BS EN ISO 13143:2025

BSI Standards Publication

Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to ISO 12813

Documents
Document Sharing Hub

Full document details: BS EN ISO 13143:2025

National foreword

This British Standard is the UK implementation of EN ISO 13143:2025. It is identical to ISO 13143:2025. It supersedes BS EN ISO 13143-1:2020, which is withdrawn.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 2025
Published by BSI Standards Limited 2025

ISBN 978 0 539 22509 9

ICS 03.220.20; 35.240.60

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 31 March 2025.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS EN ISO 13143:2025

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 13143

March 2025

ICS 03.220.20; 35.240.60

Supersedes EN ISO 13143-1:2020

English Version

Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to ISO 12813 (ISO 13143:2025)

Perception de télépéage - Évaluation des équipements embarqués et en bord de route quant à la conformité avec l'ISO 12813 (ISO 13143:2025)

Elektronische Gebührenerhebung - Bewertung der Konformität fahrzeuginterner und straßenseitiger Ausrüstung nach ISO 12813 (ISO 13143:2025)

This European Standard was approved by CEN on 25 January 2025.

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, Türkiye 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

© 2025 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN ISO 13143:2025 E

Documents
Document Sharing Hub

Full document details: BS EN ISO 13143:2025

European foreword

This document (EN ISO 13143:2025) 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 September 2025, and conflicting national standards shall be withdrawn at the latest by September 2025.

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 EN ISO 13143-1:2020.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 13143:2025 has been approved by CEN as EN ISO 13143:2025 without any modification.

Documents
Document Sharing Hub

Full document details: BS EN ISO 13143:2025

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Abbreviated terms ... **2**
5 Conformance ... **3**
6 Test suite structure (TSS) ... **3**
6.1 Structure ... 3
6.2 Reference to conformance test specifications ... 4
6.3 Test purposes (TPs) ... 4
6.3.1 TP definition conventions ... 4
6.3.2 TP naming conventions ... 5
Annex A (normative) **Test purposes for on-board equipment** ... **6**
Annex B (normative) **Test purposes for roadside equipment** ... **51**
Annex C (normative) **Protocol conformance test report proforma for OBE** ... **71**
Annex D (normative) **Protocol conformance test report proforma for RSE** ... **78**
Bibliography ... **83**

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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 of ISO 13143 cancels and replaces the second edition of ISO 13143-1:2020, which has been technically revised.

The main changes are as follows:

— updates have been made to reflect changes in the underlying normative references, in particular ISO 12813, in which data and coding specifications have been revised;

— the terms and definitions have been updated and ISO 17573-2:—[1)] has been included as the primary source for harmonized terminology across electronic fee collection (EFC) standards;

— references to underlying standards have been updated.

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.

1) Under preparation. Stage at the time of publication: ISO/DIS 17573-2:2025.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Introduction

On-board equipment (OBE) that uses satellite-based positioning technology to collect data required for charging for the use of roads operates in an autonomous way (i.e. without relying on dedicated roadside infrastructure). The OBE records the amount of road usage in all toll charging systems it passes through.

This document specifies the process and tests for evaluation of OBE and roadside equipment (RSE) for conformity to ISO 12813.

ISO 12813 specifies requirements for dedicated short-range communication (DSRC) between OBE and an interrogator for the purpose of checking conformance of road use with a local toll regime. It assumes an electronic fee collection (EFC) services architecture according to ISO 17573-1.

This document is intended to:

— assess OBE and RSE capabilities;

— assess OBE and RSE behaviour;

— serve as a guide for OBE and RSE conformance evaluation and type approval;

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

— facilitate communication between parties.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Documents
Document Sharing Hub

Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to ISO 12813

1 Scope

This document specifies the test suite structure (TSS) and test purposes (TPs) for evaluating the conformity of on-board equipment (OBE) and roadside equipment (RSE) to ISO 12813.

It provides a basis for conformance tests for dedicated short-range communication (DSRC) OBE and RSE to support interoperability between different equipment supplied by different manufacturers.

ISO 12813 specifies requirements for the compliance check communication (CCC) interface level, but not for the OBE or RSE internal functional behaviour. Consequently, tests regarding OBE and RSE functional behaviour remain outside the scope of this document.

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 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*

ISO 12813:2024, *Electronic fee collection — Compliance check communication for autonomous systems*

ISO 14816, *Road transport and traffic telematics — Automatic vehicle and equipment identification — Numbering and data structure*

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*

ISO 17573-2[2)], *Electronic fee collection — System architecture for vehicle related tolling — Part 2: Vocabulary*

EN 12834:2003, *Road transport and traffic telematics — Dedicated Short Range Communication (DSRC) — DSRC application layer*

EN 13372:2004, *Road Transport and Traffic Telematics (RTTT) — Dedicated short-range communication — Profiles for RTTT applications*

EN 15509:2023, *Electronic fee collection — Interoperability application profile for DSRC*

EN 15876, *Electronic fee collection — Conformity evaluation of on-board and roadside equipment to EN 15509*

ETSI/TS 102 486-2-2:2008, *Intelligent Transport Systems (ITS); Road Transport and Traffic Telematics (RTTT); Test specifications for Dedicated Short Range Communication (DSRC) transmission equipment; Part 2: DSRC application layer; Sub-Part 2: Test Suite Structure and Test Purposes (TSS & TP)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17573-2 and the following apply.

2) Under preparation. Stage at the time of publication: ISO/DIS 17573-2:2025.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

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

3.1
Element
DSRC directory containing application information in the form of attributes

[SOURCE: ISO 14906:2022, 3.8]

3.3
protocol implementation conformance statement
ICS for an implementation or system claimed to conform to a given protocol specification

[SOURCE: ISO/IEC 9646-1:1994, 3.3.80]

4 Abbreviated terms

AC_CR	access credentials
AID	application identifier
APDU	application protocol data unit
AP	application process
ATS	abstract test suite
BI	behaviour invalid (i.e. invalid behaviour tests)
BST	beacon service table
BV	behaviour valid (i.e. valid behaviour tests)
CCC	compliance check communication
DLC	data link control
DSRC	dedicated short-range communication
DUT	device under test
EFC	electronic fee collection
EID	element identifier
ICS	implementation conformance statement
LLC	logical link control
MAC	medium access control
OBE	on-board equipment
PCTR	protocol conformance test report
PDU	protocol data unit
PICS	protocol implementation conformance statement

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

PIXIT	protocol implementation extra information for testing
RSE	roadside equipment
SCTR	system conformance test report
T-APDU	transfer-application protocol data unit
TP	test purpose
TSS	test suite structure
VST	vehicle service table

5 Conformance

The conformance tests shall be performed as specified in Annex A and Annex B for OBE and RSE respectively.

The conformity assessment body of the OBE and RSE, respectively, is responsible for providing a conformance test report.

The conformity assessment body of the OBE shall complete the protocol conformance test report (PCTR) for the OBE as specified in Annex C.

The conformity assessment body of the RSE shall complete the PCTR for the RSE as specified in Annex D.

NOTE The PCTR forms a basis for the manufacturer's declaration of conformity.

6 Test suite structure (TSS)

6.1 Structure

Table 1 shows the test suite structure (TSS) including its subgroups that are inherited from other specifications.

Table 1 — Test suite structure

Group	Type of DUT	Behaviour
Physical layer	OBE	Valid behaviour (BV)
		Invalid behaviour (BI)
	RSE	BV
		BI
Data link control (DLC) Medium access control (MAC) sublayer	OBE	BV
		BI
	RSE	BV
		BI
DLC Logical link control (LLC) sublayer	OBE	BV
		BI
	RSE	BV
		BI
Application layer	OBE	BV
		BI
	RSE	BV
		BI

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Physical layer tests shall be performed in a radio wave laboratory.

6.2 Reference to conformance test specifications

Conformance to a profile standard implies conformance to the related base standards. Hence, a number of test cases for the CCC application are identical to the conformance test cases for the related base standards. Other test cases are derived from the base standards conformance test cases, by applying some restrictions or choices in elements such as the parameters values, according to the elements stated in the profile standard. Specific conformance test cases for the CCC application are identified for statements contained in the CCC application, which have no equivalence in the base standards. These latter cases cover, for example, the application layer data test purposes. This document considers existing test purposes for conformance to the base standards by referencing them, so that:

a) for test purposes that are identical to those specified in the base standards conformance test cases (see e.g. ETSI/TS 102 486-2-2 or EN 15876), a direct reference is reported;

NOTE For the reader's convenience, the title or a verbal description of the referenced test purpose is provided, together with the reference.

b) for test purposes that are derived from those specified in the base standards conformance test cases, a direct reference is reported, plus an indication of how the referred test purpose has been modified for the profile conformance testing;

c) for test purposes that are specific to the standard profile, a complete description is provided.

An indication of whether a test purpose is identical, derived or specific is given in each test purpose.

6.3 Test purposes (TPs)

6.3.1 TP definition conventions

The TPs are specified following the template and rules shown in Table 2.

Table 2 — TP definition rules

TP ID according to the TP naming conventions	Title
	Reference
	TP origin
	Initial condition
	Stimulus and expected behaviour
TP ID	The TP ID is a unique identifier. It is specified according to the TP naming conventions defined in 6.3.2.
Title	Short description of TP objective.
Reference	Contains the reference (document, clause, paragraph) to the subject to be validated by the actual TP.
TP origin	Indicates if the TP is identical to a TP specified in another test standard, derived from a TP specified in another test standard, or specific for this standard profile.
Initial condition	The condition specifies the required initial state of the device under test (DUT) at the time of launching of the actual TP.
Stimulus and expected behaviour	Definition of the events the tester performs and the events that are expected from the DUT to conform to the base specification.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

6.3.2 TP naming conventions

Each TP is given a unique identification. This unique identification is built up to contain the following string of information:

TP/ <group>/<dut>/<x>-<nn>

TP : to indicate that it is a test purpose;

<group> : to which group among those specified in Table 1 the TP applies;

<dut> : type of DUT (i.e. OBE or RSE);

<x> : type of testing (i.e. Valid behaviour tests, BV, or Invalid behaviour tests, BI);

<nn> : sequential TP number (01 to 99).

The naming conventions are as described in Table 3.

Table 3 — TP naming conventions

<group>	<dut>	<x>
applicable for OBE/RSE	PHY	Physical layer
applicable for OBE/RSE	MAC/LLC	MAC/LLC sublayer
applicable for OBE/RSE	AP-BAS	Application layer – I Kernel support
applicable for OBE	AP-FUN	Application layer – T Kernel support
applicable for OBE	AP-DAT	Application layer – Data attributes support
applicable for OBE	AP-SEC	Application layer – Security Level 1 support
applicable for RSE	AP-GET	Application layer - GET-rq protocol data unit (PDU) test purposes,
applicable for RSE	AP-STA	Application layer - GET-STAMPED-rq PDU test purposes
applicable for RSE	AP-MMI	Application layer - SET-MMI-rq PDU test purposes
applicable for RSE	AP-ECH	Application layer - ECHO-rq PDU test purposes
applicable for RSE	AP-REL	Application layer - EVENT-REPORT-rq PDU test purposes

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Annex A
(normative)

Test purposes for on-board equipment

A.1 General

A.1.1 Content

This annex contains the test purposes (TPs) for the conformity evaluation of OBE to ISO 12813.

A.1.2 Symbols in TP descriptions

For the application layer test purposes (see Clause A.4), a special notation and symbol convention is used, as specified in Table A.1.

Table A.1 — Description of TP symbols

Symbol	Description
XXX.rq ⇒	The tester sends the XXX.rq protocol data unit (PDU) to the device under test (DUT).
⇐ YYY.rs	The DUT sends the YYY.rs PDU to the tester.
A ≡ B	Test purpose A “is congruent to” test purpose B. The notation "Test purpose A ≡ Test purpose B" means that test purpose A is the same as test purpose B. If differences in parameters or parameter values have to be applied, these differences are indicated in the text immediately below.
A → B	Object A “is transformed” into object B. So, a notation like “Table X → Table Y” means that, for the scope of the TP, any reference of Table X should be changed into a reference to Table Y.
=	Means “assignment”, i.e. a notation like “accessCredentials = a value” means that the field accessCredentials is given a value.
Ø	Means “empty” or “not set”, i.e. a notation like “accessCredentials = Ø → accessCredentials = calculated value”, for a given TP, means “change all occurrences in which the field accessCredentials has not been assigned to a calculation of the value accessCredentials to a given value".

A.2 Physical layer

In accordance with ISO 12813:2024, 5.5.2, all test purposes TP/PHY/OBE/Bx/yy specified in EN 15876 shall be applicable for the conformity evaluation of OBE to CEN–DSRC-based CCC as specified in ISO 12813:2024, Table B.9, Item 1.

A.3 MAC and LLC

In accordance with ISO 12813:2024, 5.5.2, all test purposes TP/MAC/OBE/Bx/yy and TP/LLC/OBE/Bx/yy specified in EN 15876 are applicable for the conformity evaluation of OBE to CEN–DSRC-based CCC as specified in ISO 12813:2024, Table B.9, Item 1.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

A.4 Application Layer

A.4.1 Structure of BST and VST

A.4.1.1 BST

The BST general structure, as is transmitted to the OBE, shall be in accordance with Table A.2.

Table A.2 — BST general structure

			Length	Allowed values
T-APDUs			4 bits	'1000' indicating initialisation-request (BST)
Option indicator			1 bit (nonmandApplications opt.)	0/1
RSE	manufacturerid		16 bits	In accordance with ISO 14816
	individualid		27 bits	As specified by manufacturer
Time			32 bits	UNIX real time
Profile			1 bit (Profile ext.)	0 (= no extension)
			7 bits	In accordance with the Profile in EN 13372:2004, 6.3.2
MandApplications			1 bit (mandApplications ext.)	0 (= no extension)
			7 bits (number of applications)	M
	CCC application		1 bit (eid opt.)	0 (= eid not present)
			1 bit (parameter opt.)	0 (= parameter not present)
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	20 (= CCC application)
	Application 2 (not CCC)		1 bit (eid opt.)	0/1
			1 bit (parameter opt.)	0/1
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	≠ 20 (= no CCC application)
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any
		parameter		ApplicationContextMark in accordance with EN 12834:2003, Annex A
	...		...	...
	Application M (not CCC)		1 bit (eid opt.)	0/1
			1 bit (parameter opt.)	0/1
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	≠ 20 (= no CCC application)
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any
		parameter		ApplicationContextMark in accordance with EN 12834:2003, Annex A

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.2 *(continued)*

		Length	Allowed values
Nonmand Applications		1 bit (mandApplications ext.)	0 (= no extension)
		7 bits (number of applications)	Can be in the range of 0 .. N, provided the maximum framelength is not exceeded.
	Application 1 (not CCC)	Same length and allowed values as in "Application 2 (not CCC)" of mandApplications	
	...	...	
	Application N (not CCC)	Same lengt and allowed values as in "Application 2 (not CCC)" of mandApplications	
profileList		1 bit (profileList ext.)	0 (= no extension)
		7 bits (number of profiles)	Can be in the range of 0..K provided the maximum framelength is not exceeded.
	Profile 1	1 bit (Profile ext.)	0 (= no extension)
		7 bits	Profile in accordance with EN 12834:2003, Annex A and EN 13372:2004, 6.3.2
	...	...	...
	Profile K	1 bit (Profile ext.)	0 (= no extension)
		7 bits	Profile in accordance with EN 12834:2003, Annex A and EN 13372:2004, 6.3.2

A.4.1.2 VST

The general structure for a VST indicating one CCC application as is transmitted by the OBE shall be in accordance with Table A.3.

In addition to the CCC application the VST may optionally indicate one or more non-CCC applications.

Table A.3 — VST1 (security level 1): valid VST indicating one CCC application

			Length	Allowed value
Fill			4 bits	Any
Profile			1 bit (Profile ext.)	0 (= no extension)
			7 bits	Profile in accordance with EN 12834:2003, Annex A
			1 bit (applications ext.)	0 (= no extension)
			7 bits (number of applic.)	Can be in the range of 0..M depending on OBE support and provided the maximum framelength is not exceeded
			1 bit (eid opt.)	1 (= eid present)
			1 bit (parameter opt.)	1 (= parameter present)
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	20 (= CCC application)
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any (≠ other eid used in this VST)

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.3 *(continued)*

					Length	Allowed value
Applications	CCC application				1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	16
		parameter	CccContext-Mark	Contract Provider	10 bits (CountryCode)	In accordance with ISO 3166-1
					14 bits (IssuerIdentifier)	In accordance with ISO 14816
				typeOf Contract	16 bits	Any
				context Version	1 bit (contextVersion ext.)	0 (= no extension)
					7 bits	Any
					1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	2
			AC_CR-Reference	AC_Master KeyRef	8 bits	Any
				AC_CR-Diversifier	8 bits	Any
					1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE) 1 bit (octet string ext.)	2 (= OCTET STRING) 0 (= no extension)
					7 bits (octet string length)	4
			RndOBE		32 bits	Any

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.3 *(continued)*

			Length	Allowed value
	Application 2		1 bit (eid opt.)	0/1
			1 bit (parameter opt.)	0/1
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	DSRCApplicationEntityID, in accordance with EN 12834:2003, Annex A
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any (≠ other eid used in this VST)
		parameter		ApplicationContextMark, in accordance with EN 12834:2003, Annex A
	...			
	Application M		1 bit (eid opt.)	0/1
			1 bit (parameter opt.)	0/1
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	DSRCApplicationEntityID, in accordance with N 12834:2003, Annex A
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any (≠ other eid used in this VST)
		parameter		ApplicationContextMark, in accordance with EN 12834:2003, Annex A
OBE Configuration			1 bit (obeStatus opt.)	0/1
	equipmentClass		15 bits	Any
	manufacturerId		16 bits	Any
	obeStatus		16 bits	Any

OBE may optionally transmit a VST containing two CCC applications.

If OBE supports this optional function, the structure for a VST indicating two CCC applications (VST2) shall be in accordance with Table A.4.

VST2 shall indicate the presence of two CCC applications with the following definitions (refer to ISO 12813:2024, 9.2.3):

— one CCC application shall conform to ISO 12813:2024; and

— the other CCC application shall conform to ISO 12813:2015.

NOTE Evaluation of conformance with ISO 12813:2015 is outside the scope of this document.

In addition to the CCC applications, the VST may optionally indicate one or more non-CCC applications.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.4 — VST2 (security level 1) — Valid VST indicating two CCC applications

					Length	Allowed value
Fill					4 bits	Any
Profile					1 bit (Profile ext.)	0 (= no extension)
					7 bits	Profile in accordance with EN 12834:2003, Annex A
Applications					1 bit (applications ext.)	0 (= no extension)
					7 bits (number of applic.)	Shall be in the range of 2..M provided the maximum framelength is not exceeded
	CCC application1				1 bit (eid opt.)	1 (= eid present)
					1 bit (parameter opt.)	1 (= parameter present)
		aid			1 bit (aid ext.)	0 (= no extension)
					5 bits	20 (= CCC application)
		eid			1 bit (eid ext.)	0 (= no extension)
					7 bits	Any
		parameter			1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	16
			CccContext-Marl1	Contract Provider	10 bits (CountryCode)	In accordance with ISO 3166-1
					14 bits (IssuerIdentifier)	In accordance with ISO 14816
				TypeOf Contract	16 bits	Any
				context Version	1 bit (contextVersion ext.)	0 (= no extension)
					7 bits	Any
					1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	2
			AC_CR-Reference	AC_Master KeyRef	8 bits	Any
				AC_CR-Diversifier	8 bits	Any
					1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	4
			RndOBE		32 bits	Any

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.4 *(continued)*

					Length	Allowed value
					1 bit (eid opt.)	1 (= eid present)
					1 bit (parameter opt.)	1 (= parameter present)
		aid			1 bit (aid ext.)	0 (= no extension)
					5 bits	20 (= CCC application)
		eid			1 bit (eid ext.)	0 (= no extension)
					7 bits	≠ eid of CCC application1
					1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	16
	CCC application2	parameter	CccContext-Mark2	Contract Provider	10 bits (CountryCode)	In accordance with ISO 3166-1
					14 bits (IssuerIdentifier)	In accordance with ISO 14816
				TypeOf Contract	16 bits	Any
				context Version	1 bit (contextVersion ext.)	0 (= no extension)
					7 bits	Any
					1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	2
			AC_CR-Reference	AC_Master KeyRef	8 bits	Any
				AC_CR-Diversifier	8 bits	Any
					1 bit (Container ext.)	0 (= no extension)
					7 bits (Container CHOICE)	2 (= OCTET STRING)
					1 bit (octet string ext.)	0 (= no extension)
					7 bits (octet string length)	4
			RndOBE		32 bits	Any
	:::					
	Optional application M (non-CCC application)				1 bit (eid opt.)	1 (= eid present)
					1 bit (parameter opt.)	0 (= parameter not present)
			aid		1 bit (aid ext.)	0 (= no extension)
					5 bits	≠ 20
			eid		1 bit (eid ext.)	0 (= no extension)
					7 bits	Any (≠ other eid used in this VST)

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.4 *(continued)*

		Length	Allowed value
obe Configuration		1 bit (obeStatus opt.)	1 (= obeStatus present)
	equipmentClass	15 bits	Any
	manufacturerId	16 bits	Any
	obeStatus	16 bits	Any

A.4.2 PDUs parameters

A.4.2.1 Parameters of request PDUs

Request APDUs shall be as specified in Table A.5 – Table A.9.

No other request commands are used by the CCC application.

Fill bits shall always be set to zero.

Table A.5 — GET-Rq parameters (security level 1)

	EN 12834:2003, Annex A		EN 15509:2023, Table B.16
GET-Rq	fill		=
	eid		=
	accessCredentials	optional	mandatory
	iid	optional	prohibited
	attributeIdList	optional	mandatory

Table A.6 — Action-Rq parameters for GET_STAMPED action (security level 1)

	EN 12834:2003, Annex A		EN 15509:2023, Table B.20 and ISO 12813
ACTION-Rq	mode		TRUE
	eid		=
	actionType		0 (GET_STAMPED)
	accessCredentials	optional	mandatory
	actionParameters	optional	GetStampedRq
	iid	optional	prohibited

Table A.7 — Action-Rq parameters for SET_MMI action

	EN 12834:2003, Annex A		EN 15509:2023, Table B.20 and ISO 12813
ACTION-Rq	mode		=
	eid		0
	actionType		10 (SET_MMI)
	accessCredentials	optional	prohibited
	actionParameters	optional	SetMMIRq
	iid	optional	prohibited

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.8 — Action-Rq parameters for ECHO action

	EN 12834:2003, Annex A		EN 15509:2023, Table B.20 and ISO 12813
ACTION-Rq	mode		=
	eid		0
	actionType		15 (ECHO)
	accessCredentials	optional	prohibited
	actionParameters	optional	mandatory
	iid	optional	prohibited

Table A.9 — EVENT-REPORT-Rq parameters

	EN 12834:2003, Annex A		EN 15509:2023, Table B.22 and ISO 12813
EVENT-RE-PORT-Rq	mode		=
	eid		0
	eventType		0 (release)
	accessCredentials	optional	prohibited
	eventParameters	optional	prohibited
	iid	optional	prohibited

A.4.2.2 Parameters of response PDUs

Response APDUs shall be as specified in Table A.10 – Table A.13.

No other request commands are used by CCC application.

Fill bits shall always be set to zero.

Table A.10 — GET-Rs parameters

	EN 12834:2003, Annex A		EN 15509:2023, Table B.17
GET-Rs	fill		=
	eid		=
	Iid	optional	prohibited
	attributeList	optional	mandatory
	ret	optional	mandatory

Table A.11 — Action-Rs parameters for GET_STAMPED action

	EN 12834:2003, Annex A		EN 15509:2023, Table B.21 and ISO 12813
ACTION-Rs	fill		=
	eid		=
	iid	optional	prohibited
	responseParameter	optional	mandatory
	ret	optional	mandatory

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.12 — Action-Rs parameters for SET_MMI action

	EN 12834:2003, Annex A		EN 15509:2023, Table B.21 and ISO 12813
ACTION-Rs	fil		=
	eid		0
	iid	optional	prohibited
	responseParameter	optional	prohibited
	ret	optional	mandatory

Table A.13 — Action-Rs parameters for ECHO action

	EN 12834:2003, Annex A		EN 15509:2023, Table B.21 and ISO 12813
ACTION-Rs	fill		=
	eid		0
	iid	optional	prohibited
	responseParameter	optional	conditional (present when ret = 0)
	ret	optional	mandatory

A.4.3 Application I-kernel TPs for OBE, security level 1

A.4.3.1 General

TPs specified in A.4.3 apply to security level 1 as specified in ISO 12813:2024, Table B.6, Item 1 and to initialisation and termination processes specified in ISO 12813:2024, Table B.7, Items 1 and 5.

A.4.3.2 Data structures

For the purpose of this conformance test, the following BSTs described in:

— Table A.14 for a valid BST used in BV TPs, and

— Table A.15 for an invalid BST used in BI TPs

shall be transmitted to the DUT. Invalid values are indicated using a table footnote.

NOTE BST2 contains erroneous parameters in form of a CCC application inserted as non-mandatory application.

Table A.14 — BST1

		Length	**Value**
Option indicator		1 bit (nonmandApplications opt.)	0 (= nonmandApplications not present)
RSE	manufacturerid	16 bits	Registered value
	individualid	27 bits	Any
Time		32 bits	Any
profile		1 bit (Profile ext.)	0 (= no extension)
		7 bits	0

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.14 *(continued)*

			Length	Value
MandApplications			1 bit (mandApplications ext.)	0 (= no extension)
			7 bits (number of applications)	1
	CCC application		1 bit (eid opt.)	0 (= eid not present)
			1 bit (parameter opt.)	0 (= parameter not present)
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	20 (= CCC application)
profileList			1 bit (profileList ext.)	0 (= no extension)
			7 bits (number of profiles)	0 (= list empty)

Table A.15 — BST2

			Length	Value
Option indicator			1 bit (nonmandApplications opt.)	1 (= nonmandApplications present)
RSE	manufacturerid		16 bits	Registered value
	individualid		27 bits	Any
Time			32 bits	Any
profile			1 bit (Profile ext.)	0 (= no extension)
			7 bits	0
MandApplications			1 bit (mandApplications ext.)	0 (= no extension)
			7 bits (number of applications)	1
	Application #1 (not CCC)		1 bit (eid opt.)	1 (= eid present)
			1 bit (parameter opt.)	0 (= parameter not present)
		aid	1 bit (aid ext.)	0 (= no extension)
			5 bits	≠ 20 (AID that is not supported by the OBE)
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any
nonmandApplications			1 bit (nonmandApplications ext.)	0 (= no extension)
			7 bits (number of applications)	1
	CCC application [a]		1 bit (eid opt.) [a]	0 (= eid not present) [a]
			1 bit (parameter opt.) [a]	0 (= parameter not present) [a]
		aid [a]	1 bit (aid ext.) [a]	0 (= no extension) [a]
			5 bits [a]	20 (= CCC application) [a]
profileList			1 bit (profileList ext.)	0 (= no extension)
			7 bits (number of profiles)	0 (= list empty)

[a] Invalid value.

A.4.3.3 BV test purposes

The test subgroup objectives are:

a) to test the behaviour of the DUT in relation to:

— valid BST, and

— valid EVENT-REPORT-Rq (Release);

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

b) to test the DUT support of:

— BeaconId,

— Time,

— Profile,

— Applications, and

— LID.

TPs to assess conformity of Application I-kernel functions for OBE, security level 1, for valid behaviour shall be performed as specified in Tables A.16 to A.21.

NOTE TPs with ID TP/AP-BAS/OBE/BV/05 to TP/AP-BAS/OBE/BV/08 have not been used to be in line with the numbering in ETSI/TS 102 486–2-2.

Table A.16 — TP/AP BAS/OBE/BV/01

TP/AP-BAS/OBE/BV/01	**Receive and manage INITIALISATION.request (BST)**
TP origin	Identical to TP/AL-I/OBE/BV/01 in ETSI/TS 102 486–2-2:2008, 5.4.1
Reference	ISO 12813:2024, 7.1.2
Initial condition	In accordance with TP/AL-I/OBE/BV/01 in ETSI/TS 102 486–2-2:2008, 5.4.1
Stimulus and expected behaviour	In accordance with TP/AL-I/OBE/BV/01 in ETSI/TS 102 486–2-2:2008, 5.4.1

Table A.17 — TP/AP BAS/OBE/BV/02

TP/AP-BAS/OBE/BV/02	**Receive and manage EVENTREPORT request (RELEASE) with mode = 0**
TP origin	Identical to TP/AL-I/OBE/BV/02 in ETSI/TS 102 486–2-2:2008, 5.4.1
Reference	ISO 12813:2024, 7.1.6
Initial condition	In accordance with TP/AL-I/OBE/BV/02 in ETSI/TS 102 486–2-2:2008, 5.4.1
Stimulus and expected behaviour	In accordance with TP/AL-I/OBE/BV/02 in ETSI/TS 102 486–2-2:2008, 5.4.1

Table A.18 — TP/AP BAS/OBE/BV/03

TP/AP-BAS/OBE/BV/03	**Read and manage the BeaconID in the BST**
TP origin	Identical to TP/AL-I/OBE/BV/03 in ETSI/TS 102 486–2-2:2008, 5.4.1
Reference	ISO 12813:2024, 7.1.2
Initial condition	Identical to TP/AL-I/OBE/BV/03 in ETSI/TS 102 486–2-2:2008, 5.4.1
Stimulus and expected behaviour	In accordance with TP/AL-I/OBE/BV/03 in ETSI/TS 102 486–2-2:2008, 5.4.1

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.19 — TP/AP BAS/OBE/BV/04

TP/AP-BAS/OBE/BV/04	**Read and manage time of reception of BST in parameter Time in BST**
TP origin	Identical to TP/AL-I/OBE/BV/04 in ETSI/TS 102 486–2-2:2008, 5.4.1
Reference	ISO 12813:2024, 7.1.2
Initial condition	Identical to TP/AL-I/OBE/BV/04 in ETSI/TS 102 486–2-2:2008, 5.4.1
Test execution option	This TP may be optionally modified in comparison to the original specification in ETSI/TS 102 486-2-2 depending on the time source of the DUT. Tests with OBE which derive their internal time from sources other than the BST received (e.g. from GNSS or CN) may require an additional delay in step 5 for more than 255 seconds before submitting the next BST.
Stimulus and expected behaviour	In accordance with TP/AL-I/OBE/BV/04 in ETSI/TS 102 486–2-2:2008, 5.4.1

Table A.20 — TP/AP BAS/OBE/BV/09

TP/AP-BAS/OBE/BV/09	**Manage profile selection**
TP origin	Identical to TP/AL-I/OBE/BV/09 in ETSI/TS 102 486–2-2:2008, 5.4.1
Reference	ISO 12813:2024, 7.1.2
Initial condition	In accordance with TP/AL-I/OBE/BV/09 in ETSI/TS 102 486–2-2:2008, 5.4.1
Stimulus and expected behaviour	In accordance with TP/AL-I/OBE/BV/09 in ETSI/TS 102 486–2-2:2008, 5.4.1

Table A.21 — TP/AP BAS/OBE/BV/10

TP/AP-BAS/OBE/BV/10	**Verify that the DUT replies to a BST with a VST**			
TP origin	Specific			
Reference	ISO 12813:2024, 7.1.2			
Initial condition	DUT not in sleep mode and not yet initialised			
Stimulus and expected behaviour		**Tester**		**DUT**
	1	`BST1`	⇒	
	2		⇐	`VST1 or VST2`
	3	`Verify length and allowed values of VST1 (in accordance with Table A.3) respectively VST2 (in accordance with Table A.4)`		
	4	`IF verification performed in step 3 was not successful THEN TP failed`		

A.4.3.4 BI test purposes

The test subgroup objective is:

— to check the behaviour of the DUT in response to invalid messages.

TPs to assess conformity of Application I-kernel functions for OBE, security level 1, for invalid behaviour shall be performed as specified in Tables A.22 to A.24.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.22 — TP/AP BAS/OBE/BI/01

TP/AP-BAS/OBE/BI/01	**Manage profile selection**
TP origin	Identical to TP/AL-I/OBE/BI/01 in ETSI/TS 102 486–2-2:2008, 5.4.2
Reference	ISO 12813:2024, 7.1.2
Initial condition	In accordance with TP/AL-I/OBE/BI/01 in ETSI/TS 102 486–2-2:2008, 5.4.2
Stimulus and expected behaviour	In accordance with TP/AL-I/OBE/BI/01 in ETSI/TS 102 486–2-2, 5.4.2

Table A.23 — TP/AP BAS/OBE/BI/02

TP/AP-BAS/OBE/BI/02	**Manage applications**
TP origin	Identical to TP/AL-I/OBE/BI/02 in ETSI/TS 102 486–2-2:2008, 5.4.2
Reference	ISO 12813:2024, 7.1.2
Initial condition	In accordance with TP/AL-I/OBE/BI/02 in ETSI/TS 102 486–2-2:2008, 5.4.2
Stimulus and expected behaviour	In accordance with TP/AL-I/OBE/BI/02 in ETSI/TS 102 486–2-2:2008, 5.4.2

Table A.24 — TP/AP BAS/OBE/BI/03

TP/AP-BAS/OBE/BI/03	**Verify that the DUT handles BST with CCC application marked as non-mandatory application**			
TP origin	Specific			
Reference	ISO 12813:2024, 7.1.2			
Initial condition	DUT not in sleep mode and not yet initialised			
Stimulus and expected behaviour		**Tester**		**DUT**
	1	BST2	⇒	
	2	Verify that DUT does not initialise with INITIALISATION-response (VST1 or VST2).		
	3	IF verification performed in step 2 was not successful THEN TP failed		

A.4.4 Application T-kernel TPs for OBE

A.4.4.1 General

These TPs apply to the layer 7 functions related to T-kernel as specified in ISO 12813:2024, Table B.7, Items 2 to 6.

A.4.4.2 BV test purposes

The test subgroup objective is:

— to test the behaviour of the DUT in relation to syntactically and contextual correct behaviour of the test system.

TPs to assess conformity of Application T-kernel functions for OBE for valid behaviour shall be performed as specified in Tables A.25 to A.37.

NOTE TPs with IDs TP/AP-FUN/OBE/BV/02 to TP/AP-FUN/OBE/BV/07, TP/AP-FUN/OBE/BV/15 and TP/AP-FUN/OBE/BV/18 have not been used to be in line with the numbering in ETSI/TS 102 486–2-2.

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025

Table A.25 — TP/AP FUN/OBE/BV/01

TP/AP-FUN/OBE/BV/01	**Receive GET.request and manage GET.response with LID = private**
TP origin	Identical to TP/AL-T/OBE/BV/01 in ETSI/TS 102 486–2-2:2008, 5.2.1
Reference	ISO 12813:2024, 7.1.3
Initial condition	In accordance with TP/AL-T/OBE/BV/01 in ETSI/TS 102 486–2-2:2008, 5.2.1
Stimulus and expected behaviour	In accordance with TP/AL-T/OBE/BV/01 in ETSI/TS 102 486–2-2:2008, 5.2.1.
NOTE Request with accessCredentials.	

Table A.26 — TP/AP FUN/OBE/BV/08

TP/AP-FUN/OBE/BV/08	**Receive ACTION.request with mode = 1, manage ACTION.response with LID = private**
TP origin	Identical to TP/AL-T/OBE/BV/08 in ETSI/TS 102 486–2-2:2008, 5.2.1
Reference	ISO 12813:2024, 7.1.4, 7.1.5
Initial condition	In accordance with TP/AL-T/OBE/BV/08 in ETSI/TS 102 486–2-2:2008, 5.2.1
Stimulus and expected behaviour	In accordance with TP/AL-T/OBE/BV/08 in ETSI/TS 102 486–2-2:2008, 5.2.1
NOTE Request with accessCredentials for GET_STAMPED and without accessCredentials for SET_MMI, ECHO.	

Table A.27 — TP/AP FUN/OBE/BV/09

TP/AP-FUN/OBE/BV/09	**Receive ACTION.request with mode = 0 and LID = private**
TP origin	Identical to TP/AL-T/OBE/BV/09 in ETSI/TS 102 486–2-2:2008, 5.2.1
Reference	ISO 12813:2024, 7.1.4, 7.1.5
Initial condition	In accordance with TP/AL-T/OBE/BV/09 in ETSI/TS 102 486–2-2:2008, 5.2.1
Stimulus and expected behaviour	In accordance with TP/AL-T/OBE/BV/09 in ETSI/TS 102 486–2-2:2008, 5.2.1
NOTE Request without accessCredentials.	

Table A.28 — TP/AP FUN/OBE/BV/10

TP/AP-FUN/OBE/BV/10	**Receive ACTION.request with mode = 0 and LID = private**
TP origin	Identical to TP/AL-T/OBE/BV/10 in ETSI/TS 102 486–2-2:2008, 5.2.1
Reference	ISO 12813:2024, 7.1.4, 7.1.5
Initial condition	In accordance with TP/AL-T/OBE/BV/10 in ETSI/TS 102 486–2-2:2008, 5.2.1
Stimulus and expected behaviour	In accordance with TP/AL-T/OBE/BV/10 in ETSI/TS 102 486–2-2:2008, 5.2.1
NOTE Request without accessCredentials.	

Table A.29 — TP/AP FUN/OBE/BV/11

TP/AP-FUN/OBE/BV/11	**Verify that the OBE can receive ACTION.request with mode = 0 with LID = broadcast after initialisation**
TP origin	Identical to TP/AL-T/OBE/BV/11 in ETSI/TS 102 486–2-2:2008, 5.2.1
Reference	ISO 12813:2024, 7.1.4, 7.1.5
Initial condition	In accordance with TP/AL-T/OBE/BV/11 in ETSI/TS 102 486–2-2:2008, 5.2.1
Stimulus and expected behaviour	In accordance with TP/AL-T/OBE/BV/11 in ETSI/TS 102 486–2-2:2008, 5.2.1
NOTE Request without accessCredentials.	

© ISO 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS EN ISO 13143:2025