

TECHNICAL SPECIFICATION

ISO/TS
16410-1

First edition
2011-10-15

Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-3 —

Part 1: Test suite structure and test purposes

*Perception du télépéage — Évaluation de la conformité de l'équipement
à l'ISO/TS 17575-3 —*

Partie 1: Structure de la suite d'essais et objectifs des essais

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Reference number
ISO/TS 16410-1:2011(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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

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

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

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

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order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn.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

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 16410-1 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, in collaboration with Technical Committee CEN/TC 278, *Road Transport and Traffic Telematics*.

ISO/TS 16410 consists of the following parts, under the general title *Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-3*:

- *Part 1: Test suite structure and test purposes*
- *Part 2: Abstract test suites*

Introduction

This part of ISO 16410 is part of a set of standards that supports interoperability of autonomous EFC-systems, which includes ISO/TS 17575 parts 1 to 4 that define the EFC context data, their charge reports and their use of communication infrastructure.

Within the suite of EFC standards this conformance evaluation procedure defines the process and tests for conformity evaluation of Front End and Back End that comply with the requirements in ISO/TS 17575-3.

This part of ISO 16410 is intended to

- assess Front End and Back End capabilities,
- assess Front End and Back End behaviour,
- serve as a guide for Front End and Back End conformance evaluation and type approval,
- achieve comparability between the results of the corresponding tests applied in different places at different times, and
- facilitate communications between parties.

This part of ISO 16410 is based on

- ISO/TS 17575-3, and
- the ISO 9646 family of standards on conformance test methodology.

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Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-3 —

Part 1: Test suite structure and test purposes

1 Scope

This part of ISO/TS 16410 specifies the test suite structure (TSS) and test purposes (TP) to evaluate the conformity of Front End and Back End to ISO/TS 17575-3.

The objective of this part of ISO/TS 16410 is to provide a basis for conformance tests for the Front End and the Back End in Electronic Fee Collection (EFC) based on autonomous on-board equipment (OBE) to enable interoperability between different equipment supplied by different manufacturers.

Autonomous OBE operates without relying on dedicated road-side infrastructure by employing wide-area technologies such as Global Navigation Satellite Systems (GNSS) and Cellular Communications Networks (CN). These EFC systems are referred to by a variety of names. Besides the terms autonomous systems and GNSS/CN systems, also the terms GPS/GSM systems and wide-area charging systems are in use.

Autonomous systems use satellite positioning, often combined with additional sensor technologies such as gyroscopes, odometers, and accelerometers, to localise the vehicle and to find its position on a map containing the charged geographic objects, such as charged roads or charged areas. From the charged objects, the vehicle characteristics, the time of day and other data that are relevant for describing road use, the tariff and ultimately the road usage fee is determined.

For more information regarding autonomous systems, please refer to ISO/TS 17575-3.

Testing of the following behaviours and functionalities is outside of the scope of this part of ISO/TS 16410:

- dynamic behaviour, i.e. sequence of messages and triggering events that must be exchanged/happen to fulfil certain charging scenarios;
- profiles and business logic built on top of particular pricing schemas;
- authentication, as its handling is not described in ISO/TS 17575-3;
- Front End behaviour with respect to optional data elements in ChargeReportConfiguration, as handling of configurations requesting presence/absence of parent data element, and absence/presence of child data element is not specified in ISO/TS 17575-3.

As ISO/TS 17575-3 does not specify any invalid behaviour of Front End and Back End, BI test purposes are not applicable for any test purpose group.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 9646-6, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 6: Protocol profile test specification*

ISO/TS 17575-1, *Electronic fee collection — Application interface definition for autonomous systems — Part 1: Charging*

ISO/TS 17575-3, *Electronic fee collection — Application interface definition for autonomous systems — Part 3: Context data*

3 Terms and definitions

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

3.1

area pricing

charging process based on road usage occurring within a given area

[ISO/TS 17575-1:2010, definition 3.1]

3.2

attribute

application information formed by one or by a sequence of data elements, and that is managed by different actions used for implementation of a transaction

[ISO 14906:2011, definition 3.3]

3.3

authenticator

data appended to, or a cryptographic transformation of, a data unit that allows a recipient of the data unit to prove the source and/or the integrity of the data unit and protect against forgery

[ISO 14906:2011, definition 3.4]

3.4

Back End

generic name for the computing and communication facilities of the Service Provider and the Toll Charger exchanging data with the Front End

NOTE 1 Adapted from ISO/TS 17575-1.

NOTE 2 According to the architecture defined in ISO 17573, it is assumed in this part of ISO/TS 16410 that the Front End in general communicates with the Back End typically controlled and operated by the Service Provider.

3.5

charge object

any object that is part of the toll context description, including toll objects but also used for parking fees, etc.

NOTE Adapted from ISO/TS 17575-1.

3.6

charge report

data structure transmitted from the Front End to the Back End to report road usage data and supplementary related information

[ISO/TS 17575-1:2010, definition 3.5]

3.7**contract**

expression of an agreement between two or more parties concerning the use of the road infrastructure
[ISO 14906:2011, definition 3.7]

3.8**cordón**

border line of an area

[ISO/TS 17575-1:2010, definition 3.8]

3.9**cordón pricing**

charging process based on registering passages of a cordón

[ISO/TS 17575-1:2010, definition 3.9]

3.10**data element**

datum, which might itself consist of lower level data elements

[ISO/TS 17575-1:2010, definition 3.10]

3.11**Front End**

part(s) of the toll system where road usage data for an individual road user are collected, processed and delivered to the Back End

NOTE The Front End comprises the on-board equipment and an optional proxy.

[ISO/TS 17575-1:2010, definition 3.13]

3.12**service provider**

operator that accepts the user's payment means and in return provides a road-use service to the user

NOTE Taken from ISO 14906:2004.

3.13**tester**

combination of equipment and processes which is able to perform conformance tests according to this part of ISO/TS 16410

NOTE Adapted from ISO/TS 14907-2.

3.14**toll charger**

legal entity charging a toll for vehicles in a toll domain

[ISO/TS 17574:2009, definition 3.27]

3.15**toll context**

logical view of a toll scheme as defined by attributes and functions

[ISO/TS 17575-1:2010, definition 3.22]

3.16**toll regime**

set of rules, including enforcement rules, governing the collection of toll in a toll

[ISO/TS 17575-1:2010, definition 3.25]

4 Abbreviated terms

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

ADU	Application data unit (ISO/TS 17575-1)
ASN.1	Abstract Syntax Notation One (ISO/IEC 8824-1:2002)
ATS	Abstract Test Suite
BI	Invalid Behaviour
BV	Valid Behaviour
CCC	Compliance Check Communication (ISO/TS 12813)
CN	Cellular network (ISO/TS 17575-1)
DUT	Device Under Test
EFC	Electronic Fee Collection (ISO 17573)
GNSS	Global Navigation Satellite Systems (ISO/TS 17575-1)
HMI	Human Machine Interface (ISO/TS 17575-1)
ID	Identifier
OBE	On-board Equipment (ISO/TS 17575-1)
PCTR	Proforma Conformance Test Report
PICS	Protocol Implementation Conformance Statements
TP	Test Purposes
TSS	Test Suite Structure
VAT	Value Added Tax (ISO/TS 17575-1)

5 Test Suite Structure (TSS)

5.1 Structure

Table 1 — Test Suite Structures shows the Test Suite Structure (TSS).

Table 1 — Test Suite Structures

Group	Type of DUT	Behaviour
Procedural	Back End	Valid Behaviour
		Invalid Behaviour not applicable
ADU Header	Back End	Valid Behaviour
		Invalid Behaviour not applicable

ADU Body – Attribute general	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Toll Context Overview	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Tariff Table	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Tariff Class Definition	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Local Vehicle Class Definition	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Time Class Definition	Back End	Valid Behaviour
		Invalid Behaviour not applicable
User Class Definition	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Toll Context Layout	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Toll Context Layout for Section Pricing	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Toll Context Layout for Area Pricing	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Toll Context Layout for Cordon Pricing	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Context Handling	Front End	Valid Behaviour
		Invalid Behaviour not applicable
Charge Report	Front End	Valid Behaviour
		Invalid Behaviour not applicable

Front End related Test Purposes uses Charge Report message for validation which is specified in ISO/TS 17575-1. As a precondition to run those test purposes the compliance to ISO/TS 17575-1 shall be validated.

5.2 Reference to conformance test specifications

This part of ISO/TS 16410 takes into account already defined test purposes for conformance to the base standards by referencing them, so that

- a) for test purposes that are **identical** to those defined in this specification or the base standards conformance test cases direct reference is reported; for reader's convenience, the title or a verbal description of the referenced test purpose is given, together with the reference,
- b) 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 to be modified for the profile conformance testing,
- c) for test purposes that are **specific** to ISO/TS 17575-3, a complete description is given, and
- d) an indication on whether a test purpose is **identical**, **derived**, or **specific** is given in each test purpose.

5.3 Test Purposes (TP)

5.3.1 TP definition conventions

The TPs are defined following the rules shown in Table 2 — TP Definition Rules below. All test purposes are defined in Annex A and Annex B, including the special notation and symbol conventions that shall be used. The data structures that shall be used are specified in Annex C and defined in ISO/TS 17575-1 and ISO/TS 17575-3.

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 shall be specified according to the TP naming conventions defined in the sub-clause below.
Title	Short description of Test Purpose objective.
Reference	The reference should contain the references of the subject to be validated by the actual TP (specification reference, clause, paragraph), or the reference to the standard document defining the 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.
Initial condition	The condition defines in which initial state the DUT has to be to apply 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.

5.3.2 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> : which group TP belongs to;

<dut> : type of DUT (i.e. FE or BE);

X : type of testing (i.e. Valid Behaviour tests – BV, or Invalid Behaviour tests – BI)

<nn> : sequential TP number (01-99)

The naming conventions are as described in Table 3.

Table 3 — TP naming convention

Identifier:		
TP/<group>/<dut>/<x>-<nn>		
<group>		
applicable for BE	PRO	Procedural
applicable for BE	ADUH	ADU Header
applicable for BE	ADUB	ADU Body – Attribute general
applicable for BE	ATTR-11	Toll Context Overview
applicable for BE	ATTR-21	Tariff Table
applicable for BE	ATTR-22	Tariff Class Definition
applicable for BE	ATTR-23	Local Vehicle Class Definition
applicable for BE	ATTR-24	Time Class Definition
applicable for BE	ATTR-25	User Class Definition
applicable for BE	ATTR-31	Toll Context Layout
applicable for BE	ATTR-31S	Toll Context Layout for Section Pricing
applicable for BE	ATTR-31A	Toll Context Layout for Area Pricing
applicable for BE	ATTR-31C	Toll Context Layout for Cordon Pricing
applicable for FE	CH	Context Handling
applicable for FE	CR	Charge Report
<dut> = type of DUT	FE	Front End
	BE	Back End
x = Type of testing	BV	Valid Behaviour Tests
	BI	Invalid Behaviour Tests
<nn> = sequential number	(01-99)	Test Purpose Number

5.4 Conformance test report

The supplier of the Front End and Back End, respectively, is responsible for providing a conformance test report.

The supplier of the Front End shall complete the proforma conformance test report (PCTR) for Front End as defined in Annex D.

The supplier of the Back End shall complete the proforma conformance test report (PCTR) for Back End as defined in Annex E.

Annex A (normative)

Test Purposes (TP) for Front End

A.1 Introduction

This annex contains the test purposes (TP) for the conformity evaluation of Front End to ISO/TS 17575-3.

A.1.1 TP symbols conventions

A special notation and symbol convention shall be used, as defined in what follows.

Symbols are used in the description of the TPs, with meanings according to Table A.1 below.

Table A.1 — Description of TP Symbols

SYMBOL	DESCRIPTION
XXX.rq \Rightarrow	The Tester sends the XXX.rq to the DUT
\Leftarrow YYY.rs	The DUT sends the YYY.rs to the Tester
\Leftarrow YYY.rs = {attribute1, attribute2, attribute3}	The DUT sends the YYY.rs to the Tester. YYY.rs shall not consist of any attributes different than attribute1, attribute2, attribute3. If any of attributes in the list is optional it may be missing in YYY.rs.
\Leftarrow YYY.rs = {attribute1= value1}	The DUT sends the YYY.rs to the Tester with attribute1. Value of attribute1, i.e. value1 shall be stored by the tester and will be utilized in further TP steps.
A \equiv B	A “is equal to” B
A \rightarrow B	A “is transformed” into B
\emptyset	Means “empty” or “not set”.

A.2 Context Handling

These test purposes apply to Iso17575-3Adu as claimed in ISO/TS 17575-3 Clause B.5.4.1/1, EFC Attributes as claimed in ISO/TS 17575-3 Clause B.5.4.3/1-9.

NOTE 1 No claims related to optional items of PICS proforma are covered, as there is no means to observe any behaviour of Front End proving support of these items.

NOTE 2 No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Front End.

NOTE 3 No dynamic behaviour is covered by this specification. Dynamic behaviour is e.g. selection of applicable Tariff Class by the Front End depending on vehicle, time, user, location criteria.

NOTE 4 A Charge Report sent by the DUT may or may not include all data elements listed in the structure as almost all of them are optional.

A.2.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to the context activation;
- to test the behaviour of the DUT in relation to handling of multiple contexts;
- to test usage of communication services by DUT,

by means of the syntactically and contextual correct ADUs:

- single ADU consisting of all necessary attributes to activate the context, and/or
- several consecutive ADUs consisting of all necessary attributes to activate the context.

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TP/CH/FE/BV/01		Verify that DUT activates toll context – toll charger attribute check	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.1	
Initial Condition		<p>Front End is initialized and can accept Context Data.</p> <p>OBUs belonging to the Front End are located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>	
Stimulus and Expected Behaviour			
	Tester		DUT
1	ContextData1	⇒	
2	Event defined in ContextData1 occurred		
3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (ChargeReport not received) THEN TP failed ENDIF IF (tollCharger in ChargeReport equals to tollContextOverview.tollCharger in ContextData1) THEN TP passed ELSE TP failed ENDIF		

TP/CH/FE/BV/03	Verify that DUT activates toll context (sent in many ADUs) – toll charger attribute check		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.1		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	ContextData2	⇒	
2	ContextData3	⇒	
3	ContextData4	⇒	
4	ContextData5	⇒	
5	ContextData6	⇒	
6	ContextData7	⇒	
7	ContextData8	⇒	
8	ContextData9	⇒	
9	ContextData10	⇒	
10	Event defined in ContextData9 occurred		
11		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
12	IF (ChargeReport not received) THEN TP failed ENDIF IF (tollCharger in ChargeReport equals to tollContextOverview.tollCharger in ContextData2) THEN TP passed ELSE TP failed ENDIF		

TP/CH/FE/BV/06	Verify that DUT handles contexts of different Toll Chargers		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.1		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in both Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	ContextData1	⇒	
2	ContextData12	⇒	
3	Event defined in ContextData1 occurred		
4		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
5	IF (ChargeReport not received) THEN TP failed ENDIF IF (tollCharger in ChargeReport NOT equal to tollContextOverview.tollCharger in ContextData1) THEN TP failed ENDIF		
6	Event defined in ContextData12 occurred		
7		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
8	IF (ChargeReport not received) THEN TP failed ENDIF IF (tollCharger in ChargeReport NOT equal to tollContextOverview.tollCharger in ContextData12) THEN TP failed ELSE TP passed ENDIF		

TP/CH/FE/BV/07	Verify that DUT updates its Context Data		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.2		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in both Context Data ADUs.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	ContextData1	⇒	
2	ContextData13	⇒	
3	Event defined in ContextData1 occurred		
4		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
5	IF (ChargeReport content according to ContextData13) THEN TP passed ELSE TP failed ENDIF		

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TP/CH/FE/BV/07	Verify the usage of communication services		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 6.1		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	ContextData1	⇒	
2	Event defined in ContextData1 occurred		
3		⇐	ChargeReport = { obId, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAttributes, authenticator}
4	Verify that communication services are used to transmit the ADU as defined in ISO/TS 17575-3 Clause 6.1		

A.2.2 BI test purposes

No BI test purposes are applicable for this TP group.

A.3 Charge Report

These test purposes apply to ChargeReportConfiguration as claimed in ISO/TS 17575-3 Clause B.5.4.3/9.

NOTE 1 No claims related to optional items of PICS proforma are covered, as there is no means to observe any behaviour of Front End proving support of these items.

NOTE 2 No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Front End.

NOTE 3 No dynamic behaviour is covered by this specification. Dynamic behaviour is e.g. selection of applicable Tariff Class by the Front End depending on vehicle, time, user, location criteria.

A.3.1 BV test purposes

Test subgroup objective:

- to test the presence of particular data elements in Charge Report sent by DUT in relation to Charge Report Configuration;
- to test the absence of particular data elements in Charge Report sent by DUT in relation to Charge Report Configuration;

by means of the syntactically and contextual correct ADUs:

- single ADU consisting of all necessary attributes;
- several consecutive ADUs consisting of all necessary attributes to activate the context.

TP/CR/FE/BV/01	Verify the presence of obelID data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obelid = 1, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (obeld present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/02	Verify the absence of obelID data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre> Iso17575-3Adu = {aduHeader, Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = { obelId = F, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } } </pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (obeld NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/03	Verify the presence of paymentMeans data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = T, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (paymentMeans present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/04	Verify the absence of paymentMeans data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = F, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (paymentMeans NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/05	Verify the presence of tollCharger data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeld = any, paymentMeans = any, tollCharger = T, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (tollCharger present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/06	Verify the absence of tollCharger data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeld = any, paymentMeans = any, tollCharger = F, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (tollCharger NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/07	Verify the presence of versionInfo data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = T, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (versionInfo present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/08	Verify the absence of versionInfo data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeld = any, paymentMeans = any, tollCharger = any, versionInfo = F, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (versionInfo NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/09	Verify the presence of vatForThisSession data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = T, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (vatForThisSession present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/10	Verify the absence of vatForThisSession data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = F, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (vatForThisSession NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/11	Verify the presence of accountStatus data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = T, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (accountStatus present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/12	Verify the absence of accountStatus data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = F, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (accountStatus NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/13	Verify the presence of transactionCounter data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = { obId = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = T, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (transactionCounter present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/14	Verify the absence of transactionCounter data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = F, mileage = any, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (transactionCounter NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/15	Verify the presence of mileage data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeld = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = T, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (mileage present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/16	Verify the absence of mileage data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } where: v1 = { chargeReportContent = { objId = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = F, listOfCCCAtributes = any, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	

2	Event defined in 41'D – ChargeReportingEvents occurred		
3		⇐	ChargeReport = { obId, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAttributes, authenticator}
4	IF (mileage NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/17	Verify the presence of listOfCCCAtributes data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = { obId = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = T, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (listOfCCCAtributes present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/18	Verify the absence of listOfCCCAtributes data element in Charge Report
TP Origin	Specific
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>

Stimulus and Expected Behaviour

	Tester	DUT
1	<pre> Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = { obId = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = F, authenticator = any } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } } </pre>	⇒

2	Event defined in 41'D – ChargeReportingEvents occurred		
3		⇐	ChargeReport = { obId, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (listOfCCCAtributes NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/19	Verify the presence of authenticator data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = T } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (authenticator present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/20	Verify the absence of authenticator data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.1;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = { obeid = any, paymentMeans = any, tollCharger = any, versionInfo = any, vatForThisSession = any, accountStatus = any, transactionCounter = any, mileage = any, listOfCCCAtributes = any, authenticator = F } usageStatementContent = any, chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (authenticator NOT present) THEN TP passed ELSE TP failed ENDIF		

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TP/CR/FE/BV/21	Verify the presence of usageStatementID data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = T, regimeld = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (usageStatementID present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/22	Verify the absence of usageStatementID data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = F, regimeld = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (usageStatementID NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/23	Verify the presence of regimeID data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = T, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (regimeID present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/24	Verify the absence of regimeld data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeld = F, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (regimeID NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/25	Verify the presence of aggregatedFee data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = T, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (aggregatedFee present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/26	Verify the absence of aggregatedFee data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = F, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (aggregatedFee NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/27	Verify the presence of aggregatedSingleTariffClassSession data element in Charge Report	
TP Origin	Specific	
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;	
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>	
Stimulus and Expected Behaviour		
	Tester	DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = T, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒
2	Event defined in 41'D – ChargeReportingEvents occurred	

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (aggregatedSingleTariffClassSession present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/28	Verify the absence of aggregatedSingleTariffClassSession data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = F, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (aggregatedSingleTariffClassSession NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/29	Verify the presence of listOfChargeObjects data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = T, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (listOfChargeObjects present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/30	Verify the absence of listOfChargeObjects data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = F, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents	oc urred	

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (listOfChargeObjects NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/31	Verify the presence of listOfDSRCUsageData data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = T, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (listOfDSRCUsageData present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/32	Verify the absence of listOfDSRCUsageData data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = F, listOfRawUsageData = any, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (listOfDSRCUsageData NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/33	Verify the presence of listOfRawUsageData data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = T, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (listOfRawUsageData present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/34	Verify the absence of listOfRawUsageData data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = F, noUsage = any, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (listOfRawUsageData NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/35	Verify the presence of noUsage data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = value as in ContextData1), (tariffTable = value as in ContextData1), (tariffClassDefinition = value as in ContextData1), (localVehicleClassDefinition = value as in ContextData1), (timeClassDefinition = value as in ContextData1), (userClassDefinition = value as in ContextData1), (tollContextLayout = value as in ContextData1), (chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = v1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeld = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = T, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (noUsage present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/36	Verify the absence of noUsage data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), (chargeReportConfiguration = value as in ContextData1) } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = F, usageAuthenticator = any } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	At least one UsageStatement can be reported by Front End and Event1 occurred NOTE It is recommended to use absolute time or relative time based events.		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (noUsage NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/37	Verify the presence of usageAuthenticator data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = T } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		≤	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (usageAuthenticator present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/38	Verify the absence of usageAuthenticator data element in Charge Report		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.5.2.2;		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { tollContextOverview = value as in ContextData1), tariffTable = value as in ContextData1), tariffClassDefinition = value as in ContextData1), localVehicleClassDefinition = value as in ContextData1), timeClassDefinition = value as in ContextData1), userClassDefinition = value as in ContextData1), tollContextLayout = value as in ContextData1), chargeReportingEvents = value as in ContextData1), chargeReportConfiguration = v1 } } where: v1 = { chargeReportContent = any, usageStatementContent = { usageStatementId = any, regimeId = any, aggregatedFee = any, aggregatedSingleTariffClassSession = any, listOfChargeObjects = any, listOfDSRCUsageData = any, listOfRawUsageData = any, noUsage = any, usageAuthenticator = F } chargeReportConfigurationVersion = { version = as in ContextData1, validFrom = as in ContextData1 } }</pre>	⇒	
2	Event defined in 41'D – ChargeReportingEvents occurred		

3		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
4	IF (usageStatementList present) THEN IF (usageAuthenticator NOT present in each UsageStatement data element of usageStatementList) THEN TP passed ELSE TP failed ENDIF ELSE TP failed ENDIF		

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TP/CR/FE/BV/39	Verify that DUT reports data elements requested by Context Data (sent in many ADUs)		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.1		
Initial Condition	<p>Front End is initialized and can accept Context Data.</p> <p>OBU belonging to the Front End is located within geographic borders defined in Context Data.</p> <p>Version of any data element of context data is known for the Front End.</p> <p>No authentication is required by the Front End.</p>		
Stimulus and Expected Behaviour			
	Tester		DUT
1	ContextData2	⇒	
2	ContextData3	⇒	
3	ContextData4	⇒	
4	ContextData5	⇒	
5	ContextData6	⇒	
6	ContextData7	⇒	
7	ContextData8	⇒	
8	ContextData9	⇒	
9	ContextData10	⇒	
10	At least one UsageStatement can be reported by Front End and Event defined in ContextData9 occurred		
11		⇐	ChargeReport = { obeld, vehicleLPNr, paymentMeans, serviceProviderContract, tollCharger, timeOfReport, reportPeriod, versionInfo, usageStatementList, vatForThisSession, accountStatus, transactionCounter, mileage, listOfCCCAtributes, authenticator}
12	IF (ChargeReport not received) THEN TP failed ENDIF IF (usageStatementList empty) THEN TP failed ENDIF IF (ChargeReport content according to ContextData10) THEN TP passed ELSE TP failed ENDIF		

A.3.2 BI test purposes

No BI test purposes are applicable for this TP group.

Annex B (normative)

Test purposes (TP) for Back End

B.1 Introduction

This annex contains the test suite structure (TSS) and test purposes (TP) for the conformity evaluation of Back End to ISO/TS 17575-3.

B.1.1 TP symbols conventions

A special notation and symbol convention is used, as defined in what follows.

Symbols are used in the description of the TPs, with meanings according to Table B.1.

Table B.1 — Description of TP Symbols

SYMBOL	DESCRIPTION
XXX.rq \Rightarrow	The DUT sends the XXX.rq PDU to the Tester. If ContextDataX notation is used, the data element ContextDataX which is defined in Annex C is sent to DUT.
XXX.rq = {attribute1, attribute2, attribute3} \Rightarrow	The DUT sends the XXX.rq to the Tester. XXX.rq shall not consist of any attributes different than attribute1, attribute2, attribute3. If any of attributes in the list is optional it may be missing in XXX.rq.
XXX.rq = {attribute1= value1} \Rightarrow	The DUT sends the XXX.rq to the Tester with attribute1. Value of attribute1, i.e. value1 shall be stored by the tester and will be utilized in further TP steps.
\Leftarrow YYY.rs	The Tester sends the YYY.rs PDU to the DUT
A \equiv B	A “is equal to” B
A \rightarrow B	A “is transformed” into B
\emptyset	Means “empty” or “not set”.

In addition, it has to be noted that the sequence of ADUs issued by a Back End is not constrained by ISO/TS 17575-3. This means that ADU cannot in general be forced to be generated by the DUT. To execute the test purposes it may be needed to filter out some ADUs, as they might be applicable for TP, e.g. some ADUs are applicable for different toll regime. Such situation is illustrated in Figure B.1.

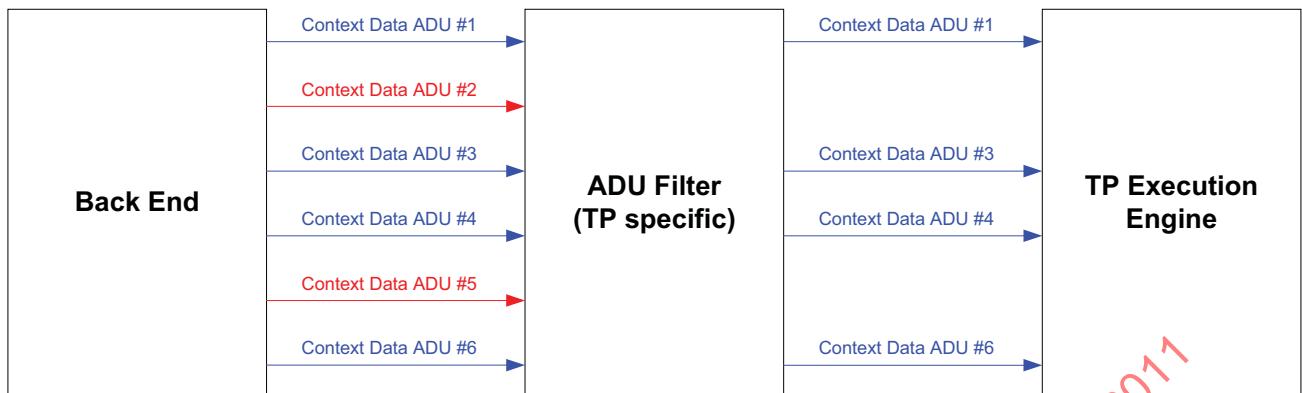


Figure B.1 — Handling of ADUs applicable for particular TP

B.2 Procedural test purposes

These test purposes apply to Communication services support as claimed in ISO/TS 17575-3 Clause B.6.4.2/1, and EFC Attributes as claimed in ISO/TS 17575-3 Clause B.6.4.3/1-9.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.2.1 BV test purposes

Test subgroup objective:

- to test the usage of communication services;
- to test the behaviour of the DUT in relation to handling versions.

TP/PRO/BE/BV/01	Verify the usage of communication services		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 6.1		
Initial Condition	Back End is initialized and can send Context Data.		
Stimulus and Expected Behaviour			
	DUT		Tester
1	Iso17575-3Adu = {aduHeader, attributeList}	⇒	
2			Verify that communication services are used to transmit the ADU as defined in ISO/TS 17575-3 Clause 6.1

TP/PRO/BE/BV/02	Verify version and validity handling		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 6.2		
Initial Condition	Back End is initialized and can send a complete set of Context Data.		
Stimulus and Expected Behaviour			
	DUT		Tester
1	Iso17575-3Adu = {aduHeader, aduBody = A1}	⇒	
2			Verify structure of sent Iso17575-3Adu(s) , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
			IF verify NOT "OK" THEN TP failed
3	Toll Context properties changed. DUT needs to provision up-to-date context data.		
4	Iso17575-3Adu = {aduHeader, aduBody = A2}	⇒	
5			Verify structure of sent Iso17575-3Adu(s) , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
6			IF verify NOT "OK" THEN TP failed
7			Compare the corresponding data elements in A1 and A2 consisting of Version information indicator (data type: VersionAndValidity). For each <i>dataelement</i> : IF A1. <i>dataelement</i> ≠ A2. <i>dataelement</i> THEN IF A1. <i>dataelement</i> . <i>dataelementVersion.version</i> >= A2. <i>dataelement</i> . <i>dataelementVersion.version</i> THEN TP failed ENDIF ENDIF IF TP not failed THEN TP passed

B.2.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.3 ADU Header test purposes

These Test Purposes apply to Iso17575-3Adu as claimed in ISO/TS 17575-3 Clause B.6.4.1/1.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.3.1 BV test purposes

Test subgroup objective:

- to test the uniqueness of Context ID within the Toll Charger;
- to test the behaviour of the DUT in relation to ADU Sequence Number.

TP/ADUH/BE/BV/01		Uniqueness of Context ID within the Toll Charger	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 7.2	
Initial Condition		Back End is initialized and has n Toll Contexts defined. Back End sends Context Data for each Toll Context.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	Iso17575-3Adu = {aduHeader = A1, aduBody }	⇒	
2	Iso17575-3Adu = {aduHeader = A2, aduBody}	⇒	
...			
n	Iso17575-3Adu = {aduHeader = An, aduBody }	⇒	
n+1			Verify structure of sent Iso17575-3Adus, taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
n+2			IF verify NOT "OK" THEN TP failed
n+3			IF each Ai.contextID (where i=1..n) is unique THEN TP passed ELSE TP failed ENDIF

TP/ADUH/BE/BV/02	Verify handling of aduSequenceNumber		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 7.2		
Initial Condition	Back End is initialized and sends Context Data.		
Stimulus and Expected Behaviour			
	DUT		Tester
1	Iso17575-3Adu = {aduHeader = A1, aduBody }	⇒	
2	Iso17575-3Adu = {aduHeader = A2, aduBody }	⇒	
3			Verify structure of sent Iso17575-3Adus , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
4			IF verify NOT "OK" THEN TP failed
5			IF (A2.aduSequenceNumber) equals to (A1.aduSequenceNumber + 1) THEN TP passed ELSE TP failed ENDIF

B.3.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.4 Attribute general test purposes

These Test Purposes apply to EFCAttributes as claimed in ISO/TS 17575-3 Clause B.6.4.3/1-9.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.4.1 BV test purposes

Test subgroup objective:

- to test the availability of all mandatory attributes.

TP/ADUB/BE/BV/11	Verify the availability of Context Data attributes to allow the Front End to operate in a toll regime
TP Origin	Specific
Reference	ISO/TS 17575-3, Clause 8.1
Initial Condition	Back End is initialized and can send Context Data.

Stimulus and Expected Behaviour

	DUT	Tester
1	<p>Iso17575-3Adu = {aduHeader, aduBody}</p> <p>Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</p>	⇒
2		Verify structure of sent Iso17575-3Adu(s), taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3		IF verify NOT "OK" THEN TP failed
4		Verify the presence of aduBody.tollContextOverview attribute in sent ADU(s).
5		IF verify NOT "OK" THEN TP failed
6		Verify the presence of aduBody.tariffTable attribute in sent ADU(s).
7		IF verify NOT "OK" THEN TP failed
8		Verify the presence of aduBody.tariffClassDefinition attribute in sent ADU(s).
9		IF verify NOT "OK" THEN TP failed
10		Verify the presence of aduBody.localVehicleClassDefinition attribute in sent ADU(s).
11		IF verify NOT "OK" THEN TP failed
12		Verify the presence of aduBody.tollContextLayout attribute in sent ADU(s).
13		IF verify NOT "OK" THEN TP failed
14		Verify the presence of aduBody.chargeReportingEvents attribute in sent ADU(s).
15		IF verify NOT "OK" THEN TP failed
16		Verify the presence of aduBody.chargeReportConfiguration attribute in sent ADU(s).
17		IF verify NOT "OK" THEN TP failed ELSE TP passed ENDIF

B.4.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.5 Toll Context Overview test purposes

These Test Purposes apply to TollContextOverview as claimed in ISO/TS 17575-3 Clause B.6.4.3/1 and OperationalStatus as claimed in ISO/TS 17575-3 Clause B.6.4.6.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.5.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to Toll Context Overview attribute.

TP/ATTR-11/BE/BV/02		Uniqueness of Toll Context within the Toll Charger	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.2	
Initial Condition		Back End is initialized and has n Toll Contexts defined. Back End sends Context Data for each Toll Context.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	Iso17575-3Adu = {aduHeader, aduBody = A1}	⇒	
2	Iso17575-3Adu = {aduHeader, aduBody = A2}	⇒	
...			
n	Iso17575-3Adu = {aduHeader, aduBody = An}	⇒	
n+1			Verify structure of sent Iso17575-3Adus , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
n+2			IF verify NOT "OK" THEN TP failed
n+3			IF each Ai.tollContextOverview.tollContext (where i=1..n) is unique THEN TP passed ELSE TP failed ENDIF

TP/ATTR-11/BE/BV/03	Verify whether Stops Operation At is not earlier than Starts Operation At in Operational Status		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.2		
Initial Condition	Back End is initialized and can send Context Data.		
Stimulus and Expected Behaviour			
	DUT		Tester
1	Iso17575-3Adu = {aduHeader, aduBody = A1} Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.	⇒	
2			Verify structure of sent Iso17575-3Adu(s), taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			IF A1.tollContextOverview.operationalStatus.startsOperationAt > A1.tollContextOverview.operationalStatus.stopsOperationAt) THEN TP failed ELSE TP passed ENDIF

B.5.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.6 Tariff Table test purposes

These Test Purposes apply to TariffTable as claimed in ISO/TS 17575-3 Clause B.6.4.3/2, Toll Scheme Types as claimed in ISO/TS 17575-3 Clause B.6.4.5.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.6.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to Tariff Table attribute.

TP/ATTR-21/BE/BV/02		Verify that type of Charge Unit is compliant to Toll Scheme Type	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.3.2.2	
Initial Condition		Back End is initialized and can send Context Data.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			<pre>IF A11.tollSchemeType = 0 THEN IF each A21.tariffs[i].chargeUnit is DISTANCE OR EVENT (where i=1..number of tariffs) THEN TP passed ELSE TP failed ENDIF ENDIF IF A11. tollSchemeType = 1 OR A11. tollSchemeType = 2 THEN IF each A21.tariffs[i].chargeUnit is DISTANCE OR TIME (where i=1..number of tariffs) THEN TP passed ELSE TP failed ENDIF ENDIF IF A11.tollSchemeType = 3 THEN IF each A21.tariffs[i].chargeUnit is EVENT (where i=1..number of tariffs) THEN TP passed ELSE TP failed ENDIF ENDIF</pre>

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TP/ATTR-21/BE/BV/03	Verify that Tariff Class ID is unique within one toll context	
TP Origin	Specific	
Reference	ISO/TS 17575-3, Clause 8.3.3.2.2	
Initial Condition	Back End is initialized and can send Context Data.	
Stimulus and Expected Behaviour		
	DUT	Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } }</pre> <p>Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</p>	⇒
2		Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3		IF verify NOT "OK" THEN TP failed
4		IF each A21.tariffs[i].tariffClassId is unique (where i=1..number of tariffs) THEN TP passed ELSE TP failed ENDIF

B.6.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.7 Tariff Class Definition test purposes

These Test Purposes apply to TariffClassDefinition as claimed in ISO/TS 17575-3 Clause B.6.4.3/3 and B.6.4.8.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.7.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to Tariff Class Definition attribute.

TP/ATTR-22/BE/BV/01		Verify that each combination of vehicle, time, location and user class leads to one and only one Tariff Class	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.3.3	
Initial Condition		Back End is initialized and can send Context Data.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			Verify whether each combination of time, vehicle, location and user class leads to exactly one Tariff Class in A22.tariffClasses[i]
5			IF verify NOT "OK" THEN TP failed ELSE TP passed

TP/ATTR-22/BE/BV/02	Verify that Tariff Class ID is unique within one toll context within TariffClassDefinition attribute		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.3.3.2		
Initial Condition	Back End is initialized and can send Context Data.		
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu, taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			IF each A22.tariffClasses[i].tariffClassId is unique (where i=1..number of tariffClasses) THEN TP passed ELSE TP failed ENDIF

B.7.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.8 Local Vehicle Class Definition test purposes

These Test Purposes apply to LocalVehicleClassDefinition as claimed in ISO/TS 17575-3 Clause B.6.4.3/4.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.8.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to Local Vehicle Class Definition attribute.

TP/ATTR-23/BE/BV/01		Verify that Local Vehicle Class ID is unique	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.3.4.1	
Initial Condition		Back End is initialized and can send Context Data. Local Vehicle Class Definition is present in ADU.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			IF each A23.localVehicleClasses[i].localVehicleClassId is unique (where i=1..number of localVehicleClasses) THEN TP passed ELSE TP failed ENDIF

TP/ATTR-23/BE/BV/02		Verify that Priority Level is different for overlapping Vehicle Classes	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.3.4.1	
Initial Condition		Back End is initialized and can send Context Data. Local Vehicle Class Definition is present in ADU.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			Group localVehicleClasses that overlap at least with one criterion within nominalElements or ordinalElements. Verify that priorityValue is present AND each localVehicleClass gets different priorityValue within each group
5			IF verify "OK" THEN THEN TP passed ELSE TP failed ENDIF

B.8.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.9 Time Class Definition test purposes

These Test Purposes apply to TimeClassDefinition as claimed in ISO/TS 17575-3 Clause B.6.4.3/5, and Priority Value as claimed in ISO/TS 17575-3 Clause B.6.4.12/1.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.9.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to Time Class Definition attribute.

TP/ATTR-24/BE/BV/01		Verify that Time Class ID is unique	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.3.5.1	
Initial Condition		Back End is initialized and can send Context Data. Time Class Definition is present in ADU.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			IF each A24.timeClasses[i].timeClassId is unique (where i=1..number of timeClasses) THEN TP passed ELSE TP failed ENDIF

TP/ATTR-24/BE/BV/02	Verify that Priority Level is different for overlapping Time Classes
TP Origin	Specific
Reference	ISO/TS 17575-3, Clause 8.3.3.5.1
Initial Condition	Back End is initialized and can send Context Data. Time Class Definition is present in ADU.

Stimulus and Expected Behaviour

	DUT	Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒
2		Verify structure of sent Iso17575-3Adu, taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3		IF verify NOT "OK" THEN TP failed
4		<p>Group timeClasses that overlap at least with one criterion within nominalElements or ordinalElements..</p> <p>Verify that priorityValue is present AND each timeClass gets different priorityValue within each group</p>
5		<p>IF verify "OK" THEN</p> <p> THEN TP passed</p> <p> ELSE TP failed</p> <p>ENDIF</p>

B.9.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.10 User Class Definition test purposes

These Test Purposes apply to UserClassDefinition as claimed in ISO/TS 17575-3 Clause B.6.4.3/6.

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.10.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to User Class Definition attribute.

TP/ATTR-25/BE/BV/01		Verify that User Class ID is unique	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.3.6.1	
Initial Condition		Back End is initialized and can send Context Data. User Class Definition is present in ADU.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			IF each A25.userClasses[i].userClassId is unique (where i=1..number of userClasses) THEN TP passed ELSE TP failed ENDIF

TP/ATTR-25/BE/BV/02	Verify that User Classes do not overlap
TP Origin	Specific
Reference	ISO/TS 17575-3, Clause 8.3.3.6.1
Initial Condition	Back End is initialized and can send Context Data. User Class Definition is present in ADU.

Stimulus and Expected Behaviour

	DUT	Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒
2		Verify structure of sent Iso17575-3Adu, taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3		IF verify NOT "OK" THEN TP failed
4		Group userClasses that have exactly the same values of following data elements: contractTypes and numberOfPassangers. Verify that each group consists of exactly one user class.
5		IF verify "OK" THEN THEN TP passed ELSE TP failed ENDIF

B.10.2 BI test purposes

No BI test purposes are applicable for this TP group.

B.11 Toll Context Layout test purposes

These Test Purposes apply to

- TollContextLayout as claimed in ISO/TS 17575-3 Clause B.6.4.3/7;
- Layout Description Type as claimed in ISO/TS 17575-3 B.6.4.17;

- Section Pricing Layout Description as claimed in ISO/TS 17575-3 B.6.4.18 (ATTR-31S);
- Area Pricing Layout Description as claimed in ISO/TS 17575-3 B.6.4.19 (ATTR-31A);
- Road Network object as claimed in ISO/TS 17575-3 B.6.4.23 (ATTR-31A);
- Cordon Pricing Layout Description as claimed in ISO/TS 17575-3 B.6.4.24 (ATTR-31A);
- Cordon Entry Location Description as claimed in ISO/TS 17575-3 B.6.4.25 (ATTR-31A);
- Cordon Exit Location Description as claimed in ISO/TS 17575-3 B.6.4.26 (ATTR-31A).

NOTE No test purposes for invalid behaviour are specified (BI), as ISO/TS 17575-3 does not specify any invalid behaviour of Back End.

B.11.1 BV test purposes

Test subgroup objective:

- to test the behaviour of the DUT in relation to Toll Context Layout attribute for section layout description (ATTR-31S), Section List for section layout description (ATTR-31L), area layout description (ATTR-31A), and cordon layout description (ATTR-31C).

TP/ATTR-31/BE/BV/01		Verify that Layout Description is compliant to Toll Scheme Type	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.4	
Initial Condition		Back End is initialized and can send Context Data.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } }</pre> <p>Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</p>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			<pre>IF A11.tollSchemeType = 0 THEN IF A31.layoutDescription is SECTIONLAYOUT THEN TP passed ELSE TP failed ENDIF ENDIF IF A11. tollSchemeType = 1 OR A11. tollSchemeType = 2 THEN IF A31.layoutDescription is AREALAYOUT THEN TP passed ELSE TP failed ENDIF ENDIF IF A11. tollSchemeType = 3 THEN IF A31.layoutDescription is CORDONLAYOUT THEN TP passed ELSE TP failed ENDIF ENDIF</pre>

B.11.1.1 Toll Context Layout test purposes for Section pricing scheme

TP/ATTR-31S/BE/BV/01	Verify that Charge Object ID is unique
TP Origin	Specific
Reference	ISO/TS 17575-3, Clause 8.3.4.1
Initial Condition	Back End is initialized and can send Context Data. Section pricing scheme is used for the Toll Context.

Stimulus and Expected Behaviour

	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			IF each A31.sectionPricingLayout [i].chargeObjectID is unique (where i=1..number of sectionLayouts) THEN TP passed ELSE TP failed ENDIF

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TP/ATTR-31S/BE/BV/02	Verify that Point ID is unique
TP Origin	Specific
Reference	ISO/TS 17575-3, Clause 8.3.4.1
Initial Condition	Back End is initialized and can send Context Data. Section pricing scheme is used for the Toll Context.

Stimulus and Expected Behaviour

	DUT	Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒
2		Verify structure of sent Iso17575-3Adu, taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3		IF verify NOT "OK" THEN TP failed
4		For each A31.sectionPricingLayout [i] (where i=1..number of sectionLayouts) IF (each networkPoints[j].pointId is unique within sectionLayout (where j=1..number of usedPoints)) OR (networkPoints=∅) THEN GOTO next sectionLayout ELSE TP failed ENDIF
5		IF TP not failed THEN TP passed

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TP/ATTR-31S/BE/BV/03		Verify that Link ID is unique	
TP Origin		Specific	
Reference		ISO/TS 17575-3, Clause 8.3.4.1.1	
Initial Condition		Back End is initialized and can send Context Data. Section pricing scheme is used for the Toll Context.	
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			IF (each A31.sectionPricingLayout[i].tollPath.linkID is unique (where i=1..number of sectionLayouts)) THEN TP passed ELSE TP failed ENDIF

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TP/ATTR-31S/BE/BV/06	Verify that Point identified by Point ID in Link has been defined in Network Points
TP Origin	Specific
Reference	ISO/TS 17575-3, Clause 8.3.4.1.1
Initial Condition	Back End is initialized and can send Context Data. Section pricing scheme is used for the Toll Context.

Stimulus and Expected Behaviour

	DUT	Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒
2		Verify structure of sent Iso17575-3Adu, taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3		IF verify NOT "OK" THEN TP failed
4		Verify that each point (i.e. startPoint, endPoint, listOfIntermediatePoints) defined in each Link of TollContextLayout which is identified by pointIdentifier is defined in A31.networkPoints
5		IF verify "OK" THEN TP passed ELSE TP failed ENDIF

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TP/ATTR-31S/BE/BV/08	Verify that Point identified by Point ID in Liability Rules has been defined in Network Points
TP Origin	Identical to TP/ATTR-31S/BE/BV/06
Reference	ISO/TS 17575-3, Clause 8.3.4.1.2
Initial Condition	See TP/ATTR-31S/BE/BV/06
Stimulus and Expected Behaviour	
See TP/ATTR-31S/BE/BV/06	
NOTE	Link type is replaced by LiabilityRules type

TP/ATTR-31S/BE/BV/10	Verify that Point identified by Point ID in Supporting Information has been defined in Network Points
TP Origin	Identical to TP/ATTR-31S/BE/BV/06
Reference	ISO/TS 17575-3, Clause 8.3.4.1.3
Initial Condition	See TP/ATTR-31S/BE/BV/06
Stimulus and Expected Behaviour	
See TP/ATTR-31S/BE/BV/06	
NOTE	Link type is replaced by SupportingPoints type

TP/ATTR-31S/BE/BV/11	Verify that Applicable Time Classes for Section Layout are present in Time Class Definition		
TP Origin	Specific		
Reference	ISO/TS 17575-3, Clause 8.3.4.1		
Initial Condition	Back End is initialized and can send Context Data. Section pricing scheme is used for the Toll Context.		
Stimulus and Expected Behaviour			
	DUT		Tester
1	<pre>Iso17575-3Adu = {aduHeader, aduBody = { (tollContextOverview = A11), (tariffTable = A21), (tariffClassDefinition = A22), (localVehicleClassDefinition = A23), (timeClassDefinition = A24), (userClassDefinition = A25), (tollContextLayout = A31), (chargeReportingEvents = A41), (chargeReportConfiguration = A42) } } Back End may send the attributes in several Iso17575-3Adus. TollCharger and ContextID data elements contained in ADU Header shall be the same in each ADU.</pre>	⇒	
2			Verify structure of sent Iso17575-3Adu , taking presence and absence of optional data elements into account and verify allowed values of present data elements according to Table C.1 — General Structure of Context Data
3			IF verify NOT "OK" THEN TP failed
4			<p>Verify that timeClassId(s) specified in applicableTimeClasses for each A31.sectionPricingLayout [i] (where i=1..number of sectionLayouts) are defined in A24.</p> <p>NOTE If applicableTimeClasses = \emptyset, result of the verification for particular sectionPricingLayout is OK.</p>
5			<p>IF verify "OK" OR applicableTimeClasses = \emptyset</p> <p>THEN TP passed</p> <p>ELSE TP failed</p> <p>ENDIF</p>