

DIN EN ISO 13143-1



ICS 03.220.20; 35.240.20

Einsprüche bis 2024-03-19
Vorgesehen als Ersatz für
DIN EN ISO 13143-1:2021-04

Entwurf

**Elektronische Gebührenerhebung –
Bewertung der Konformität fahrzeuginterner und straßenseitiger
Ausrüstung nach ISO 12813 –
Teil 1: Struktur und Zweck des Prüfprogrammes (ISO/DIS 13143-1:2023);
Englische Fassung prEN ISO 13143-1:2023**

Electronic fee collection –

Evaluation of on-board and roadside equipment for conformity to ISO 12813 –

Part 1: Test suite structure and test purposes (ISO/DIS 13143-1:2023);

English version prEN ISO 13143-1:2023

Perception de télépéage –

Évaluation des équipements embarqués et en bord de route quant à la conformité avec l'ISO 12813 –

Partie 1: Structure de suite d'essais et buts des essais (ISO/DIS 13143-1:2023);

Version anglaise prEN ISO 13143-1:2023

Anwendungswarnvermerk

Dieser Entwurf mit Erscheinungsdatum 2024-01-19 wird der Öffentlichkeit zur Prüfung und Stellungnahme vorgelegt.

Weil das beabsichtigte Dokument von der vorliegenden Fassung abweichen kann, ist die Anwendung dieses Entwurfs besonders zu vereinbaren.

Stellungnahmen werden erbeten

- vorzugsweise online im Norm-Entwurfs-Portal von DIN unter www.din.de/go/entwuerfe bzw. für Norm-Entwürfe der DKE auch im Norm-Entwurfs-Portal der DKE unter www.entwuerfe.normenbibliothek.de, sofern dort wiedergegeben;
- oder als Datei per E-Mail an naautomobil@din.de möglichst in Form einer Tabelle. Die Vorlage dieser Tabelle kann im Internet unter www.din.de/go/stellungnahmen-norm-entwuerfe oder für Stellungnahmen zu Norm-Entwürfen der DKE unter www.dke.de/stellungnahme abgerufen werden;
- oder in Papierform an den DIN-Normenausschuss Auto und Mobilität (NAAutomobil), 10004 Berlin, Postfach 8 04 62 oder Behrenstr. 35, 10117 Berlin.

Es wird gebeten, mit den Kommentaren zu diesem Entwurf jegliche relevanten Patentrechte, die bekannt sind, mitzuteilen und unterstützende Dokumentationen zur Verfügung zu stellen.

Gesamtumfang 86 Seiten

DIN-Normenausschuss Auto und Mobilität (NAAutomobil)

Nationales Vorwort

Dieses Dokument (prEN ISO 13143-1:2023) wurde vom Technischen Komitee ISO/TC 204 „Intelligent transport systems“ in Zusammenarbeit mit dem Technischen Komitee CEN/TC 278 „Intelligente Verkehrssysteme“ erarbeitet, dessen Sekretariat von NEN (Niederlande) gehalten wird.

Das zuständige deutsche Normungsgremium ist der Gemeinschaftsarbeitsausschuss NA 052-00-71 GA „Gemeinschaftsarbeitsausschuss NAAutomobil/DKE: Intelligente Verkehrssysteme“ im DIN-Normenausschuss Auto und Mobilität (NAAutomobil).

Dieses Dokument enthält unter Berücksichtigung des DIN-Präsidialbeschlusses 1/2004 nur die Englische Fassung von prEN ISO 13143-1:2023.

Dieses Dokument legt den Prozess und Prüfungen für die Evaluierung der Konformität von fahrzeuginternen sowie straßenseitigen Systemen nach den Anforderungen in ISO 12813:2019 fest.

Dieses Dokument dient deshalb EFC-Systemherstellern zur Qualitätsprüfung ihrer Systeme und somit der Sicherstellung interoperabler Mautsysteme.

Aktuelle Informationen zu diesem Dokument können über die Internetseiten von DIN (www.din.de) durch eine Suche nach der Dokumentennummer aufgerufen werden.

Änderungen

Gegenüber DIN EN ISO 13143-1:2021-04 wurden folgende Änderungen vorgenommen:

- a) Ergänzungen, um Änderungen in den zugrundeliegenden Basisnormen DIN EN ISO 12813 und DIN EN ISO 14906 zu berücksichtigen;
- b) Begriffe wurden, basierend auf den harmonisierten Begriffen in ISO/TS 17573-2, angepasst und ergänzt;
- c) Ergänzungen in den Datenfestlegungen, um Änderungen in den zugrundeliegenden Basisnormen DIN EN ISO 17573-3 und DIN EN ISO 12813:2023 zu berücksichtigen.

Nationaler Anhang NA (informativ)

Begriffe

Reihenfolge und Inhalt der folgenden Begriffe sind identisch mit denen im Abschnitt Begriffe der Englischen Fassung.

Für die Anwendung dieses Dokuments gelten die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- ISO Online Browsing Platform: verfügbar unter <https://www.iso.org/obp>
- IEC Electropedia: verfügbar unter <https://www.electropedia.org/>

3.1

Zugriffsbeglaubigung

en **access credentials**

vertrauenswürdiger Nachweis oder Sicherheitsmodul, das die beanspruchte Identität eines Objekts oder einer Anwendung nachweist

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

3.2

Attribut

en **attribute**

adressierbares Datenpaket, welches aus einem einzelnen Datenelement oder einer strukturierten Sequenz von Datenelementen besteht

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

3.3

Authentifizierung

en **authentication**

Sicherheitsmechanismus, der die Überprüfung der bereitgestellten Identität erlaubt

[QUELLE: EN 301 175 V1.1.1:1998, 3]

3.4

Authentifikator

en **authenticator**

Daten, wenn möglich verschlüsselt, die zur *Authentifizierung* (3.3) verwendet werden

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

3.5

Datengruppe

en **data group**

Klasse von verwandten *Attributen* (3.2)

[QUELLE: ISO/TS 17573-2:2020, 3.55]

3.6

Element

en **element**

dediziertes Nahbereichskommunikations-Verzeichnis (DRSC), welches Anwendungsinformation in Form von *Attributen* (3.2) beinhaltet

3.7

Erklärung zur Konformität der Implementierung

ICS

en **implementation conformance statement**

Erklärung bezogen auf die implementierte Leistungsfähigkeit und Optionen, die festlegt, in welchem Ausmaß die Implementierung zu einer gegebenen Spezifikation konform ist

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

3.8

Erklärung zur Konformität der Protokollimplementierung

PICS

en **protocol implementation conformance statement**

ICS (3.7) für eine Implementierung oder ein System, deren (dessen) Konformität mit einer gegebenen Protokollspezifikation erklärt wird

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

3.9

fahrzeuginterne Einrichtung

en **on-board equipment**

alle notwendigen Einrichtungen im Fahrzeug, die zur Ausführung notwendiger Funktionen und Kommunikationsdiensten der elektronischen Gebührenerhebung (EFC) benötigt werden

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

3.10

Straßenrandeinrichtung

en **roadside equipment**

feste oder bewegliche Einrichtung zur elektronischen Gebührenerhebung (EFC) entlang oder an einer Straße

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

3.11

Tester

en **tester**

Kombination von Einrichtung, Personen und Prozessen, die spezifische Konformitätsprüfungen durchführen kann

[QUELLE: ISO/TS 17573-2:2020, 3.188]

3.12

Transaktion

en **transaction**

Gesamtheit eines Informationsaustausches zwischen zwei physikalisch getrennten Kommunikationseinrichtungen

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

Contents

Page

Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	2
4 Abbreviated terms.....	3
5 Conformance.....	4
6 Test suite structure (TSS).....	4
6.1 Structure.....	4
6.2 Reference to conformance test specifications.....	5
6.3 Test purposes (TPs).....	5
6.3.1 TP definition conventions.....	5
6.3.2 TP naming conventions.....	6
Annex A (normative) Test purposes for on-board equipment.....	7
Annex B (normative) Test purposes for roadside equipment.....	48
Annex C (normative) Protocol conformance test report proforma for OBE.....	66
Annex D (normative) Protocol conformance test report proforma for RSE.....	73
Bibliography.....	78

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 third edition cancels and replaces the second edition (ISO 13143-1:2020), which has been technically revised. In addition, as a result of the withdrawal of ISO 13143-2, the title of this document is changed to ISO 13141 Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to ISO 12813.

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

- amendments to reflect changes to the underlying requirements standards, in particular ISO 12813 and ISO 14906;
- updating of terms and definitions, including the reference to ISO/TS 17573-2 as the primary source;
- updating of data definitions, including the reference to ISO 17573-3 and ISO/FDIS 12813:2023 as the primary sources;
- amendment of terms to reflect the harmonization of terms across electronic fee collection (EFC) standards.

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.

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

ISO 12813 defines 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.

This document is based on:

- ISO 12813,
- the set of DSRC standards defining the communication stack, and
- ISO/IEC 9646.

- Entwurf -

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

Part 1: Test suite structure and test purposes

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 defines requirements on the compliance check communication (CCC) interface level, but not for the RSE or OBE internal functional behaviour. Consequently, tests regarding OBE and/or 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/FDIS 12813:2023, *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 14906:2022, *Electronic fee collection — Application interface definition for dedicated short-range communication*

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*

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 15876-1, *Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to EN 15509 — Part 1: Test suite structure and test purposes*

ETSI/TS 102 486-2-2 V1.2.1, (2008-10), *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 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 <https://www.electropedia.org/>

3.1 access credentials

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 authentication

security mechanism allowing verification of the provided identity

[SOURCE: EN 301 175 V1.1.1:1998, 3]

3.4 authenticator

data, possibly encrypted, that is used for *authentication* (3.3)

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

3.5 data group

class of closely related *attributes* (3.2)

[SOURCE: ISO/TS 17573-2:2020, 3.55]

3.6 element

dedicated short-range communication (DSRC) directory containing application information in the form of *attributes* (3.2)

3.7 implementation conformance statement

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 protocol implementation conformance statement

ICS (3.7) for an implementation or system claimed to conform to a given protocol specification

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

3.9

on-board equipment

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

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

3.10

roadside equipment

fixed or moveable electronic fee collection (EFC) equipment located along or on the road

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

3.11

tester

combination of equipment, humans and processes able to perform specified conformance tests

[SOURCE: ISO/TS 17573-2:2020, 3.188]

3.12

transaction

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

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

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
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
TP-ID	Test purpose identifier
TSS	test suite structure
VST	vehicle service table

5 Conformance

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

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

The supplier of the RSE shall complete the PCTR for the RSE as specified in Annex D.

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	BV
		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

Table 1 (continued)

Group	Type of DUT	Behaviour
Application layer	OBE	BV
		BI
	RSE	BV
		BI

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, for example, the parameters values, according to what is stated in the profile standard. Finally, 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 takes into account already defined test purposes for conformance to the base standards by referencing them, so that:

- For test purposes that are identical to those defined in the base standards conformance test cases (see e.g. ETSI/TS 102 486-2-2 or EN 15876-1), a direct reference is reported. For the reader's convenience, the title or a verbal description of the referenced test purpose is provided, together with the reference.
- For test purposes that are derived from those defined in the base standards conformance test cases, a direct reference is reported, plus an indication on how the referred test purpose has been modified for the profile conformance testing.
- For test purposes that are specific to the standard profile, a complete description is provided.

An indication on 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 defined following the template and rules shown in Table 2. All TPs are defined in Annex A (tests related to OBE) and Annex B (test related to RSE).

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 5.3.2.
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 defined in another test standard, derived from a TP defined in another test standard, or specific for this standard profile.

Table 2 (continued)

TP ID according to the TP naming conventions	Title
	Reference
	TP origin
	Initial condition
	Stimulus and expected behaviour
Initial condition	The condition defines the required initial state of the device under test (DUT) MACPCTR 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.

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

Annex A (normative)

Test purposes for on-board equipment

A.1 Introduction

A.1.1 General

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 A.4), a special notation and symbol convention is used, as defined in this subclause.

Symbols are used in the description of the TPs, with meanings according to 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.
$A \equiv B$	Test purpose A “is congruent to” test purpose B. The notation “Test purpose $A \equiv$ Test purpose B” means that the 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.
$A \rightarrow B$	Object A “is transformed” into object B. So, a notation like “Table X $\rightarrow$ 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”. That is, a notation like “accessCredentials = a value” means that the field accessCredentials is given a value.
∅	Means “empty” or “not set”. So, a notation like “accessCredentials = ∅ $\rightarrow$ 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

As per ISO/FDIS 12813:2023, 5.5.2, all test purposes TP/PHY/OBE/Bx/yy defined in EN 15876-1 are applicable for the conformity evaluation of OBE to CEN-DSRC based CCC as defined in ISO 12813:2023, Table B.9, Item 1.

A.3 MAC and LLC

As per ISO/FDIS 12813:2023, 5.5.2, all test purposes TP/MAC/OBE/Bx/yy (except TP/MAC/OBE/BV/09, see NOTE) and TP/LLC/OBE/Bx/yy defined in EN 15876-1 are applicable for the conformity evaluation of OBE to CEN-DSRC based CCC as defined in ISO/FDIS 12813:2023, Table B.9, Item 1.

NOTE Test purpose TP/MAC/OBE/BV/09 has been excluded from this document as this TP does not apply for profiles 0/1 of EN 13372.

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, is described in 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	According to 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	According to Profile in EN 13372:2004, 6.3.2
MandAp- plica- tions			1 bit (mandApplications ext.)	0 (= no extension)
			7 bits (number of applications)	M
	CCC applica- tion		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)
	Applica- tion 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
		parame- ter		ApplicationContextMark according to EN 12834:2003, Annex A
		...	...	...
	Applica- tion 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
		parame- ter		ApplicationContextMark according to EN 12834:2003, Annex A

Table A.2 (continued)

		Length	Allowed values
Non-mand Applications		1 bit (mandApplications ext.)	0 (= no extension)
		7 bits (number of applications)	N
	Application 1 (not CCC)	See “Application 2 (not CCC)” of mandApplications	
	...	...	
	Application N (not CCC)	See “Application 2 (not CCC)” of mandApplications	
profileList		1 bit (profileList ext.)	0 (= no extension)
		7 bits (number of profiles)	K
	Profile 1	1 bit (Profile ext.)	0 (= no extension)
		7 bits	Profile according to EN 12834:2003, Annex A and EN 13372:2004, 6.3.2
	...	...	...
	Profile K	1 bit (Profile ext.)	0 (= no extension)
		7 bits	Profile according to 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 is described in 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 according to EN 12834:2003, Annex A
				1 bit (applications ext.)	0 (= no extension)
				7 bits (number of applic.)	M
				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)
				1 bit (Container ext.)	0 (= no extension)
				7 bits (Container CHOICE)	2 (= OCTET STRING)

Table A.3 (continued)

				Length	Allowed value
Applica- tions	CCC applica- tion			1 bit (octet string ext.)	0 (= no extension)
				7 bits (octet string length)	16
		para meter	CccContext-Mark	Contract Provider	10 bits (CountryCode)
				Contract Provider	14 bits (IssuerIdentifier)
			typeOf Contract	16 bits	According to ISO 3166-1
				16 bits	According to ISO 14816
			context Version	1 bit (contextVersion ext.)	Any
				7 bits	0 (= no extension)
				1 bit (Container ext.)	Any
				7 bits (Container CHOICE)	0 (= no extension)
				1 bit (octet string ext.)	2 (= OCTET STRING)
				7 bits (octet string length)	0 (= no extension)
				7 bits (octet string length)	2
				8 bits	Any
			AC_CR-Reference	AC_Master KeyRef	Any
				AC_CR-Diversifier	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

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, according to EN 12834:2003, Annex A
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any (≠ other eid used in this VST)
		parameter		ApplicationContextMark, according to 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, according to N 12834:2003, Annex A
		eid	1 bit (eid ext.)	0 (= no extension)
			7 bits	Any (≠ other eid used in this VST)
		parameter		ApplicationContextMark, according to 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

The general structure for a VST indicating two CCC applications as is optionally transmitted by the OBE is described in Table A.4.

VST2 shall indicate the presence of two CCC applications with the following definitions (refer to ISO/FDIS 12813:2023, 9.2.3):

- one CCC application shall conform to ISO/FDIS 12813:2023; 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.

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 according to EN 12834:2003, Annex A

Table A.4 (continued)

					Length	Allowed value			
Applica- tions					1 bit (applications ext.)	0 (= no extension)			
					7 bits (number of applic.)	M (≥2)			
	CCC applica- tion1	aid			1 bit (eid opt.)	1 (= eid present)			
					1 bit (parameter opt.)	1 (= parameter present)			
						1 bit (aid ext.)	0 (= no extension)		
						5 bits	20 (= CCC application)		
		eid			1 bit (eid ext.)	0 (= no extension)			
					7 bits	Any			
		para meter	CccContext- Mar11			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		
				Contract Provider			10 bits (CountryCode)	According to ISO 3166-1	
							14 bits (IssuerIden- tifier)	According to 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	
							1 bit (eid opt.)	1 (= eid present)	
							1 bit (parameter opt.)	1 (= parameter present)	

Table A.4 (continued)

					Length	Allowed value			
		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	CccCon-textMark2	Contract Provider	10 bits (CountryCode)	According to ISO 3166-1			
					14 bits (IssuerIdentifier)	According to 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)				

Table A.4 (continued)

		Length	Allowed value
obe Configura- tion		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

The following tables describe the valid format of the request APDUs:

- Table A.5;
- Table A.6;
- Table A.7;
- Table A.8;
- 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

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-REPORT-Rq	mode	=
	eid	0
	eventType	0 (release)
	accessCredentials optional	prohibited
	eventParameters optional	prohibited
	iid optional	prohibited

A.4.2.2 Parameters of response PDUs

The following tables describe the valid format of the response APDUs:

- Table A.10;
- Table A.11;
- Table A.12;
- 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

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

These TPs apply to security level 1 as defined in ISO/FDIS 12813:2023, Table B.6, Item 1 and to initialisation and termination processes defined in ISO/FDIS 12813:2023, 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, and
- Table A.15

shall be transmitted to the DUT. Invalid values are indicated in **boldface**.

Table A.14 — BST1 (actual BST used, BV) valid BST

			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
MandApplica-tions			1 bit (mandApplications ext.)	0 (= no extension)
			7 bits (number of applications)	1
	CCC applica-tion		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 (actual BST used, BI) invalid BST — Extraneous parameter (CCC application inserted as non-mandatory application)

			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
	nonmandApplica-tions			1 bit (nonmandApplications ext.)
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)

Table A.15 (continued)

	Length	Value
	7 bits (number of profiles)	0 (= list empty)

A.4.3.3 BV test purposes

Test subgroup objective:

- a) to test the behaviour of the DUT in relation to:
 - valid BST, and
 - valid EVENT-REPORT-Rq (Release).
- b) to test the DUT support of:
 - BeaconId,
 - Time,
 - Profile,
 - Applications, and
 - LID.

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, 5.4.1
Reference	ISO/FDIS 12813:2023, 7.1.2
Initial condition	See TP/AL-I/OBE/BV/01 in ETSI/TS 102 486-2-2, 5.4.1
Stimulus and expected behaviour	
See TP/AL-I/OBE/BV/01 in ETSI/TS 102 486-2-2, 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, 5.4.1
Reference	ISO/FDIS 12813:2023, 7.1.6
Initial condition	See TP/AL-I/OBE/BV/02 in ETSI/TS 102 486-2-2, 5.4.1
Stimulus and expected behaviour	
See TP/AL-I/OBE/BV/02 in ETSI/TS 102 486-2-2, 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, 5.4.1
Reference	ISO/FDIS 12813:2023, 7.1.2
Initial condition	Identical to TP/AL-I/OBE/BV/03 in ETSI/TS 102 486-2-2, 5.4.1
Stimulus and expected behaviour	
See TP/AL-I/OBE/BV/03 in ETSI/TS 102 486-2-2, 5.4.1.	