO 14907-2:2021. It supersedes PD CEN ISO/TS 14907-2:2016, which is withdrawn.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 committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2021
Published by BSI Standards Limited 2021

ISBN 978 0 539 13815 3

ICS 35.240.60; 43.040.15

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2021.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS EN ISO 14907-2:2021

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 14907-2

April 2021

ICS 35.240.60; 43.040.15

Supersedes CEN ISO/TS 14907-2:2016

English Version

Electronic fee collection - Test procedures for user and fixed equipment - Part 2: Conformance test for the on-board unit application interface (ISO 14907-2:2021)

Perception du télépéage - Modes opératoires relatifs aux équipements embarqués et aux équipements fixes - Partie 2: Essai de conformité de l'interface d'application de l'unité embarquée (ISO 14907-2:2021)

Elektronische Gebührenerhebung - Testverfahren für straßenseitige und fahrzeugseitige Einrichtungen - Teil 2: Konformitätsprüfungen für die Anwendungsschnittstelle der fahrzeugseitigen Einrichtung (ISO 14907-2:2021)

This European Standard was approved by CEN on 21 January 2021.

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

© 2021 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN ISO 14907-2:2021 E

Documents
Document Sharing Hub

Full document details: BS EN ISO 14907-2:2021

European foreword

This document (EN ISO 14907-2:2021) 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 October 2021, and conflicting national standards shall be withdrawn at the latest by October 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 CEN ISO/TS 14907-2:2016.

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 14907-2:2021 has been approved by CEN as EN ISO 14907-2:2021 without any modification.

Documents
Document Sharing Hub

Full document details: BS EN ISO 14907-2:2021

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **2**
3 Terms and definitions **2**
4 Abbreviated terms **4**
5 OBU and supporting information **5**
5.1 General 5
5.2 ICS 8
5.3 IXIT 8
6 Testing requirements **9**
6.1 EFC application interface 9
6.2 Conceptual test architecture 9
6.3 Conformance test system 10
6.3.1 Generalities 10
6.3.2 Functionality of tester 11
6.3.3 Conformance testing 11
6.4 Test documentation 12
6.4.1 Generalities 12
6.4.2 Tester 12
6.4.3 Test methods and test cases 12
6.4.4 Test results 12
Annex A (normative) **Implementation conformance statement proforma** **13**
Annex B (normative) **Implementation of extra information for testing proforma** **28**
Annex C (informative) **OBU test cases** **33**
Annex D (informative) **OBE conformance test procedures conducted in Japan** **72**
Bibliography **77**

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

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 first edition cancels and replaces the third edition (ISO/TS 14907-2:2016), which has been technically revised.

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

— EFC application interface (i.e. 6.1) has been added;

— the terms have been revised and aligned with ISO/TS 17573-2:2020.

A list of all parts in the ISO 14907 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.

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

Introduction

This document describes tests that verify on-board unit (OBU) conformance of functions and data structures implementations for electronic fee collection (EFC) applications.

The purpose of this document is to define tests that:

— assess OBU capabilities,

— assess OBU behaviour,

— serve as a guide for OBU 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.

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS EN ISO 14907-2:2021

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

Part 2: Conformance test for the on-board unit application interface

1 Scope

This document describes tests which verify on-board unit (OBU) conformance of functions and data structures implementations, as defined in the implementation conformance statement (ICS) based on ISO 14906 for EFC applications.

This document defines tests for assessing OBU conformance in terms of :

— basic dedicated short-range communication (DSRC) L7 functionality,

— EFC application functions,

— EFC attributes (i.e. EFC application information),

— the addressing procedures of EFC attributes and (hardware) components,

— the EFC transaction model, which defines the common elements and steps of any EFC transaction, and

— the behaviour of the interface so as to support interoperability on an EFC-DSRC application interface level.

After the tests of isolated data items and functions (C.2 to C.4), an example is given for testing a complete EFC transaction (C.3). Although this document defines examples of test cases for DSRC and EFC functionality (see Annex C), it does not intend to specify a complete test suite for a certain implementation. To compose a test suite for a specific EFC implementation, the test cases can be modified and new test cases can be defined and added in order for the conformance test suite to be complete. It can be useful to consider the following when defining a complete test suite:

— small range: “exhaustive testing” of critical interoperability/compatibility features,

— large range: testing of boundaries and random values, and

— composite types: testing of individual items in sequence or parallel.

This document does not define tests which assess:

— performance,

— robustness, and

— reliability of an implementation.

NOTE 1 ISO 14907-1 defines test procedures that are aimed at assessing performance, robustness and reliability of EFC equipment and systems.

NOTE 2 The ISO/IEC 10373 series defines test methods for proximity, vicinity, integrated circuit(s) cards and related devices that can be relevant for OBUs which support such cards.

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

Annex D provides an informative overview of Japanese on-board equipment (OBE) conformance tests which are based on the ISO 14907 series, in order to illustrate how these can be applied in practice.

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

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

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:

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

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

3.1
access credentials
AC_CR
trusted attestation or secure module that establishes the claimed identity of an object or application

[SOURCE: ISO/TS 17573-2:2020, 3.4]

3.2
attribute
addressable package of data consisting of a single data element or structured sequences of data elements

[SOURCE: ISO/TS 17573-2:2020, 3.13]

3.3
authenticator
data, possibly encrypted, that is used for authentication

[SOURCE: ISO/TS 17573-2:2020, 3.16]

3.4
channel
information transfer path

[SOURCE: ISO/IEC 7498-2:1989, 3.3.13]

3.5
electronic fee collection
EFC
fee collection by electronic means

Note 1 to entry: Fee and toll are synonyms within the context of standardization of EFC in ISO/TC 204.

[SOURCE: ISO/TS 17573-2:2020, 3.70, modified — Note 1 to entry added.]

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

3.6
Element
DSRC directory containing application information in the form of *attributes* (3.2)

[SOURCE: ISO 14906:2018, 3.8]

3.7
implementation conformance statement
ICS
statement of capabilities and options that have been implemented that defines to what extent the implementation is compliant with a given specification

[SOURCE: ISO/TS 17573-2:2020, 3.90]

3.8
implementation conformance statement proforma
document, in the form of a questionnaire, which when completed for an implementation or system becomes an *implementation conformance statement* (ICS) (3.7)

[SOURCE: ISO/IEC 9646-1:1994, 3.3.40]

3.9
implementation extra information for testing
IXIT
statement containing all of the information related to the *implementation under test (IUT)* (3.11) and its corresponding system under test (SUT) which will enable the testing laboratory to run an appropriate test suite against that IUT

[SOURCE: ISO/TS 17573-2:2020, 3.92]

3.10
implementation extra information for testing proforma
document, in the form of a questionnaire, which when completed for an *implementation under test (IUT)* (3.11) becomes an *implementation extra information for testing (IXIT)* (3.9)

[SOURCE: ISO/TS 17573-2:2020, 3.93]

3.11
implementation under test
IUT
implementation of one or more open systems interconnection (OSI) protocols in an adjacent user/provider relationship, being part of a real system, which is to be studied by testing

[SOURCE: ISO/TS 17573-2:2020, 3.94]

3.12
on-board equipment
OBE
all required equipment on-board a vehicle for performing required *electronic fee collection (EFC)* (3.5) functions and communication services

[SOURCE: ISO/TS 17573-2:2020, 3.126]

3.13
on-board unit
OBU
electronic unit on-board a vehicle for performing specific *electronic fee collection (EFC)* (3.5) functions and for communication with external systems

Note 1 to entry: An OBU always includes, in this context, at least the support of the DSRC interface.

[SOURCE: ISO/TS 17573-2:2020, 3.127, modified — Note 1 to entry added.]

Documents
Document Sharing Hub

© ISO 2021 – All rights reserved

Full document details: BS EN ISO 14907-2:2021

3.14
roadside equipment
RSE
fixed or movable *electronic fee collection (EFC)* (3.5) equipment located along or on the road

Note 1 to entry: Movable RSE can be mounted temporarily along the road or in a vehicle.

[SOURCE: ISO/TS 17573-2:2020, 3.161]

3.15
service primitive
elementary communication service provided by the application layer protocol to the application processes (AP)

[SOURCE: ISO/TS 17573-2:2020, 3.173]

3.16
transaction
whole of the exchange of information between two physically separated communication facilities

[SOURCE: ISO/TS 17573-2:2020, 3.211]

3.17
transaction model
functional model describing the general structure of electronic payment *transactions* (3.16)

[SOURCE: ISO/TS 17573-2:2020, 3.213]

4 Abbreviated terms

ACn	acknowledged command/response
APDU	application protocol data unit
AP	application process
ARIB	Association of Radio Industries and Businesses NOTE A Japanese standards development organization.
ASCII	American Standard Code for Information Interchange
ASP	application service primitive
AVI	automatic vehicle identification
BST	beacon service table
DSRC	dedicated short-range communication
DUT	device under test
eid	Element identifier
FTP	file transfer protocol
I-Kernel	Initialization Kernel
iid	invoker identifier
ind	indication

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

L1	layer 1 of DSRC (physical layer)
L2	layer 2 of DSRC (data link layer)
L7	application layer core of DSRC
LID	logical link control identifier
LLC	logical link control
LSDU	link layer service data unit
MMI	man-machine nterface
n.a.	not applicable
NE_OK	command accepted/response LSDU not yet available
PoC	point of control
PoO	point of observation
PrWA	private window allocation
PrWRq	private window request
req	request
ret	return
rs	response
SAM	secure application module
T-APDU	transfer-application protocol data unit
T-ASDU	transfer-application service data unit
TC	test case
T-Kernel	transfer kernel
TTI	traffic and traveller information
VST	vehicle service table

5 OBU and supporting information

5.1 General

The supplier shall provide the OBU, i.e. the device under test (DUT), and the associated information, including:

— the OBU personalized to be able to perform tests according to the ICS and implementation extra information for testing (IXIT) as defined in 5.2 and 5.3, respectively. At least five samples shall be submitted for test. More samples can be needed if several different data structures and data contents are required in the tests;

— user's manual for the OBU, which shall include instructions on how to handle the equipment, and can include further detailed information about the protocol functions;

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

— ICS according to 5.2. The ICS shall include statements regarding the following:

  — L7 services that are implemented in the OBU;

  — EFC functions (action types) that are implemented in the OBU;

  — whether or not data elements are used;

— IXIT according to 5.3 The IXIT shall, if applicable, include:

  — a statement regarding which L2 services shall be used to transfer the L7 services (and EFC services);

  — a description of security calculations in the OBU including a specification of the encryption algorithm used;

  — values of the test master keys for calculation and verification of OBU security data such as authenticators and access credentials.

The supplier should also provide configuration/personalization equipment for the OBU if this ensures effective testing.

Figure 1 gives a more detailed picture of the interface between the entity performing the conformance test and the supplier of the DUT. By the EFC application specification, the ICS proforma and the IXIT proforma, the supplier is requested to provide the DUT (OBU), which contains the implementation under test (IUT), as well as the documentation needed to perform the tests. More details on the content of the different documents are given in Clause 5 on OBU and supporting information.

NOTE The DUT contains the IUT.

Figure 1 shows the overall procedure of conformance testing. Figure 2 shows the exchange of information between the supplier of the DUT and the test house.

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

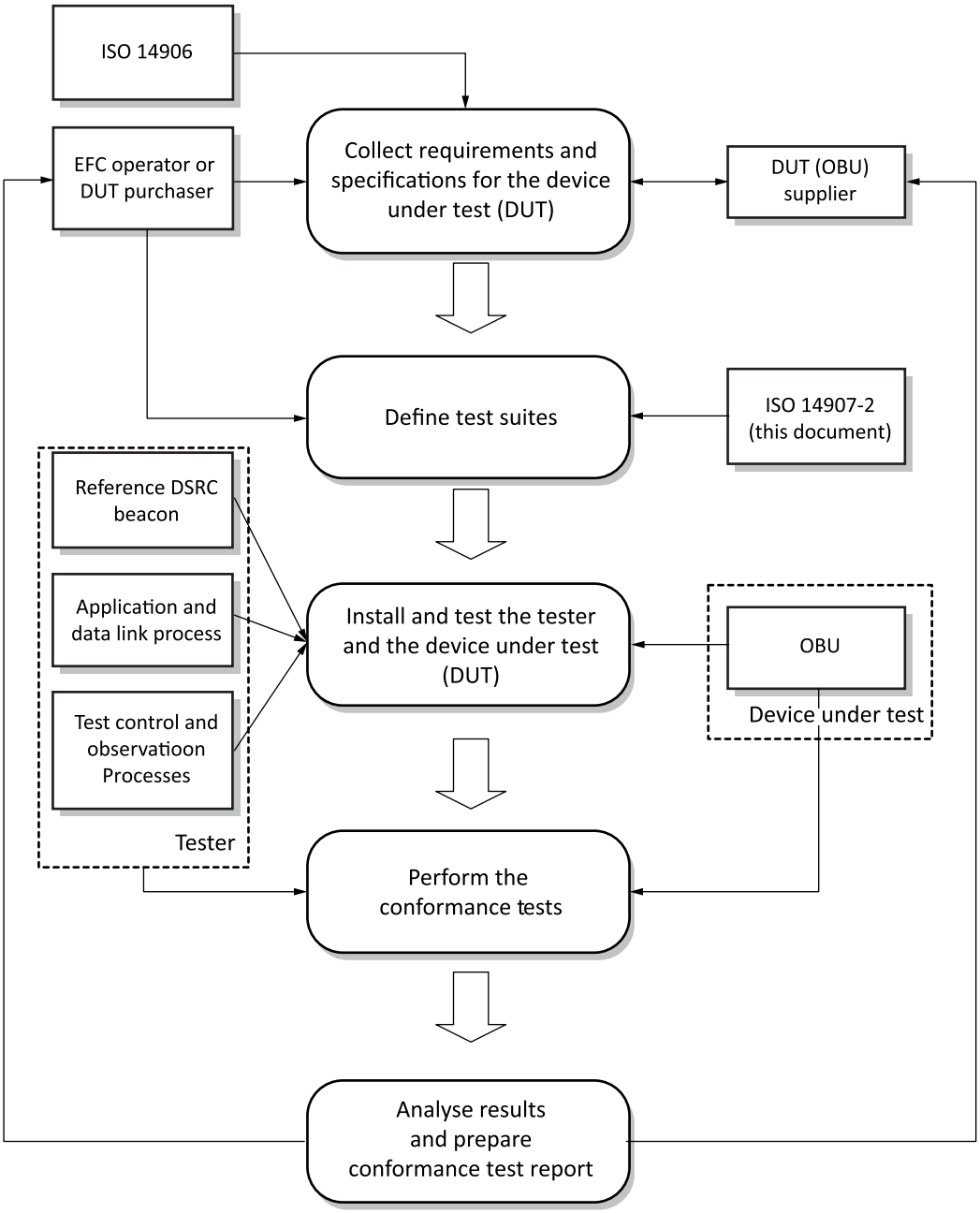

Figure 1 — Conformance testing process

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

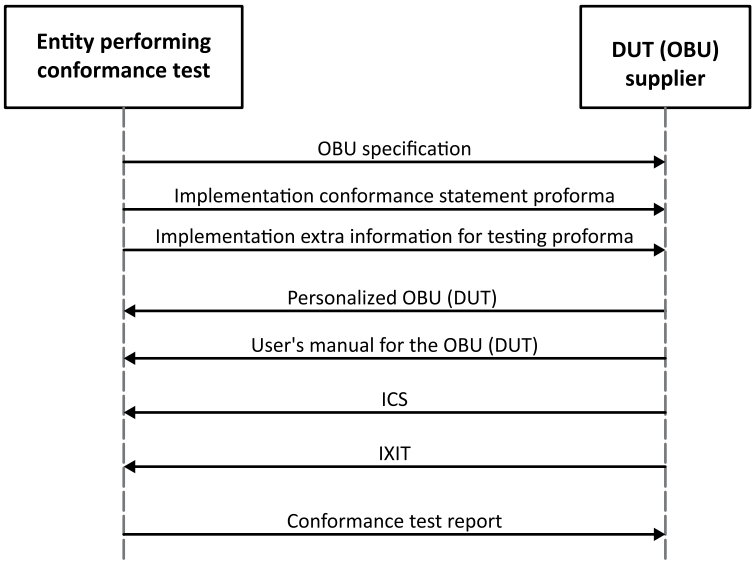

Figure 2 — Information exchange flow

5.2 ICS

The ICS is a statement made by the supplier that claims conformance to a certain specification. The ICS states which capabilities have been implemented in the specifications. It also states possible limitations in the implementation of the specification.

This document describes testing of implementations according to the following documents:

— EN 12834;

— ISO 14906.

Annex A contains the ICS proforma that shall be used for the ICS.

5.3 IXIT

The IXIT is a statement made by the supplier or an implementer of an IUT which contains or references all of the information, in addition to that given in the ICS, related to the DUT and its testing environment. The IXIT enables the test laboratory to run an appropriate test suite against the DUT.

In this document, the IXIT specifies the services in the lower communication layers that shall be used to perform the services to be tested. These services are described in EN 12795, EN 12253 and EN 13372, for example.

The IXIT shall also contain further information and describe algorithms and procedures that are not specified in the above listed documents but are prerequisites to perform the testing. Examples of such information are:

— content of the ApplicationContextMark in the VST,

— calculation of access credentials in DSRC services,

— use of returnCode in DSRC L7 services and EFC functions, and

— calculation of authenticators in EFC functions.

Annex B contains the IXIT proforma that shall be used for the declaration of the IXIT.

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

6 Testing requirements

6.1 EFC application interface

Figure 3 illustrates the scope of the conformance assessment of the EFC application interface covered by this document.

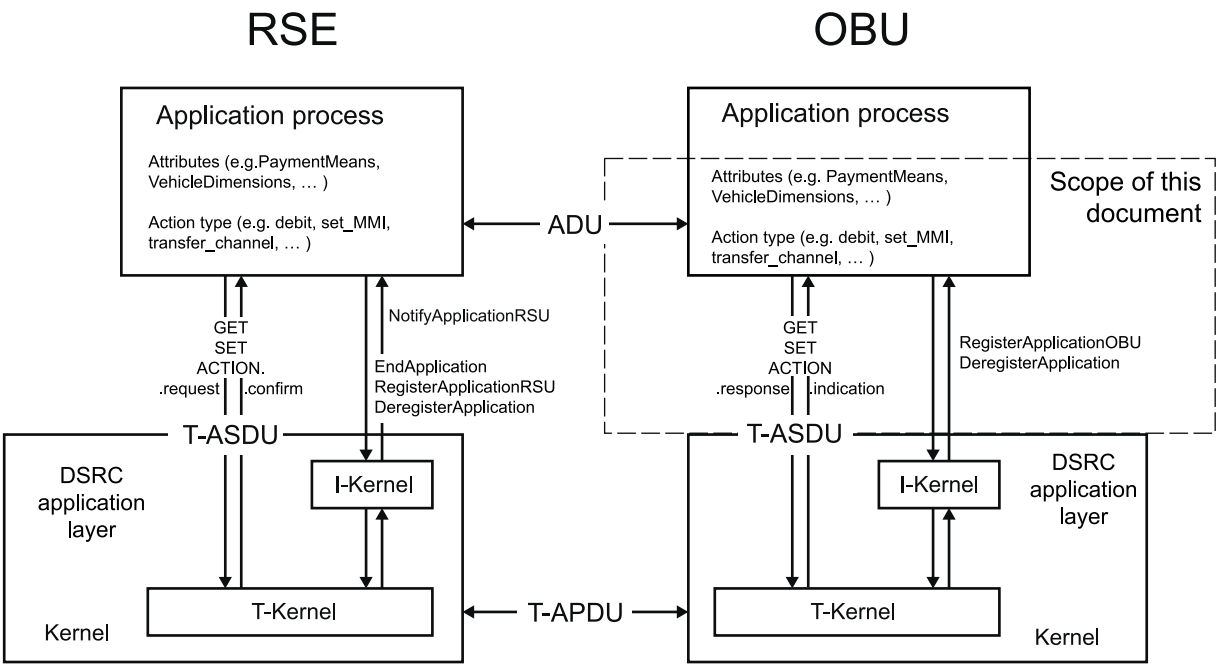

Figure 3 — The EFC application interface

6.2 Conceptual test architecture

A remote test method shall be used for the conformance test of OBUs (DUT). Figure 4 shows the conceptual testing architecture of tester and DUT. The conformance test is only related to the the PoC, which is the point where the test events are controlled. The PoC shall be implemented inside the tester on the interface between the application layer and the APs.

The Point of Observation (PoO), which is the point where the occurrence of test events is to be observed, shall be implemented inside the tester on the interface between the application layer and the AP. The PoO must also interface the data link layer since some tests require observation of the behaviour on this layer.

The PoC and PoO are characterized by a set of application service primitives (ASPs), according to the specifications of the tests. The test events observed at the PoO may be supplemented by information provided by other sub-units, for example, MMI or an IC card, if available with the DUT.

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

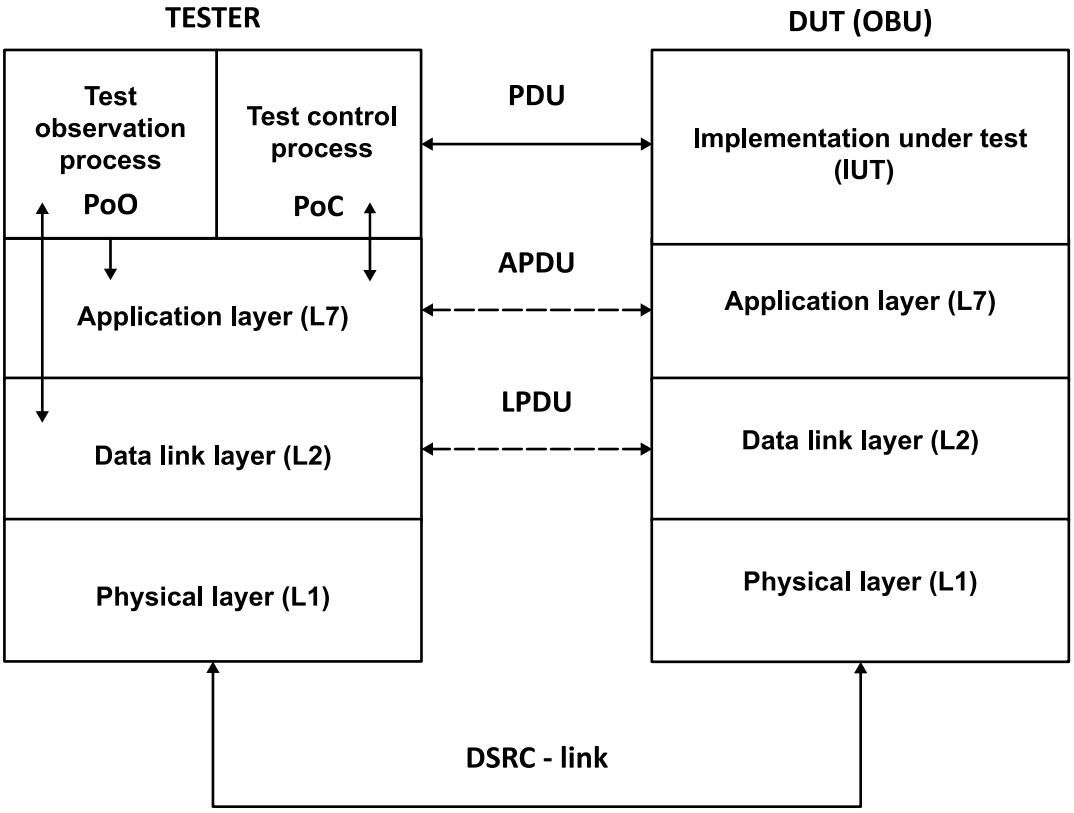

Figure 4 — Conceptual architecture of the conformance test

6.3 Conformance test system

6.3.1 Generalities

The conformance tests shall be performed under controlled conditions by using a test system according to Figure 5.

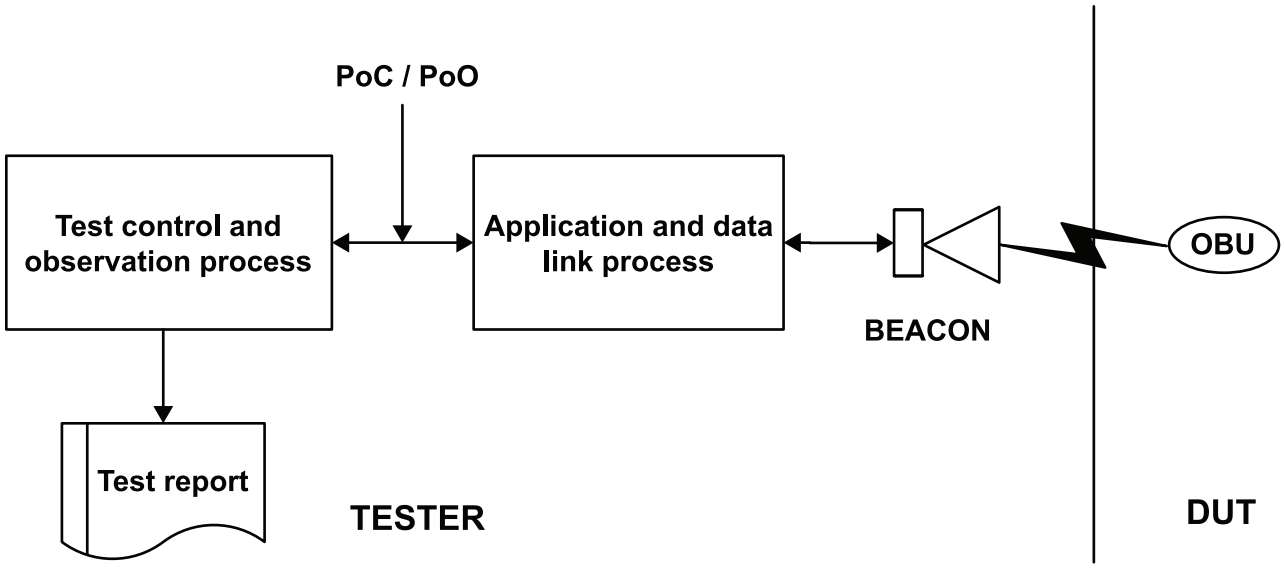

Figure 5 — Test facilities

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

6.3.2 Functionality of tester

6.3.2.1 Reference beacon

The beacon shall be a transparent physical layer interface for DSRC according to European or International Standards. This means that it shall be able to operate standardized data profiles of DSRC links. A simple beacon may be used that only sends and receives frames to or from the DUT. The communication is controlled by the application and data link process of the tester.

Beacon parameters, for example, the transmitting power, shall be adjustable by the tester.

6.3.2.2 Application and data link process

The tester shall be able to operate the communication link in real time according to data link layer functionality of European or International Standards. The process shall provide the connection to the test control and observation process and shall control the sending and reception of frames to and from the beacon.

6.3.2.3 Test control and observation processes

The test control and observation processes shall be implemented on an appropriately equipped computer system. The processes shall comply with the definitions of the application and data link layers defined by European or International Standards and shall be able to generate test suites in reference to ISO 14906. The control process shall provide functionality to configure the test bed, to generate test suites and to perform test suites.

EXAMPLE Test suites can be generated in plain ASCII format and can be retrieved by the real-time control process via FTP.

While the tests are being performed, all events shall be observed by the PoO process. All results shall be documented, visualized and be made available for detailed analysis.

6.3.3 Conformance testing

The tests performed by the tester shall be able to concentrate on EFC-communication protocol aspects, which are:

— initialization phase (BST-VST exchange);

— application layer services in accordance with EN 12834;

— EFC functions and services in accordance with ISO 14906;

— EFC data and parameters used in accordance with ISO 14906; and

— transaction phase (logical sequence).

The DUT shall be operated in a controlled environment according to the manufacturer's instructions.

All test suites shall be generated corresponding to the specification of the manufacturer, which shall describe the behaviour of the DUT in terms of expected messages from the beacon and intended answers from the DUT. The communication sequence shall be unambiguously defined. The test generation tool shall be able to check the messages against the European or International DSRC standards. All events of a DUT are stored by the tester.

The test suites generated shall strictly correspond to the European or International DSRC standards and to ISO 14906.

The results of the tests shall only be related to the IUT of the DUT. Only the correctness of the implementation shall be tested, and any assessment of performance, robustness or reliability is

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

excluded. The results of the tests shall be able to provide confidence that the DUT works according to ICS, the underlying DSRC standards and to ISO 14906, within the scope of the performed tests.

6.4 Test documentation

6.4.1 Generalities

The test documentation shall provide comprehensive information of the tester used, the DUT, the tests carried out, and the gathered test results.

6.4.2 Tester

All relevant information and specifications of the tester used shall be documented in the test report.

The ICS and the IXIT shall be provided by the manufacturer or supplier of the DUT. The ICS and IXIT shall describe all the capabilities and limitations of the DUT according to Annex A and Annex B, respectively.

6.4.3 Test methods and test cases

A test suite is required which covers all implemented and specified functions of the DUT to be tested based on the provided ICS and IXIT. Completeness and correctness of the test suite is required to verify conformity between IUT and specification, including the referenced standards.

The test suite is separated in test groups; each test group consists of a number of test cases. The tester shall provide a tool which enables the user to specify the test suite and which provides documentation of the test suite.

The user-defined test suite should be automatically translated in a computer format which is executable by the tester.

6.4.4 Test results

Each test case carried out shall be documented by the test generation equipment. For each test case, a verdict shall be given: passed, inconclusive or failed. The results of all test cases shall form the conformance test report.

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

Annex A
(normative)

Implementation conformance statement proforma

A.1 Overview

The forms in this annex shall be completed by the supplier of the DUT (OBU) to state conformance to applicable parts of EN 12834 (DSRC L7 standard) and ISO 14906.

When the forms are completed (i.e. Tables A.1 to A.44), this annex forms the ICS that shall be submitted to the test laboratory before the start of the tests.

A.2 Identification of OBU supplier

Table A.1 — Identification of OBU supplier form

Company	
Postal address	
Telephone	
Contact person	
Email address	

A.3 Identification of OBU

Table A.23 — Identification of OBU form

Brand	
Type, version	
Manufacturer ID	
Equipment class	
Serial numbers of supplied units	

A.4 DSRC application layer implementation

A.4.1 Declaration of application layer features

EN 12834 (DSRC L7) implemented functionality shall be declared by completing Table A.3.

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

Table A.3 — EN 12834 functionality

Feature(s)			Status	Implemented Yes/No/n.a.	Restrictions or other comments
T-Kernel	Fragmentation/defragmentation		optional/mand.		
	Concatenation/deconcatenation		optional/mand.		
	Multiplexing/demultiplexing		optional/mand.		
	Fragmentation header	1 octet	mand.		
		2 octets	optional/mand.		
		3 octets	optional/mand.		
	Service primitives	GET	optional		
		SET	optional		
		ACTION	optional		
		EVENT-REPORT	mand.		
		INITIALIZATION	mand.		
I-Kernel			optional/mand.		
Timer T (second)			255/0-255		
LID for INITIALIZATION.req			broadcast/ private		
NOTE "/" means that any number or feature listed can be chosen.					

A.4.2 Detailed L7 services statement

A.4.2.1 Generalities

For each implemented L7 service according to EN 12834, the corresponding table shall be completed (i.e. Tables A.4 to A.11). The information is used to control the service tests.

A.4.2.2 INITIALIZATION

Table A.4 — INITIALIZATION.req, BST

Data element	Data type	Used/not used, restrictions
rsu	BeaconID	
time	Time	
profile	Profile	
mandApplications	ApplicationList	
nonmandApplications	ApplicationList, OPTIONAL	
profileList	SEQUENCE (SIZE (0..127,...)) OF Profile	

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

Table A.5 — INITIALIZATION.rs, VST

Data element	Data type	Used/not used, restrictions
profile	Profile	
applications	ApplicationList	
obeConfiguration	ObeConfiguration	

A.4.2.3 GET

Table A.6 — GET.req

Data element	Data type	Used/not used, restrictions
eid	Dsrc-EID	
accessCredentials	OCTET STRING OPTIONAL	
iid	DsrcEID OPTIONAL	
attrIdList	AttributeIdList OPTIONAL	

If access credentials are used, the algorithm for how to calculate these shall be described in the IXIT.

Table A.7 — GET.rs

Data element	Data type	Used/not used, restrictions
eid	Dsrc-EID	
iid	DsrcEID OPTIONAL	
attributelist	AttributeList OPTIONAL	
ret	ReturnStatus OPTIONAL	

A.4.2.4 SET

Table A.8 — SET.req

Data element	Data type	Used/not used, restrictions
mode	BOOLEAN	
eid	Dsrc-EID	
accessCredentials	OCTET STRING OPTIONAL	
attrList	AttributeList	
iid	DsrcEID OPTIONAL	

If access credentials are used, the algorithm for how to calculate these shall be described in the IXIT.

Table A.9 — SET.rs

Data element	Data type	Used/not used, restrictions
eid	Dsrc-EID	
iid	DsrcEID OPTIONAL	
ret	ReturnStatus OPTIONAL	

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

A.4.2.5 EVENT-REPORT

Table A.10 — EVENT-REPORT.req

Data element	Data type	Used/not used, restrictions
mode	BOOLEAN	
eid	Dsrc-EID	
eventType	EventType	
accessCredentials	OCTET STRING (SIZE (0..127,..)) OPTIONAL	
eventParameter	Container OPTIONAL	
iid	DsrcEID OPTIONAL	

If access credentials are used, the algorithm for how to calculate these shall be described in the IXIT.

Table A.11 — EVENT-REPORT.rs

Data element	Data type	Used/not used, restrictions
eid	Dsrc-EID	
iid	DsrcEID OPTIONAL	
ret	ReturnStatus OPTIONAL	

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

A.5 EFC Functions

A.5.1 Declaration of EFC functions implemented

The ISO 14906-implemented EFC functions (DSRC L7 ACTION-services) shall be declared by completing Table A.12.

Table A.12 — EFC Functions

EFC function	Implemented Yes/No	Restrictions and remarks
GET_STAMPED		
SET_STAMPED		
GET_SECURE		
SET_SECURE		
GET_INSTANCE		
SET_INSTANCE		
GET_NONCE		
SET_NONCE		
TRANSFER_CHANNEL		
COPY		
SET_MMI		
SUBTRACT		
ADD		
DEBIT		
CREDIT		
ECHO		

A.5.2 Detailed EFC functions statement

A.5.2.1 Generalities

For each implemented EFC function, the corresponding table shall be completed (i.e. Tables A.13 to A.44). The information is used to control the function tests.

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

A.5.2.2 GET STAMPED

Table A.13 — ACTION.rq (GET STAMPED)

Data element	Data type	Used/not used, restrictions
mode	BOOLEAN = TRUE	
eid	Dsrc-EID	
actionType	ActionType = 0	
accessCredentials	OCTET STRING OPTIONAL	
actionParameter	GetStampedRq:: = SEQUENCE { attributeIdList AttributeIdList, nonce OCTET STRING, keyRef INTEGER(0..255) }	
iid	DsrcEID OPTIONAL	

If access credentials are used, the algorithm for how to calculate these shall be described in the IXIT.

Table A.14 — ACTION.rs (GET STAMPED)

Data element	Data type	Used/not used, restrictions
eid	Dsrc-EID	
iid	DsrcEID OPTIONAL	
responseParameter	GetStampedRs:: = SEQUENCE { attributeList AttributeList, authenticator OCTET STRING }	
ret	ReturnStatus OPTIONAL	

The algorithm for calculation of the authenticator shall be described in the IXIT.

A.5.2.3 SET STAMPED

Table A.15 — ACTION.req (SET STAMPED)

Data element	Data type	Used/not used, restrictions
mode	BOOLEAN = TRUE	
eid	Dsrc-EID	
actionType	ActionType = 1	
accessCredentials	OCTET STRING OPTIONAL	
actionParameter	SetStampedRq:: = SEQUENCE { attributeList AttributeList, nonce OCTET STRING, keyRef INTEGER(0..255) }	
iid	DsrcEID OPTIONAL	

If access credentials are used, the algorithm for how to calculate these shall be described in the IXIT.

© ISO 2021 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021

Table A.16 — ACTION.rs (SET STAMPED)

Data element	Data type	Used/not used, restrictions
eid	Dsrc-EID	
iid	DsrcEID OPTIONAL	
responseParameter	OCTET STRING	
ret	ReturnStatus OPTIONAL	

The algorithm for calculation of the authenticator in the responseParameter OCTET STRING shall be described in the IXIT.

A.5.2.4 GET SECURE

Table A.17 — ACTION.req (GET SECURE)

Data element	Data type	Used/not used, restrictions
mode	BOOLEAN = TRUE	
eid	Dsrc-EID	
actionType	ActionType = 2	
accessCredentials	OCTET STRING OPTIONAL	
actionParameter	OCTET STRING	
iid	DsrcEID OPTIONAL	

If access credentials are used, the algorithm for how to calculate these shall be described in the IXIT.

Table A.18 — ACTION.rs (GET SECURE)

Data element	Data type	Used/not used, restrictions
eid	Dsrc-EID	
iid	DsrcEID OPTIONAL	
responseParameter	OCTET STRING	
ret	ReturnStatus OPTIONAL	

The content in the responseParameter OCTET STRING shall be described in the IXIT.

A.5.2.5 SET SECURE

Table A.19 — ACTION.req (SET SECURE)

Data element	Data type	Used/not used, restrictions
mode	BOOLEAN	
eid	Dsrc-EID	
actionType	ActionType = 3	
accessCredentials	OCTET STRING OPTIONAL	
actionParameter	OCTET STRING	
iid	DsrcEID OPTIONAL	

If access credentials are used, the algorithm for how to calculate these shall be described in the IXIT.

The content in the actionParameter OCTET STRING shall be described in the IXIT.

© ISO 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 14907-2:2021