

DIN EN ISO 15118-4

ICS 43.120

Entwurf

Einsprüche bis 2018-09-20
Ersatz für
E DIN EN ISO 15118-4:2016-12

**Straßenfahrzeuge –
Kommunikationsschnittstelle zwischen Fahrzeug und Ladestation –
Teil 4: Konformitätsprüfungen für das Netzwerk- und
Anwendungsprotokoll (ISO 15118-4:2018);
Englische Fassung prEN ISO 15118-4:2018, nur auf CD-ROM**

Road vehicles –

Vehicle to grid communication interface –

Part 4: Network and application protocol conformance test (ISO 15118-4:2018);

English version prEN ISO 15118-4:2018, only on CD-ROM

Véhicules routiers –

Interface de communication entre véhicule et réseau électrique –

Partie 4: Essai de conformité du protocole d'application et du réseau (ISO 15118-4:2018);

Version anglaise prEN ISO 15118-4:2018, seulement en CD-ROM

Anwendungswarnvermerk

Dieser Norm-Entwurf mit Erscheinungsdatum 2018-07-20 wird der Öffentlichkeit zur Prüfung und
Stellungnahme vorgelegt.

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

Stellungnahmen werden erbeten

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

Die Empfänger dieses Norm-Entwurfs werden gebeten, mit ihren Kommentaren jegliche relevanten
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Gesamtumfang 1473 Seiten

DIN-Normenausschuss Automobiltechnik (NAAutomobil)

Nationales Vorwort

Dieses Dokument (prEN ISO 15118-4:2018) wurde vom Technischen Komitee ISO/TC 22 „Road vehicles“ ausgearbeitet, dessen Sekretariat von AFNOR (Frankreich) gehalten wird und wurde vom Technischen Komitee CEN/TC 301 „Straßenfahrzeuge“ übernommen, dessen Sekretariat von AFNOR (Frankreich) gehalten wird.

Das zuständige deutsche Normungsgremium ist der Arbeitsausschuss NA 052-00-31 AA „Datenkommunikation“ des DIN-Normenausschusses Automobiltechnik (NAAutomobil).

Das Präsidium des DIN hat mit seinem Beschluss 1/2004 festgelegt, dass von dem in den Regeln der europäischen Normungsarbeit von CEN/CENELEC verankerten Grundsatz, wonach Europäische Normen in den drei offiziellen Sprachen Deutsch, Englisch und Französisch veröffentlicht werden, in begründeten Ausnahmefällen abgewichen und auf die deutsche Sprachfassung verzichtet werden kann.

Die Genehmigung dafür hat die DIN-Geschäftsleitung entsprechend ihren in Anlage 1 zu dem DIN-Rundschreiben A 5/2004 festgelegten Kriterien für die vorliegende Norm auf Antrag des NA 052 NAAutomobil als Ergebnis einer Einzelfallentscheidung erteilt, zumal bereits dieser Norm zugrunde liegende Papiere überwiegend in englischer Sprache auch von den deutschen Marktteilnehmern angewendet werden.

Um den Energieverbrauch von Fahrzeugen zu senken, werden Fahrzeuge mit elektrischem Teil- oder Kompletantrieb entwickelt. Um die Batterien dieser Fahrzeuge aufladen zu können, wird eine spezielle Lade-Infrastruktur benötigt.

Während verschiedene Teilaspekte in der Normung von Elektrofahrzeugen und Infrastruktur bei ISO und IEC bereits behandelt wurden, beschäftigt sich diese Normenreihe mit dem Informationsaustausch zwischen Elektrofahrzeug und Lade-Infrastruktur. Kommunikation ist für das effektive Aufladen von Fahrzeugen sowie die Entwicklung effizienter und komfortabler Abrechnungssysteme unabdingbar.

Dieser Teil der Normenreihe beschreibt spezifische Prüfungen basierend auf den Kommunikationsanforderungen, die in ISO/IEC 15118-2 beschrieben sind. Die Norm dient Systemlieferanten als Grundlage, die Systemkonformität von Kommunikationssteuerungen entweder in Elektrofahrzeugen oder in Ladesäulen nachzuweisen.

Nationaler Anhang NA (informativ)

Begriffe

Die Benummerung der folgenden Begriffe und Abkürzungen ist identisch mit der Benummerung in der englischen Fassung.

Für die Anwendung dieses Dokuments gelten die Begriffe nach ISO 15118-1, ISO 15118-2, ISO 15118-3 und die folgenden Begriffe.

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

— IEC Electropedia: unter <http://www.electropedia.org/>

— ISO Online Browsing Platform: unter <http://www.iso.org/obp>

3.1

abstrakter Prüffall

(en: abstract test case)

vollständige und unabhängige Spezifikation von Aktionen die notwendig sind, einen speziellen Prüfzweck sicherzustellen

Anmerkung 1 zum Begriff: Diese Spezifikation ist auf einem gewissen Abstraktionsniveau für eine bestimmte abstrakte Prüfmethode festgelegt, in dem in einem stabilen Prüfzustand gestartet und in einem stabilen Prüfzustand geendet wird und dabei eine oder mehrere nachfolgende Verbindungen eingebunden sein können.

Anmerkung 2 zum Begriff: Die Spezifikation sollte in der Art und Weise vollständig sein, um ein Prüfurteil zu ermöglichen, welches eindeutig jedem potentiell überwachbaren Prüfergebnis zugeordnet werden kann (d.h. Reihe von Prüfereignissen).

Anmerkung 3 zum Begriff: Die Spezifikation sollte in der Art und Weise unabhängig sein, dass es möglich ist die abgeleiteten ausführbaren Prüffälle isoliert von anderen Prüffällen dieser Art auszuführen (d.h. die Spezifikation sollte immer die Möglichkeit des Starts und das Beenden im Zustand „Leerlauf“ beinhalten).

Anmerkung 4 zum Begriff: Vergleiche mit ITU-T X.290.

3.2

abstrakte Prüfreihe

ATS

(en: abstract test suite)

Prüfreihe, die sich aus abstrakten Prüffällen zusammensetzt

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.3

Black-Box-Prüfung

(en: black box testing)

Prüfmethode, welche das Verhalten eines SUT untersucht, ohne dabei die interne Implementierung und Struktur des SUT zu berücksichtigen und sich nur auf die offenen Prüfschnittstellen am SUT verlässt

3.4

Konformitätsanforderungen

(en: conformance requirements)

Konformität eines realen Systems, bestehend aus der Konformität zu jeder Anforderung und Konformität zur Reihe

Anmerkung 1 zum Begriff: Reihe von zusammenhängenden Anforderungen, die zusammen das Systemverhalten und dessen Kommunikation festlegen. Konformität eines realen Systems wird deshalb auf zwei Ebenen ausgedrückt: Konformität zu jeder individuellen Anforderung und Konformität zur Reihe. Vorhandene ISO 15118-4 Konformitätsprüfungen beinhalten Anforderungen und Anforderungen an die Übertragungssyntax soweit diese mittels Black-Box Prüfung bestätigt werden können.

Anmerkung 2 zum Begriff: Siehe auch *statische Konformitätsanforderungen* und *dynamische Konformitätsanforderungen*.

3.5

normgerechte Implementierung

(en: conforming implementation)

IUT, welche sowohl statische-, als auch dynamische Konformitätsanforderungen befriedigt, die mit den genannten Fähigkeiten in PIC(S) in Einklang sind

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.6

dynamische Konformitätsanforderungen

(en: dynamic conformance requirements)

Anforderungen die festlegt, welches überwachbare Verhalten anhand der relevanten Spezifikation(en) in Bezug auf die Kommunikation erlaubt ist

Anmerkung 1 zum Begriff: Die Anforderungen für diese Konformitätsspezifikation sind in ISO 15118-2 festgelegt.

Anmerkung 2 zum Begriff: Vergleiche mit ITU-T X.290.

3.7

ausführbarer Prüffall

(en: executable test case)

Umsetzung eines abstrakten Prüffalls

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.8

erwartetes Verhalten

(en: expected behavior)

genaue Antwort des SUT anhand der zugrunde liegenden Protokollspezifikation bezogen auf den Stimulus, der im Prüfverhalten festgelegt ist

3.9

Konformitätsaussage zur Implementierung

ICS

(en: implementation conformance statement)

Aussage, die vom Lieferant der Implementierung oder des Systems getroffen wurde, die Konformität nach einer gegebenen Spezifikation ausdrückt, welche Fähigkeiten implementiert wurden

Anmerkung 1 zum Begriff: Die gegebene Spezifikation für diese Konformitätsspezifikation ist die ISO 15118-2.

Anmerkung 2 zum Begriff: Vergleiche mit ITU-T X.290.

3.10

zusätzliche Prüfinformation zur Implementierung

IXIT

(en: implementation extra information for testing)

Aussage, die vom Lieferant oder einem Umsetzer einer Implementierung einer IUT getroffen wurde, die alle Informationen (zusätzlich zu den gegebenen ICS) bezogen auf die IUT und deren Testumgebung referenziert oder beinhaltet und dem Prüflabor ermöglicht, eine geeignete Prüfreihe gegen die IUT durchzuführen

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.11

Implementierung unter Prüfung

IUT

(en: implementation under test)

Implementierung mit einem oder mehreren OSI-Protokolle(s) in einer angrenzenden Nutzer/Anbieter-Beziehung, als der Teil eines realen offenen Systems, welches durch die Prüfung untersucht wird

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.12

Hauptprüfkomponente

MTC

(en: main test component)

einzelne Prüfkomponente in einer Komponentenprüfkonfiguration, verantwortlich für die Erstellung und Steuerung *paralleler Prüfkomponenten* sowie der Berechnung und Zuordnung des Prüfurteils

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.13

parallele Prüfkomponente

PTC

(en: parallel test component)

Prüfkomponente, die von der Hauptprüfkomponente erstellt wurde

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.14

Nachbedingung

(en: post-condition)

Prüfschritte, die für Festlegung des Weges vom Ende des *Prüfverhaltens* bis zum finalen stabilen Zustand des Prüffalls benötigt werden

Anmerkung 1 zum Begriff: Siehe auch *Prüfverhalten*.

3.15

Vorbedingung

(en: pre-condition)

Prüfschritte, die für Festlegung des Weges vom beginnenden stabilen Zustand des Prüffalls bis zum initialen Zustand, von dem das Prüfverhalten beginnt, benötigt werden

Anmerkung 1 zum Begriff: Siehe auch *Prüfverhalten*.

3.16

Erklärung zur Konformität der Protokollimplementierung

PICS

(en: protocol implementation conformance statement)

ICS, die für eine Implementierung oder System getroffen wurde, die Konformität nach einer gegebenen Protokollspezifikation ausdrückt

Anmerkung 1 zum Begriff: Die gegebene Spezifikation für diese Konformitätsspezifikation ist die ISO 15118-2.

Anmerkung 2 zum Begriff: Vergleiche mit ITU-T X.290.

3.17

Zusatzinformation für die Prüfung der Protokollimplementierung

PIXIT

(en: protocol implementation extra information for testing)

IXIT, die auf die Konformitätsprüfung nach einer gegebenen Protokollspezifikation bezogen ist

Anmerkung 1 zum Begriff: Die gegebene Spezifikation für diese Konformitätsspezifikation ist die ISO 15118-2.

Anmerkung 2 zum Begriff: Vergleiche mit ITU-T X.290.

3.18

Laufzeitumgebung

(en: runtime environment)

Umgebung, die Systemanforderungen an das Betriebssystem und die entsprechende Plattform beschreibt

BEISPIEL Prüfsystem.

3.19

semantisch ungültiges Prüfverhalten

SemITB

(en: semantically invalid test behavior)

Prüfschritte, bei denen das Prüfsystem Stimuli an das SUT sendet, welche nach der Protokollspezifikation semantisch ungültig sind

Anmerkung 1 zum Begriff: Diese Art von Prüfverhalten ist in dieser Konformitätsnorm festgelegt und beinhaltet ausdrücklich Anforderungen, die das entsprechende Fehlverhalten des SUT festlegen.

3.20

statische Konformitätsanforderungen

(en: static conformance requirements)

eine der Anforderungen die festlegt, welche Limitierungen der Kombinationen von implementierten Ressourcen in einem realen offenen System erlaubt sind und Konformität zu den relevanten Spezifikation(en) ausdrücken

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.21

zu prüfendes System

SUT

(en: system under test)

reales offenes System, das die IUT beinhaltet

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.22

syntaktisch ungültiges Prüfverhalten

SynITB

(en: syntactically invaild test behavior)

Prüfschritte, bei denen das Prüfsystem Stimuli an das SUT sendet, die nach der Protokollspezifikation syntaktisch ungültig sind

Anmerkung 1 zum Begriff: Diese Art von Prüfverhalten ist nicht in dieser Konformitätsnorm festgelegt, siehe Codec-Anforderungen.

3.23

Prüfverhalten

(en: test behavior)

Reihe von Prüfschritten (Prüfkörper), die notwendig sind um den Prüfzweck sicherzustellen und um Urteile den möglichen Ergebnissen zuzuordnen

3.24

Prüfausführung

(en: test execution)

Interpretation oder Ausführung einer abstrakten Prüfreihe

Anmerkung 1 zum Begriff: Konzeptionell kann die TE in drei interagierende Einheiten unterteilt werden: eine ausführbare Prüfreihe (ETS), einen Prüfrahmen (TFW) und ein optionales internes Kodierungs-/Dekodierungssystem (EDS).

Anmerkung 2 zum Begriff: Siehe auch ETSI ES 201 873-5 V4.6.1.

3.25

Prüfrahmen

TFW

(en: test framework)

Einheit, die alle Aktionen von Prüffällen oder Funktionen ausführt

Anmerkung 1 zum Begriff: Der Prüfrahmen interagiert mit den Einheiten Prüfsteuerung (TM), SUT-Adapter (SA) und Programmadapter (PA) über die Prüfsteuerungsschnittstelle (TCI) und die Prüflaufzeitschnittstelle (TRI). Zusätzlich steuert der Prüfrahmen die ausführbare Prüfreihe (ETS) und das Kodierungs-/Dekodierungssystem (EDS). Der Prüfrahmen initialisiert die Adapter sowie die ETS- und EDS-Einheiten. Diese Einheit führt alle notwendigen Aktionen aus, um einen Prüffall oder Funktion mit Parametern in der ETS-Einheit ordnungsgemäß auszuführen. Er befragt die Prüfsteuerungseinheit nach Modulparameterwerten, die für die ETS notwendig sind und sendet aufgezeichnete Informationen dorthin. Der Prüfrahmen sammelt und löst zugeordnete Urteile, die von der ETS-Einheit zurückgegeben werden.

Anmerkung 2 zum Begriff: Siehe auch ETSI ES 201 873-5 V4.6.1.

Anmerkung 3 zum Begriff: In diesem Dokument wird der Prüfrahmen TTCN-3 Laufzeitsystem (T3RTS) verwendet, um einen Prüfrahmen funktionell zu erläutern.

3.26

Prüfziel

(en: test purpose)

Prosabeschreibung einer gut definierten Zielsetzung einer Prüfung, welche sich auf eine einfache Konformitätsanforderung oder einen Satz von in Beziehung stehenden Konformitätsanforderungen konzentriert, die in der entsprechenden OSI-Spezifikation festgelegt sind

BEISPIEL Überprüfung, ob ein spezifischer Wert eines spezifischen Parameters unterstützt wird.

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

3.27

Prüfsystem

(en: test system)

reales System, welches den Prüfraumen, die abstrakte Prüfreihe, die Prüfausführung und die Adapter sowie die Codecs umfasst

Anmerkung 1 zum Begriff: Typischerweise beinhaltet es auch eine gemeinsame Laufzeitumgebung, basierend auf einem Betriebssystem.

3.28

Prüfssteuerungsschnittstelle

TCI

(en: test control interface)

vier Schnittstellen, welche die Interaktionen der TTCN-3-Abläufe mit der Prüfsteuerung, der Kodierung und Dekodierung, den Umgang mit den Prüfkomponenten und die Aufzeichnung in einem Prüfsystem definieren

Anmerkung 1 zum Begriff: Vergleiche mit ETSI ES 201 873-5 V4.6.1.

3.29

Prüflaufzeitschnittstelle

TRI

(en: test runtime interface)

zwei Schnittstellen, welche die TTCN-3-Prüfsystem Abläufe zwischen dem SUT und dem Programmadapter (PA) sowie dem Systemadapter (SA) in einem Prüfsystem definieren

Anmerkung 1 zum Begriff: Vergleiche mit ETSI ES 201 873-5 V4.6.1.

3.30

Prüfsystemschnittstelle

TSI

(en: test system interface)

Prüfkomponente, welche die Zuordnung der im (abstrakten) TTCN-3-Prüfsystem vorhandenen Ports zu denjenigen bereitstellt, welche vom offenen realen System angeboten werden

Anmerkung 1 zum Begriff: Vergleiche mit ETSI ES 201 873-5 V4.6.1.

3.31

gültiges Prüfverhalten

VTB

(en: valid test behavior)

Prüfschritte, bei denen das Prüfsystem Stimuli an das SUT sendet, die nach der Protokollspezifikation (syntaktisch und semantisch) gültig sind

Anmerkung 1 zum Begriff: Diese Art von Prüfverhalten ist in dieser Konformitätsspezifikation festgelegt.

Anmerkung 2 zum Begriff: Die Protokollanforderungen für diese Konformitätsspezifikation sind in ISO 15118-2 festgelegt.

3.32

Urteil

Prüfurteil

(en: verdict, test verdict)

Aussage von „bestanden“, „fehlgeschlagen“ oder „ergebnislos“, wie in einer abstrakten Prüfreihe festgelegt, hinsichtlich auf die Konformität einer IUT bezogen auf den Prüffall, der gerade ausgeführt wird

Anmerkung 1 zum Begriff: Vergleiche mit ITU-T X.290.

Contents	Page
Foreword.....	vii
Introduction.....	viii
1 Scope	1
2 Normative references	2
3 Terms and definitions.....	2
4 Symbols (and abbreviated terms)	7
5 Conventions	8
5.1 Requirement structure.....	8
5.2 Test system description	9
6 Test architecture reference model.....	9
6.1 General information	9
6.2 Platform adapter interface.....	10
6.3 SUT adapter interfaces	10
6.4 Codecs	11
7 Test suite conventions	11
7.1 General information	11
7.2 Test suite structure (TSS).....	11
7.3 Test profiles.....	13
7.4 Test suite identifiers.....	62
7.5 Test suite coverage	67
7.6 Test case description.....	184
7.7 Test case specification	185
8 Test case descriptions for 15118-2 V2GTP	198
8.1 General information	198
8.2 SECC test cases	198
8.3 EVCC test cases.....	202
9 Test case descriptions for 15118-2 SDP messages.....	208
9.1 General information	208
9.2 SECC test cases	208
9.3 EVCC test cases.....	211
10 Test case descriptions for 15118-2 V2G application layer messages.....	236
10.1 General information	236
10.2 SECC test cases	236
10.3 EVCC test cases.....	405
Annex A (normative) Configuration specifications	671
A.1 Timer configuration	671
A.2 PICS configuration.....	671

A.3	PIXIT configuration	673
Annex B (normative) Control part specification.....		675
B.1	SECC control parts.....	675
B.1.1	AC specific control parts.....	675
B.1.2	DC specific control parts.....	675
B.2	EVCC control parts	688
B.2.1	AC specific control parts	702
B.2.2	DC specific control parts.....	702
Annex C (normative) Test-case specifications for 15118-2 V2GTP		745
C.1	SECC test cases.....	745
C.2	EVCC test cases	745
Annex D (normative) Test-case specifications for 15118-2 SDP messages		752
D.1	SECC test cases.....	752
D.2	EVCC test cases	752
Annex E (normative) Test-case specifications for 15118-2 V2G application layer messages.....		773
E.1	SECC test cases.....	773
E.1.1	V2G protocol handshake	773
E.1.1.1	SECC test cases for SupportedAppProtocol.....	773
E.1.2	V2G messages	773
E.1.2.1	SECC test cases for SessionSetup	775
E.1.2.2	SECC test cases for ServiceDiscovery	775
E.1.2.3	SECC test cases for ServiceDetail	782
E.1.2.4	SECC test cases for PaymentServiceSelection	784
E.1.2.5	SECC test cases for PaymentDetails	788
E.1.2.6	SECC test cases for Authorization.....	794
E.1.2.7	SECC test cases for ChargeParameterDiscovery	794
E.1.2.8	SECC test cases for PowerDelivery	799
E.1.2.9	SECC test cases for CertificateUpdate.....	824
E.1.2.10	SECC test cases for CertificateInstallation	839
E.1.2.11	SECC test cases for SessionStop.....	839
E.1.2.12	SECC test cases for ChargingStatus	842
E.1.2.13	SECC test cases for MeteringReceipt	846
E.1.2.14	SECC test cases for CableCheck	848
E.1.2.15	SECC test cases for PreCharge	852
E.1.2.16	SECC test cases for CurrentDemand	855
E.1.2.17	SECC test cases for WeldingDetection	859
E.2	EVCC test cases	860
Annex F (normative) Function specifications for supporting test execution		1009

F.1	Configuration functions.....	1009
F.2	Pre-condition functions.....	1009
F.2.1	SECC functions.....	1011
F.2.2	EVCC functions.....	1027
F.3	Post-condition functions.....	1027
F.3.1	SECC functions.....	1038
F.3.2	EVCC functions.....	1038
F.4	Common behavior functions.....	1039
F.4.1	SECC functions.....	1040
F.4.2	EVCC functions.....	1042
F.5	Library functions.....	1044
Annex G (normative)	Function specifications for 15118-2 V2GTP.....	1051
G.1	SECC functions.....	1051
G.2	EVCC functions.....	1053
Annex H (normative)	Function specifications for 15118-2 SDP messages.....	1056
H.1	SECC functions.....	1056
H.2	EVCC functions.....	1057
Annex I (normative)	Function specifications for 15118-2 V2G application layer messages	1061
I.1	SECC functions.....	1061
I.1.1	V2G protocol handshake.....	1061
I.1.1.1	SECC functions for SupportedAppProtocol.....	1061
I.1.2	V2G messages.....	1063
I.1.2.1	SECC functions for SessionSetup.....	1063
I.1.2.2	SECC functions for ServiceDiscovery.....	1064
I.1.2.3	SECC functions for ServiceDetail.....	1072
I.1.2.4	SECC functions for PaymentServiceSelection.....	1080
I.1.2.5	SECC functions for PaymentDetails.....	1087
I.1.2.6	SECC functions for Authorization.....	1091
I.1.2.7	SECC functions for ChargeParameterDiscovery.....	1104
I.1.2.8	SECC functions for PowerDelivery.....	1140
I.1.2.9	SECC functions for CertificateUpdate.....	1154
I.1.2.10	SECC functions for CertificateInstallation.....	1167
I.1.2.11	SECC functions for SessionStop.....	1176
I.1.2.12	SECC functions for ChargingStatus.....	1176
I.1.2.13	SECC functions for MeteringReceipt.....	1185
I.1.2.14	SECC functions for CableCheck.....	1197
I.1.2.15	SECC functions for PreCharge.....	1203
I.1.2.16	SECC functions for CurrentDemand.....	1209

I.1.2.17	SECC functions for WeldingDetection.....	1213
I.2	EVCC functions.....	1217
Annex J (normative)	Template specifications for V2G TCP/TLS Port Control	1373
Annex K (normative)	Template specifications for 15118-2 V2GTP.....	1375
K.1	Common templates.....	1375
Annex L (normative)	Template specifications for 15118-2 SDP messages.....	1376
L.1	Common templates.....	1376
Annex M (normative)	Template specifications for 15118-2 V2G application layer messages	1377
M.1	Common templates.....	1377
M.1.1	V2G protocol handshake	1378
M.1.1.1	CMN templates for SupportedAppProtocol	1378
M.1.2	V2G messages	1378
M.1.2.1	CMN templates for SessionSetup	1378
M.1.2.2	CMN templates for ServiceDiscovery	1378
M.1.2.3	CMN templates for Authorization	1381
M.1.2.4	CMN templates for PowerDelivery	1381
M.1.2.5	CMN templates for SessionStop	1383
M.1.2.6	CMN templates for ChargingStatus	1384
M.1.2.7	CMN templates for CableCheck	1384
M.1.2.8	CMN templates for PreCharge	1385
M.1.2.9	CMN templates for CurrentDemand.....	1385
M.1.2.10	CMN templates for WeldingDetection	1387
M.2	SECC templates	1387
M.3	EVCC templates	1397
Annex N (normative)	Template specifications for Security.....	1430
N.1	Common templates.....	1430
Annex O (normative)	Data type definitions.....	1434
O.1	Data types for PICS.....	1434
O.2	Data types for PIXIT	1434
O.3	Data types for V2G TCP/TLS Port Control	1436
O.4	Data types for V2GTP	1437
O.5	Data types for SDP messages.....	1438
O.6	Data types for V2G messages	1438
O.7	Data types for Security	1457

Foreword

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

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Electrical and electronic equipment*, and Technical Committee IEC/TC 69 *Electric road vehicles and electric industrial trucks*. The draft was circulated for voting to the national bodies of both ISO and IEC.

A list of all parts in the ISO 15118 series can be found on the ISO website.

Introduction

The first three parts of ISO 15118 describe the use cases and the technical specification of the Vehicle-to-Grid Communication Interface which is intended for the optimized use of energy resources so that electric road vehicles can recharge in the most economic or most energy efficient way. It is furthermore required to develop efficient and convenient billing systems in order to cover the resulting micro-payments. The necessary communication channel may serve in the future to contribute to the stabilization of the electrical grid as well as to support additional information services required to operate electric vehicles efficiently and economically.

The complexity resulting from the network and application protocol requirements defined in the second part of the standard requires a considerable amount of testing in order to enable interoperability between independent implementations. This document therefore defines a conformance test suite for the network and application layer protocols in order to derive a common and agreed basis for conformance tests. The resulting test suite is a necessary prerequisite for downstream interoperability tests. Since interoperability furthermore involves the actual application logic of an implementation those tests are beyond the scope of this document. Hence this document focuses on the interface aspects and the corresponding requirements given in part two only.

Road vehicles — Vehicle to grid communication interface — Part 4: Network and application protocol conformance test

1 Scope

This document specifies conformance tests in the form of an Abstract Test Suite (ATS) for a System Under Test (SUT) implementing an EVCC or SECC according to ISO 15118-2. These conformance tests specify the testing of capabilities and behaviors of an SUT as well as checking what is observed against the conformance requirements specified in ISO 15118-2 and against what the supplier states the SUT implementation's capabilities are.

The capability tests within the ATS check that the observable capabilities of the SUT are in accordance with the static conformance requirements defined in ISO 15118-2. The behavior tests of the ATS examine an implementation as thoroughly as is practical over the full range of dynamic conformance requirements defined in ISO 15118-2 and within the capabilities of the SUT (see NOTE).

A test architecture is described in correspondence to the ATS. The conformance test cases in this document are described leveraging this test architecture and are specified in TTCN-3 Core Language for ISO/OSI Network Layer (Layer 3) and above. The conformance test cases for the Data Link Layer (Layer 2) and Physical Layer (Layer 1) are described in ISO 15118-5. Test cases with overlapping scopes are explicitly detailed.

This document does not include specific tests of other standards referenced within ISO 15118-2, e.g. IETF RFCs. Furthermore, the conformance tests specified in this document do not include the assessment of performance nor robustness or reliability of an implementation. They cannot provide judgments on the physical realization of abstract service primitives, how a system is implemented, how it provides any requested service, nor the environment of the protocol implementation. Furthermore, the test cases defined in this document only consider the communication protocol defined ISO 15118-2. Power flow between the EVSE and the EV is not considered.

NOTE 1 Practical limitations make it impossible to define an exhaustive test suite, and economic considerations can restrict testing even further. Hence, the purpose of this document is to increase the probability that different implementations are able to interwork. This is achieved by verifying them by means of a protocol test suite, thereby increasing the confidence that each implementation conforms to the protocol specification. However, the specified protocol test suite cannot guarantee conformance to the specification since it detects errors rather than their absence. Thus conformance to a test suite alone cannot guarantee interworking. What it does do is give confidence that an implementation has the required capabilities and that its behavior conforms consistently in representative instances of communication.

NOTE 2 This document has some interdependencies to the conformance tests defined in ISO 15118-5 which result from ISO/OSI cross layer dependencies in the underlying protocol specification (e.g. for sleep mode)

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61851-1:2017, *Electric vehicle conductive charging system — Part 1: General requirements*

ISO 15118-1:2013, *Road vehicles — Vehicle to grid communication interface — Part 1: General information and use-case definition*

ISO 15118-2:2014, *Road vehicles — Vehicle-to-Grid Communication Interface — Part 2: Network and application protocol requirements*

ISO 15118-3:2015, *Road vehicles — Vehicle-to-Grid Communication Interface — Part 3: Physical and data link layer requirements*

ETSI ES 201 873-5 V4.6.1, *TTCN-3: TTCN-3 Runtime Interface (June 2014)*

ETSI ES 201 873-6 V4.6.1, *TTCN-3: TTCN-3 Control Interface (June 2014)*

NOTE 1 Even though the technical specification ISO 15118-2:2014, which is the baseline for this conformance test document, explicitly references IEC 61851-1:2011, this document references IEC 61851-1:2017 because of applicability on the market.

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 15118-1, ISO 15118-2, ISO 15118-3 and the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

abstract test case

complete and independent specification of the actions required to achieve a specific test purpose

Note 1 to entry: This specification is defined at the level of abstraction of a particular Abstract Test Method, starting in a stable testing state and ending in a stable testing state and may involve one or more consecutive or concurrent connections.

Note 2 to entry: The specification should be complete in the sense that it is sufficient to enable a test verdict to be assigned unambiguously to each potentially observable test outcome (i.e. sequence of test events).

Note 3 to entry: The specification should be independent in the sense that it should be possible to execute the derived executable test case in isolation from other such test cases (i.e. the specification should always include the possibility of starting and finishing in the “idle” state).

Note 4 to entry: Compare with ITU-T X.290.

3.2

abstract test suite

ATS

test suite composed of abstract test cases

Note 1 to entry: Compare with ITU-T X.290.

3.3

black box testing

method of testing that examines the behavior of an SUT without considering the internal implementation and structure of the SUT, thus relying on the SUT's open interface for testing

3.4

conformance requirements

conformance of a real system consisting of conformance to each requirement and conformance to the set

Note 1 to entry: Set of interrelated requirements which together define the behavior of the system and its communication. Conformance of a real system will, therefore, be expressed at two levels, conformance to each individual requirement and conformance to the set. Applicable ISO 15118-4 conformance tests include requirements and transfer syntax requirements as far as they can be validated by black box testing.

Note 2 to entry: See also *static conformance requirements* and *dynamic conformance requirements*.

3.5

conforming implementation

IUT which satisfies both static and dynamic conformance requirements, consistent with the capabilities stated in the PICS(s)

Note 1 to entry: Compare with ITU-T X.290.

3.6

dynamic conformance requirements

one of the requirements which specifies what observable behavior is permitted by the relevant specification(s) in instances of communication

Note 1 to entry: The requirements for this conformance specification are defined in ISO 15118-2.

Note 2 to entry: Compare with ITU-T X.290.

3.7

executable test case

realization of an abstract test case

Note 1 to entry: Compare with ITU-T X.290.

3.8

expected behavior

exact response of the SUT according to the underlying protocol specification to the stimulus defined in the test behavior

3.9

implementation conformance statement

ICS

statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented

Note 1 to entry: The given specification for this conformance specification is ISO 15118-2.

Note 2 to entry: Compare with ITU-T X.290.

3.10

implementation extra information for testing

IXIT

statement made by a supplier or implementer of an IUT which contains or references all of the information (in addition to that given in the ICS) related to the IUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the IUT

Note 1 to entry: Compare with ITU-T X.290.

3.11 implementation under test IUT

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

Note 1 to entry: Compare with ITU-T X.290.

3.12 main test component MTC

single test component in a test component configuration responsible for creating and controlling *parallel test components* and computing and assigning the test verdict

Note 1 to entry: Compare with ITU-T X.290.

3.13 parallel test component PTC

test component created by the main test component

Note 1 to entry: Compare with ITU-T X.292.

3.14 post-condition

test steps needed to define the path from the end of the *test behavior* up to the finishing stable state for the test case

Note 1 to entry: See also *Test behavior*.

3.15 pre-condition

test steps needed to define the path from the starting stable state of the test case up to the initial state from which the *test behavior* will start

Note 1 to entry: See also *Test behavior*.

3.16 protocol implementation conformance statements PICS

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

Note 1 to entry: The given protocol specification for this conformance specification is ISO 15118-2.

Note 2 to entry: Compare with ITU-T X.290.

3.17 protocol implementation extra information for testing PIXIT

IXIT related to testing for conformance to a given protocol specification

Note 1 to entry: The given protocol specification for this conformance specification is ISO 15118-2.

Note 2 to entry: Compare with ITU-T X.290.

3.18

runtime environment

environment that describes the operating system and corresponding platform requirements of a system

EXAMPLE Test system.

3.19

semantically invalid test behavior

SemITB

test steps where the test system sends stimuli to the SUT that are semantically invalid according to the protocol requirements

Note 1 to entry: This type of test behavior is defined in this conformance standard and explicitly includes requirements which define the appropriate error handling of the SUT.

3.20

static conformance requirements

one of the requirements that specify the limitations on the combinations of implemented capabilities permitted in a real open system which is claimed to conform to the relevant specification(s)

Note 1 to entry: Compare with ITU-T X.290.

3.21

system under test

SUT

real open system in which the IUT resides

Note 1 to entry: Compare with ITU-T X.290.

3.22

syntactically invalid test behavior

SynITB

test steps where the test system sends stimuli to the SUT that are syntactically invalid according to the protocol requirements

Note 1 to entry: This type of test behavior is not defined in this conformance standard, see codec requirements.

3.23

test behavior

set of test steps (test body) which are essential in order to achieve the test purpose and assign verdicts to the possible outcomes

3.24

test execution

interpretation or execution of an abstract test suite

Note 1 to entry: Conceptually, the TE can be decomposed into three interacting entities: an Executable Test Suite (ETS), a Test Framework (TFW) and an optional internal Encoding/Decoding System (EDS) entity.

Note 2 to entry: See also ETSI ES 201 873-5 V4.6.1.

3.25

test framework

TFW

entity to perform all actions of test cases or functions

Note 1 to entry: The Test Framework interacts with the Test Management (TM), SUT Adaptor (SA) and Platform Adaptor (PA) entities via Test Control Interface (TCI) and Test Runtime Interface (TRI) and additionally manages the Executable Test Suite (ETS) and Encoding/Decoding System (EDS) entities. It initializes adaptors as well as ETS and EDS entities. This entity performs all the actions necessary to properly start the execution of a test case or function with parameters in the ETS entity. It queries the TM entity for module parameter values required by the ETS and sends logging information to it. It also collects and resolves associated verdicts returned by the ETS entity.

Note 2 to entry: See also ETSI ES 201 873-5 V4.6.1.

Note 3 to entry: In this document, the Test Framework TTCN-3 Runtime System (T3RTS) is used to explain a Test Framework functionality.

3.26

test purpose

prose description of a well-defined objective of testing, focusing on a single conformance requirement or a set of related conformance requirements as specified in the appropriate OSI specification

EXAMPLE Verifying the support of a specific value of a specific parameter

Note 1 to entry: Compare with ITU-T X.290.

3.27

test system

real system combining the test framework, abstract test suite, test execution and adapters as well as codecs

Note 1 to entry: Typically also containing a common runtime environment based on an operating system.

3.28

test control interface

TCI

four interfaces that define the interaction of the TTCN-3 Executable with the test management, the coding and decoding, the test component handling and the logging in a test system

Note 1 to entry: Compare with ETSI ES 201 873-6 V4.6.1.

3.29

test runtime interface

TRI

two interfaces that define the interaction of the TTCN-3 Executable between the SUT and the Platform Adaptor (PA) and the System Adaptor (SA) in a test system

Note 1 to entry: Compare with ETSI ES 201 873-5 V4.6.1.

3.30

test system interface

TSI

test component that provides a mapping of the ports available in the (abstract) TTCN-3 test system to those offered by a real test system

Note 1 to entry: Compare with ETSI ES 201 873-6 V4.6.1.

3.31

valid test behavior

VTB

test steps where the test system sends stimuli to the SUT that are valid (syntactically and semantically) according to the protocol requirements

Note 1 to entry: This type of test behavior is defined in this conformance document.

Note 2 to entry: The protocol requirements for this conformance specification are defined in ISO 15118-2.

3.32

verdict

test verdict

statement of “pass”, “fail” or “inconclusive”, as specified in an abstract test case, concerning conformance of an IUT with respect to that test case when it is executed

Note 1 to entry: Compare with ITU-T X.290.

4 Symbols and abbreviated terms

For the purpose of this document, the following abbreviations apply.

ALM	Application Layer Message
ATS	Abstract Test Suite
BEV	Battery Electric Vehicle
CA	Certificate Authority
CPL	Control Pilot Line
CRL	Certificate Revocation List
DH	Diffie Hellman
DER	Distinguished Encoding Rules
ECDSA	Elliptic Curve Digital Signature Algorithm
EDS	Encoding/Decoding System
EIM	External Identification Means
EMAID	E-Mobility Account Identifier
ETS	Executable Test Suite
EV	Electric Vehicle
EVCC	Electric Vehicle Communication Controller
EVSE	Electric Vehicle Supply Equipment
EXI	Efficient XML Interchange
HAL	Hardware Abstraction Layer
ICS	Implementation Conformance Statement
ID(s)	Identifier(s)
ITB	Invalid Test Behavior
IUT	Implementation under Test
IXIT	Implementation eXtra Information for Testing
OCSP	Online Certificate Status Protocol
OEM	Original Equipment Manufacturer

MTC	Main Test Component
NACK	Negative Acknowledgement
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PKI	Public Key Infrastructure
PLC	Power Line Communication
PnC	Plug and Charge
PTC	Parallel Test Component
PWM	Pulse-Width Modulation
SA	Secondary Actor
SDP	SECC Discovery Protocol
SECC	Supply Equipment Communication Controller
SLAC	Signal Level Attenuation Characterization
SUT	System Under Test
TC	Test Case
TCI	Test Control Interface
TCP	Transmission Control Protocol
TE	Test Execution
TFW	Test Framework
TP	Test Purpose
TRI	Test Runtime Interface
TSI	Test System Interface
TSS	Test Suite Structure
TTCN-3	Testing and Test Control Notation version 3
V2G	Vehicle-to-Grid
V2G CI	V2G Communication Interface
V2GTP	V2G Transfer Protocol
VTB	Valid Test Behavior
UDP	User Datagram Protocol
XML	Extensible Markup Language

5 Conventions

5.1 Requirement structure

This document uses unique number identifiers for each individual requirement. This requirement structure allows for easier requirement tracking and management. The following format is used throughout this document:

"[V2G"Y"- "XXX"]" requirement text

Where:

- "V2G" represents the ISO 15118 set of standards;
- "Y" represents the document part of the ISO 15118 document set, for this document Y = 4;
- "XXX" represents the individual requirement number; and
- "requirement text" includes the actual text of the requirement.

5.2 Test system description

TTCN-3 is used in this document to define/specify the test system and the test cases inside the test suite. However, using TTCN-3 is not mandatory for the implementation of conformance tests for ISO 15118-2.

[V2G4-001] The implementers of conformance tests shall verify that all test objectives implemented in their environment are identical to those described in this document.

6 Test architecture reference model

6.1 General information

Figure 1 provides an overview on the test architecture for this document. The following subclauses define the interface requirements marked black in Figure 1 for platform and SUT adapters (see 6.2 and 6.3) as well as the codecs (see 6.4). The Test Suite is defined in detail in the remainder of this document.

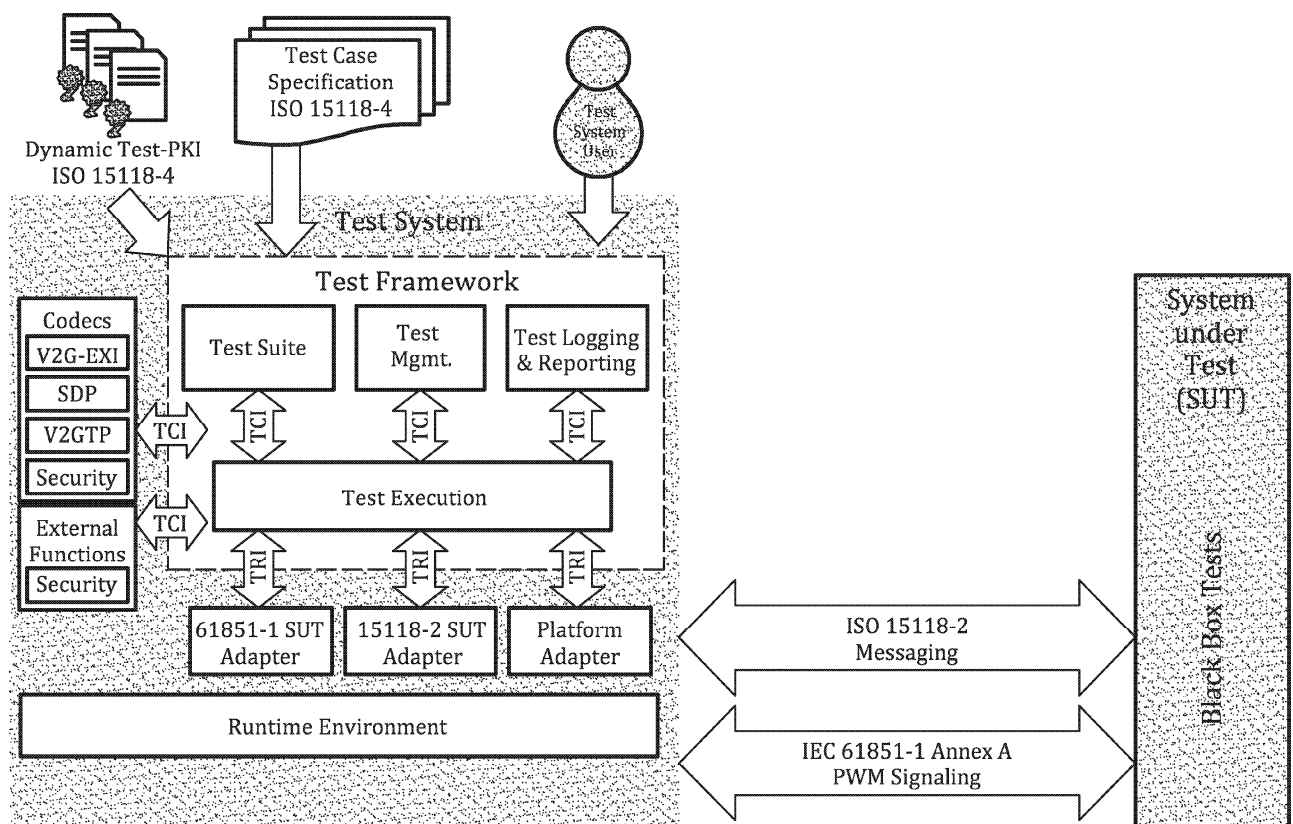


Figure 1 — Test architecture reference model for testing of ISO 15118-2

For the scope of this document only the "ISO 15118-2 – Messaging" interface to the SUT and its dependencies to the corresponding "IEC 61851-1:2017, Annex A – PWM Signaling" interface are relevant. This document therefore limits its scope to the respective SUT adapters and codecs.

6.2 Platform adapter interface

The platform adapter within the test system is responsible for timers and external functions. Besides means for timers, which are typically provided as part of the test framework, no external functions are defined for ISO 15118-2 conformance testing.

[V2G4-002] The platform adapter of the test system shall implement the TriPlatformPA and the TriPlatformTE interfaces as defined in ETSI ES 201 873-5 V4.6.1, 6.5.3.

6.3 SUT adapter interfaces

The SUT adapter within the test system adapts the TTCN-3 communication operations to the SUT based on an abstract test system interface and implements the real test system interface. It is responsible to propagate message requests and procedure based calls from the Test Execution (see Figure 1) to the SUT, and to notify the Test Execution of any received test events by appending them to its port queues.

[V2G4-003] The SUT adapters of the test system shall implement the TriCommunicationSA and the TriCommunicationTE interfaces as defined in ETSI ES 201 873-5 V4.6.1, 6.5.2.

NOTE 1 The actual implementation of these adapters is out of scope of this document.

[V2G4-004] The IEC 61851-1 SUT adapter shall adapt the HAL 61851-1 functions to a PWM Signal defined in 7.7.7.

NOTE 2 The IEC 61851-1 SUT adapter could need additional hardware for adapting the message-based HAL 61851-1 communication to PWM Signaling according to IEC 61851-1:2017, Annex A.

[V2G4-005] The ISO 15118-2 SUT adapter shall adapt and send/receive the encoded SDP requests/responses through UDP messages to/from the SUT as defined in ISO 15118-2:2014, 7.7.2 and 7.10.1.

[V2G4-006] The ISO 15118-2 SUT adapter shall adapt and send/receive the encoded V2G messages through a TCP or TLS connection to/from the SUT as defined in ISO 15118-2:2014, 7.7.1 and 7.7.3.

[V2G4-007] The ISO 15118-2 SUT adapter shall adapt the internal port control messages for TCP and TLS connection management as defined in Annex O, O.3

NOTE 3 The TCP/TLS connection management includes the following functionality:

- control for TCP/TLS port disconnection handling;
- control for receiving information/status on a given TCP/TLS connection;
- notification of TCP/TLS connection status events; and
- notification of TLS Handshake status events.

[V2G4-008] The ISO 15118-2 SUT adapter shall provide a port map operation (refer to 7.3.2) with additional parameters for TCP and TLS connection configuration as defined in Annex O, O.3.

NOTE 4 The TCP/TLS connection configuration includes the following functionality:

- configuration for IP address and port;
- configuration for usage of security (TCP/TLS);
- configuration for cipherSuite;

- configuration for TLS protocol version; and
- configuration for TLS certificate.

NOTE 5 The ISO 15118-3 adapter is defined in ISO 15118-5. It could need additional hardware to adapt between different Layer 2 communication technologies (e.g. Ethernet to HomePlug Green PHY).

6.4 Codecs

A codec is responsible for the external encoding and decoding of TTCN-3 values into bit strings suitable to be sent to the SUT. The Test Execution (TE) determines which codec shall be used and passes the TTCN-3 data to the appropriate encoder to obtain the encoded data. Received data is decoded in this entity by using the appropriate decoder, which translates the received data into TTCN-3 values cf. ETSI ES 201 873-6 V4.5.1, that can be matched against expected behaviors in the form of templates.

[V2G4-009] All codecs in this document shall implement the TCI-CD interface as defined in ETSI ES 201 873-6 V4.6.1, 7.3.2.

NOTE 1 For ISO 15118-2 conformance testing three codecs (V2G-EXI, SDP, V2GTP, see Figure 1) are used to encode or decode messages consumable by the tester into bit strings / signals consumable by the SUT.

NOTE 2 The exact implementation of these codecs is out of scope of this document.

[V2G4-010] The V2G-EXI codec shall encode TTCN-3 values as defined in Annex O, 0.6 into corresponding EXI streams as defined in ISO 15118-2:2014, 7.9.1.

[V2G4-011] The V2G-EXI Security codec shall encode TTCN-3 values for X.509 Certificates as defined in Annex O, 0.6 into a corresponding Base64 representation suitable for EXI streams according to ISO 15118-2:2014, 7.9.1.

[V2G4-012] The V2G-EXI codec shall decode EXI streams as defined in ISO 15118-2:2014, 7.9.1 into TTCN-3 values as defined in Annex O, 0.6.

[V2G4-013] The V2G-EXI Security codec shall decode Base64 representation from EXI streams according to ISO 15118-2:2014, 7.9.1 into TTCN-3 values for X.509 Certificates as defined in Annex O, 0.6.

[V2G4-014] The SDP codec shall encode TTCN-3 values as defined in Annex O, 0.5 into corresponding SDP requests/responses as defined in ISO 15118-2:2014, 7.10.1.3, 7.10.1.4 and 7.10.1.5.

[V2G4-015] The SDP codec shall decode SDP requests/responses as defined in ISO 15118-2:2014, 7.10.1.3, 7.10.1.4 and 7.10.1.5 into TTCN-3 values as defined in Annex O, 0.4.

[V2G4-016] The V2GTP codec shall encode TTCN-3 values as defined in Annex O, 0.4 into corresponding V2GTP envelopes as defined in ISO 15118-2:2014, 7.8.3.1.

[V2G4-017] The V2GTP codec shall decode V2GTP envelopes as defined in ISO 15118-2:2014, 7.8.3.1 into TTCN-3 values as defined in Annex O, 0.4.

7 Test suite conventions

7.1 General information

This clause defines all conventions that are relevant for conformance tests of SUTs implementing ISO 15118-2.

7.2 Test suite structure (TSS)

A test suite is a complete set of test cases, possibly combined into groups or modules (e.g. for use cases or domains like AC, DC charging), that are necessary to perform conformance testing for a given SUT.

In each test case, the SUT is stimulated with specific inputs and the reactions are observed and evaluated. Depending on the test purpose different pre-conditions and post-conditions shall be considered for the formulation of the test behavior. The pre-conditions, post-conditions as well as test behaviors are encapsulated into individual functions and stored within separate modules. Thus, a complete test case is composed by the actual test behavior enveloped by pre- and post-conditions (see 7.7.5 for details). The corresponding grouping of functions can therefore be assigned to the lowest abstract hierarchical level (see Figure 2). The test cases are defined on the second level.

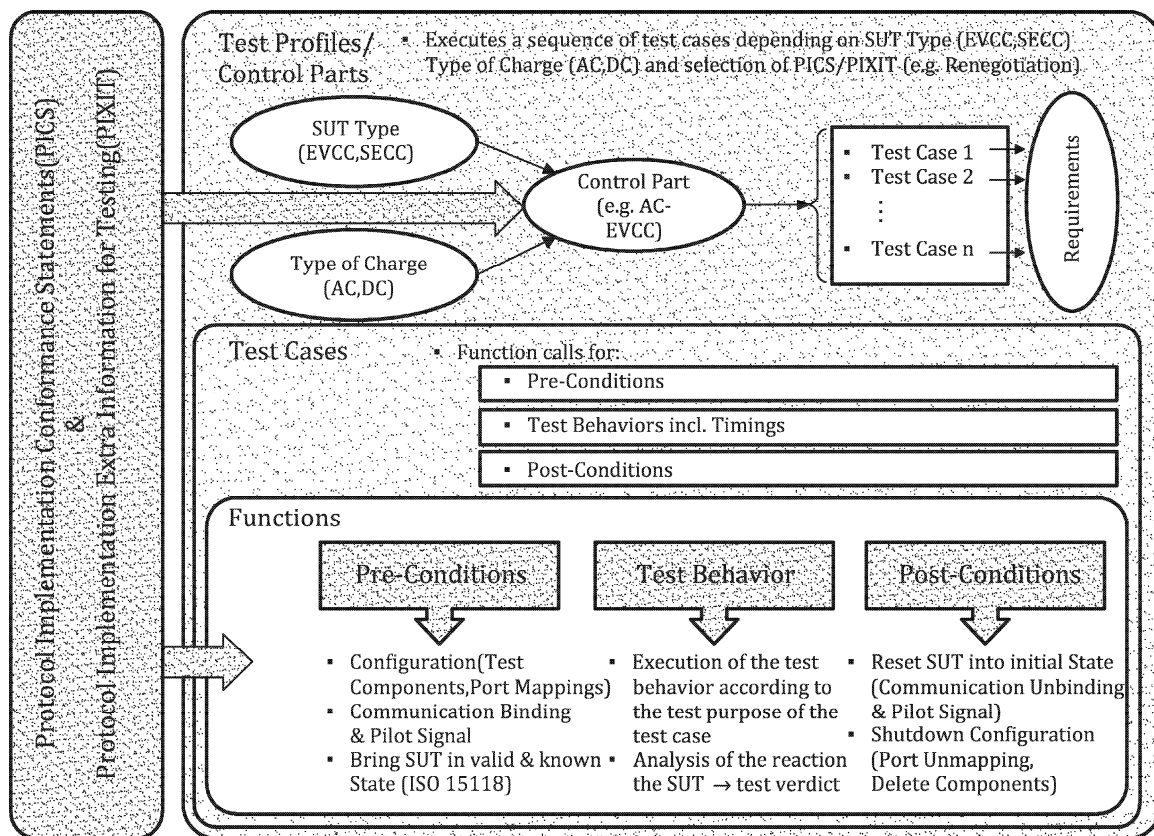


Figure 2 — General overview of the Test Suite Structure (TSS)

The test profile is a collection of self-contained test cases as well as PICS (see 7.3.3) and PIXIT (see 7.3.4) in order to represent a given use case. The selection is based on the use cases of the ISO 15118 standard and its corresponding requirements.

Hence the Test Suite Structure (TSS) is segmented into subgroups defined according to ISO 15118 use cases for conformance testing. Table 1 shows these subgroups, which are used for the organization of the test case specifications as well as for the test suite identifiers (see 7.4 for details).

Table 1 — Identifiers within the Test Suite Structure (TSS)

Identifiers	Values	Description
<sut>		System under Test
	EVCC	Electric Vehicle Communication Controller
	SECC	Supply Equipment Communication Controller
<dom>		Domain
	AC	AC specific behaviors
	DC	DC specific behaviors
	IN	Inductive specific behaviors

	CMN	Common behaviors
<ctx>	{fullname}	Context (e.g. name of message pattern signal name according to standard)

NOTE 1 The domain for inductive charging is not relevant for this document but was introduced for future purposes.

Table 2 describes the Annexes derived for this document.

Table 2 — Test suite structure - Annexes description

Annexes	Description
Configuration Annex A	The configuration annex contains constant definitions timers, PICS and PIXIT definitions. The configuration described in Annex A shall be applied.
Control Part Annex B	The control part annex describes the execution order of modeled test cases (test groups). The EVCC control part subclauses contain the test groups if the SUT is an EVCC. The SECC control part subclauses contain the test groups if the SUT is an SECC. The control part in Annex B shall be followed.
Test Cases Annex C - E	The test case annexes contain the TTCN-3 test case files. The EVCC subclauses contain the test cases if the SUT is an EVCC. The SECC subclauses contain the test cases if the SUT is an SECC. The control part in Annexes C to E shall be considered.
Functions Annex F - I	The function annexes contain methods for supporting the test execution as well as the actual pre-, post-conditions and test behaviors of the ISO 15118 conformance tests. The EVCC subclauses contain the test behavior if the SUT is an EVCC. The SECC subclauses contain the test behavior if the SUT is an SECC. The Pre-condition subclause contains functions that are used for defining the pre-conditions of a test behavior. The Post-condition subclause contains functions that are used to establish the post-conditions of a test case. The Library Functions subclause contains utility functions used across the test suite for various purposes. The functions in Annexes F to I shall be considered.
Templates Annex J - N	The Templates subclause contains the TTCN-3 template files for matching a SUT's reaction on a stimulus against its expected behavior. The templates in Annexes J to N shall be considered.
Data Structures Annex O	The Data Structures subclause contains data structures that are needed additionally to the ISO 15118 data structures e.g. used for X.509 Certificates. The data structures in Annex O shall be considered.

7.3 Test profiles

This subclause defines test profiles for conformance with ISO 15118-2. A test profile consists of a test configuration as well as a selection and assignment of PICS/PIXIT. Depending on the test configuration a set of test components and ports are defined. The test profile furthermore includes a test group defining the set of relevant test cases and the sequence in which they are executed in order to perform a conformance test for a given use case.

7.3.1 Test configurations

The test configuration reflects various ISO 15118 scenarios. Entities for the SUT, Tester and PTCs are:

- Electric Vehicle Communication Controller (EVCC);
- Supply Equipment Communication Controller (SECC); and
- PWM Signaling (IEC 61851).

Table 3 shows combinations of such entities defining valid test configurations for this document (CF_Part_ID).

Table 3 — ISO 15118-4 test configurations

CF_Part_ID	SUT	Tester	PTCs
CF_04_001	SECC	EVCC	PTC1=61851
CF_04_002	EVCC	SECC	PTC1=61851

7.3.2 Components and ports

In correspondence to the identified set of relevant test configurations this subclause defines test components which reflect the main entities needed for stimulation of the SUT with respect to ISO 15118. Ports are used to connect these components with each other and the SUT. The components are predefined in the configuration module and are summarized in Table 4. Port types define which kind of messages can be sent or received by this port. The corresponding port type definitions are summarized in Table 5.

Table 4 — Component definitions

Components	Description
SECC_Tester (MTC)	This component type is the main type for the tests of an SECC. A V2G_TCP_TLS_ALM_SECC_Port , V2G_UDP_SDP_Port, HAL_61851_Port and a HAL_61851_Internal_Port (see Table 5) are assigned to this component type.
EVCC_Tester (MTC)	This component type is the main type for the tests of an EVCC. A V2G_TCP_TLS_ALM_EVCC_Port , V2G_UDP_SDP_Port, HAL_61851_Port and a HAL_61851_Internal_Port (see Table 5) are assigned to this component type.
HAL_61851_Listener (PTC)	The HAL_61851_Listener is responsible for watching the correct IEC 61851 behavior and is used in the form of a parallel test component (PTC). This component uses the HAL_61851_Port (see Table 5) to communicate with an IEC 61851-1 SUT Adapter and the HAL_61851_Internal_Port to communicate with the MTC.

Table 5 — Port type definitions

Port Type	Description
V2G_TCP_TLS_ALM_SECC_Port	This port is used to send and receive V2G- Application Layer Messages (ALM) or supportedAppProtocol messages via TCP/TLS defined in ISO 15118-2 to/from an SECC. This port is also used to send and receive internal TCP/TLS port control messages defined in Annex O.
V2G_TCP_TLS_ALM_EVCC_Port	This port is used to send and receive V2G- Application Layer Messages (ALM) or supportedAppProtocol messages via TCP/TLS defined in ISO 15118-2 to/from an EVCC. This port is also used to send and receive internal TCP/TLS port control messages defined in Annex O.
V2G_UDP_SDP_Port	This port is used to send and receive SDP messages via UDP defined in ISO 15118-2 to/from an EVCC or SECC.
HAL_61851_Port	This port is used to send or receive messages to an IEC 61851 communication unit. The communication unit will interpret these messages and will set the corresponding signaling to the SUT (SECC/EVCC). The specification of the IEC 61851 communication unit is out of scope of this document.
HAL_61851_Internal_Port	This port is used to synchronize the status of the IEC 61851-1 PWM signal between the MTC (SECC_Tester or EVCC_Tester) and PTC (HAL_61851_Listener_Port). It enables the MTC and PTC to send and receive

	HAL 61851-1 messages.
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These components and ports compose relevant test configurations for this document. Whether the type EVCC_Tester or SECC_Tester shall be used as MTC depends on the type of the SUT. If the SUT is an EVCC, the MTC shall use the type EVCC_Tester. If the SUT is an SECC, the MTC shall use the type SECC_Tester. The HAL_61851_Listener combines all necessary listener functionality into one component, independent on whether the MTC represents an SECC_Tester or an EVCC_Tester. The MTC always contains a TTCN-3 test configuration and delimits the lifeline during test execution. Next to using ports for communication purposes, local timers, variables or constants may be assigned to components to store dynamic information during test case execution.

In addition to the MTC and PTC and their corresponding port type definitions, a test configuration also consists of respective Test System Interfaces (TSI). An abstract Test System Interface (TSI) is specified as a collection of ports. A TSI has no local timers, constants or variables. Only ports are assigned to it. During the test case execution test components ports can be mapped dynamically to the TSI ports to establish communication channel to the real test system interface. In the test configuration the TSI uses the type System_EVCC or System_SECC depending on the type of the SUT. If the SUT is an EVCC, the TSI uses the type System_EVCC. If the SUT is an SECC, the TSI uses the type System_SECC.

The test configuration is illustrated in Figure 3. The type of the V2G components and ports (EVCC or SECC) depends on the SUT type.

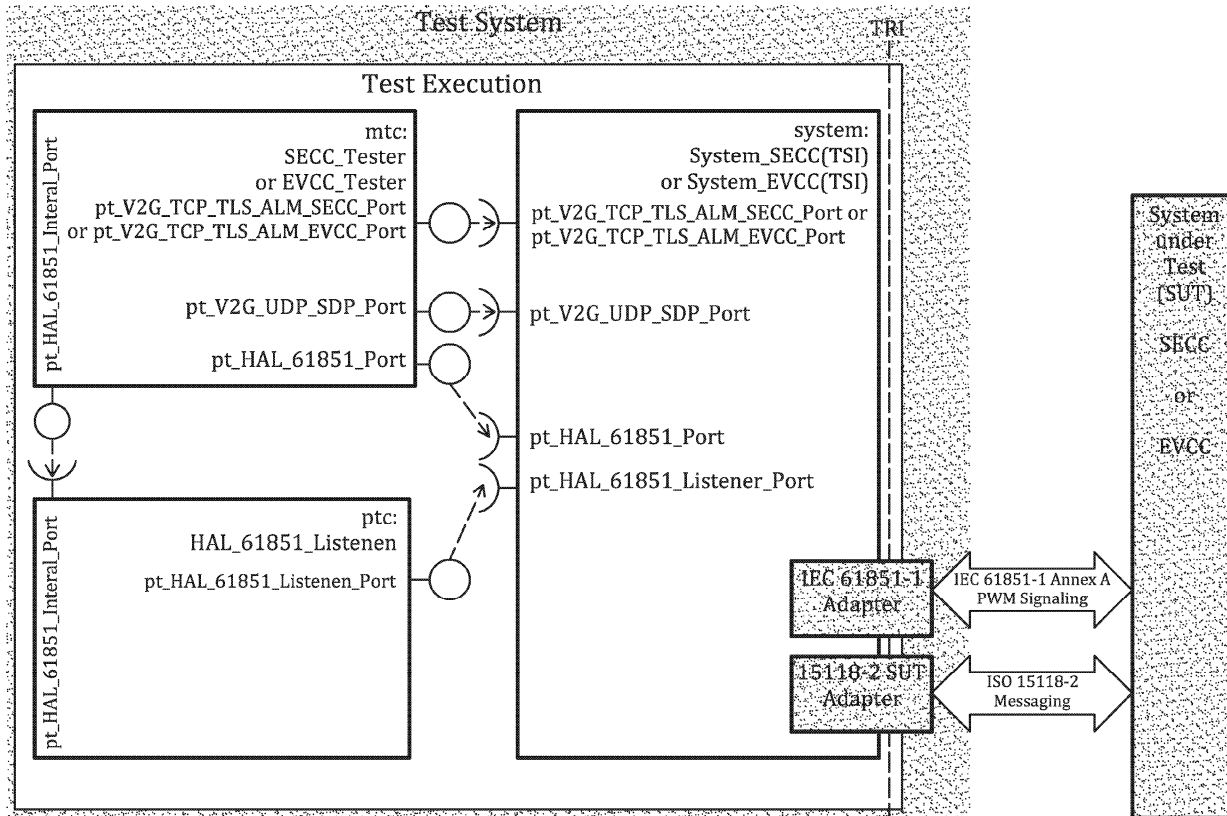


Figure 3 — ISO 15118-4 test configuration

As shown in Figure 3, the port mappings are defined statically as follows.

- The port `pt_V2G_TCP_TLS_ALM_EVCC_Port` of the TSI is always mapped to port `pt_V2G_TCP_TLS_ALM_EVCC_Port` of the MTC.
- The port `pt_V2G_TCP_TLS_ALM_SECC_Port` of the TSI is always mapped to port `pt_V2G_TCP_TLS_ALM_SECC_Port` of the MTC.
- The port `pt_V2G_UDP_SDP_Port` of the TSI is always mapped to port `pt_V2G_UDP_SDP_Port` of the MTC.
- The port `pt_HAL_61851_Port` of the TSI is always mapped to port `pt_HAL_61851_Port` of the MTC.
- The port `pt_HAL_61851_Listener_Port` of the TSI is always mapped to port `pt_HAL_61851_Listener_Port` of the `v_HAL_61851_Listenen`. The `pt_HAL_61851_Listener_Port` is from the same type `HAL_61851_Port` as the `pt_HAL_61851_Port`.
- The internal port `pt_HAL_61851_Internal_Port` is not mapped to the TSI. This port is connected between the MTC and PTC.

7.3.3 Protocol Implementation Conformance Statement (PICS) Definition

To evaluate the conformance of a particular implementation, it is necessary to have a statement of the capabilities and options which have been implemented, and any features which have been omitted, so that the implementation can be tested for conformance against relevant requirements, and against those requirements only. Such a statement is called a Protocol Implementation Conformance Statement (PICS) cf. [ITU-T X.290].

All PICS defined in the ATS are summarized in Table 6 - Table 8.

**Table 6 — PICS for test system configurations CF_04_001 and CF_04_002
(SUT either SECC or EVCC)**

PICS	Description
PICS_CMN_CMN_CombinedTesting	Indication for enabling combined testing including SLAC association & V2G messaging
PICS_CMN_CMN_ChargingMode	Indication for testing either AC or DC charging mode
PICS_CMN_CMN_IdentificationMode	Indication for testing either EIM or PnC identification mode
PICS_CMN_CMN_PlugType	Indication for testing either type1 or type2 plug type
PICS_CMN_AC_CableCapability	Indication for used AC cable type Choice: i) capability13A, ii) capability20A, iii) capability32A, iv) capability63A, v) capability70A
PICS_CMN_CMN_WakeUp	Indication for the sleep time within a paused session
PICS_CMN_CMN_V2gtpSdp	Indication for explicit testing V2GTP by using SDP payload
PICS_CMN_CMN_V2gtpV2g	Indication for explicit testing V2GTP by using V2G payload
PICS_CMN_CMN_Renegotiation	Indication for explicit testing of Renegotiation
PICS_CMN_CMN_Renegotiation LoopIndication	Indicates the iteration of the ChargingStatus (AC) or CurrentDemand (DC) loop, when ReNegotiation shall be triggered (shall be smaller or equal to PICS_CMN_CMN_LoopCounter).
PICS_CMN_CMN_LoopCounter	Indicates the number of iterations of the ChargingStatus (AC) or CurrentDemand (DC) loop
PICS_CMN_CMN_InvalidV2gtp DataFields	Indication for enabling Test Group: Invalid V2GTP data fields
PICS_CMN_CMN_SDPTimeouts AndInvalidData	Indication for enabling Test Group: SDP Timeouts and invalid SDP data fields
PICS_CMN_CMN_FailedResponseCodes	Indication for enabling Test Group: V2G FAILED response codes
PICS_CMN_CMN_V2gTimeouts	Indication for enabling Test Group: V2G timeouts
PICS_CMN_CMN_PkiName	Indication for selected PKI Choice: i) PKI_1, ii) PKI_2, iii) PKI_3, iv) PKI_4, v) PKI_5, vi) PKI_6, vii) PKI_7

**Table 7 — PICS for test system configurations CF_04_001
(SUT equals SECC)**

PICS	Description
PICS_SECC_CMN_Pause	Indication for enabling a charging pause
PICS_SECC_CMN_EIMDone	Indication for initiating EIM Authorization process Choice: i) beforePlugin, ii) afterPlugin, iii) duringSlac, iv) v2gAuthorization
PICS_SECC_CMN_EvStateInChargeProgress	Indication for explicit testing of State C/D of IEC 61851-1:2017, Annex A during charging
PICS_SECC_DC_WeldingDetection	Indication for explicit testing of WeldingDetection
PICS_SECC_CMN_DepartureTime	Indication for using a departure time
PICS_SECC_CMN_MaxEntriesSAScheduleTuple	Indication for enabling a maximal number of entries in the SAScheduleTuple

**Table 8 — PICS for test system configurations CF_04_002
(SUT equals EVCC)**

PICS	Description
PICS_EVCC_CMN_PmaxSchedulewithZeroPow	Indication for enabling a PmaxScheduleList with a list element pMax = 0W (triggering pause) Choice: i) sleepWithoutCharge, ii) sleepAfterCharge, iii) none_
PICS_EVCC_CMN_ReceiptRequired	Indication for explicit testing of MeteringReceipt message
PICS_EVCC_CMN_InvalidStatesAndDutyCycles	Indication for enabling Test Group: Invalid states and duty cycles
PICS_EVCC_CMN_InvalidV2GMessages	Indication for enabling Test Group: Invalid V2G messages
PICS_CMN_EVCC_SalesTariff	Indication for using a SalesTariff

7.3.4 Protocol Implementation extra Information for Testing (PIXIT) Definition

In order to ensure testability of each defined message pair defined in ISO 15118-2, the following set of PIXIT are defined in addition to PICS in this document. PIXIT are used to indicate to the SUT that a specific capability of the SUT is tested.

NOTE 1 Due to the black box test paradigm in this document, it is not defined how to ensure that a corresponding PIXIT is set on the SUT side for a given test case execution.

All PIXIT defined in the ATS are summarized in Table 9 - Table 11.

**Table 9 — Selected PIXIT for test system configurations CF_04_001 and CF_04_002
(SUT either SECC or EVCC)**

PIXIT	Description
PIXIT_CMN_CMN_WakeUp	Indication for the wake-up time (SUT) within a paused session
PIXIT_CMN_CMN_CertificateHandling	Indication for explicit testing of CertificateInstallation or CertificateUpdate message
PIXIT_CMN_CMN_PkiName	Indication for selected PKI Choice: i) PKI_1, ii) PKI_2, iii) PKI_3, iv) PKI_4, v) PKI_5, vi) PKI_6, vii) PKI_7
PIXIT_CMN_CMN_Renegotiation	Indication for explicit testing of Renegotiation initiated by the SUT Choice: i) renegotiation, ii) unknown
PIXIT_CMN_CMN_MeterReading	Indication for explicit testing of MeterReading element Choice: i) meterReading, ii) unknown

**Table 10 — Selected PIXIT for test system configurations CF_04_001
(SUT equals SECC)**

PIXIT	Description
PIXIT_SECC_CMN_VAS	Indication for explicit testing of ServiceDetail message (SUT shall send a serviceList within ServiceDiscoveryRes message) Choice: i) serviceDetail, ii) none_, iii) unknown
PIXIT_SECC_CMN_ReceiptRequired	Indication for explicit testing of MeteringReceipt message
PIXIT_SECC_CMN_CertificateHandling	Indication for explicit testing of CertificateInstallation or CertificateUpdate message

PIXIT	Description
	Choice: i) certInstall, ii) certUpdate, iii) none_
PIXIT_SECC_CMN_SalesTariff	Indication for explicit testing of Sales Tariff elements Choice: i) salesTariff, ii) unknown
PIXIT_SECC_CMN_TLS	Indication for explicit testing of TLS in EIM mode
PIXIT_SECC_CMN_VersionNumberMinor	Indication for the supported VersionNumberMinor of the SUT
PIXIT_SECC_CMN_InternetAccess	Indication for support of InternetAccess service Choice: i) internetAccess, ii) unknown
PIXIT_SECC_DC_CableCheckOngoing	Indication for explicit testing of the repetition of the CableCheck message sequence Choice: i) ongoing, ii) unknown
PIXIT_SECC_CMN_AuthorizationOngoing	Indication for explicit testing of the repetition of the Authorization message sequence until V2G_SECC_Ongoing_Timer expires on SUT side Choice: i) ongoing, ii) unknown
PIXIT_SECC_CMN_ChargeParameterDiscoveryOngoing	Indication for explicit testing of the repetition of the ChargeParameterDiscovery message sequence until V2G_SECC_Ongoing_Timer expires on SUT side Choice: i) ongoing, ii) unknown
PIXIT_SECC_CMN_MeterInfo	Indication for explicit testing of MeterInfo element Choice: i) meterInfo, ii) unknown
PIXIT_SECC_CMN_PaymentOption	Indication for supported payment option within ServiceDiscoveryRes message (Only one payment option possible) Choice: i) externalPayment, ii) contract

**Table 11 — Selected PIXIT for test system configurations CF_04_002
(SUT equals EVCC)**

PIXIT	Description
PIXIT_EVCC_CMN_VAS	Indication for explicit testing of ServiceDetail message (SUT shall send a ServiceDetailReq message for each service of the received serviceList) Choice: i) serviceDetail, ii) none_, iii) unknown
PIXIT_EVCC_CMN_Pause	Indication for enabling a charging pause Choice: i) pause, ii) unknown, iii) none_
PIXIT_EVCC_DC_WeldingDetection	Indication for explicit testing of WeldingDetection message Choice: i) weldingDetection, ii) none_, iii) unknown
PIXIT_EVCC_CMN_TLS	Indication for explicit testing of TLS in EIM mode Choice: i) tls, ii) none_, iii) unknown
PIXIT_EVCC_CMN_CertificateHandling	Indication for explicit testing of CertificateInstallation or CertificateUpdate message Choice: i) certInstall, ii) certUpdate, iii) none_, iv) unknown
PIXIT_EVCC_CMN_DepartureTime	Indication for explicit testing of DepartureTime element Choice: i) departureTime, ii) none_, iii) unknown
PIXIT_EVCC_AC_MaxNumberOfPhasesInUse	Indication for explicit testing of MaxNumberOfPhasesInUse element Choice: i) maxNumberOfPhasesInUse, ii) unknown

PIXIT	Description
PIXIT_EVCC_CMN_ChargingProfileOptimization	Indication for the SUTs capability to optimize charging profiles based on the charge schedule Choice: i) optimization, ii) none, iii) unknown
PIXIT_EVCC_CMN_NewSAScheduleTupleID	Indication for explicit testing of using a new SAScheduleTupleID after renegotiation by the SUT Choice: i) newSAScheduleTupleID, ii) unknown
PIXIT_EVCC_CMN_SAScheduleTupleID MR	Indication for explicit testing SAScheduleTupleID within MeteringReceiptReq message Choice: i) sAScheduleTupleID, ii) unknown

7.3.5 Test control

The control part calls the test cases with actual parameters and controls their execution. Program statements PICS/PIXIT are used to specify the selection and execution order of the test cases (see Annex B). For each use case all valid PICS/PIXIT configurations are summarized in Table 12 - Table 15.

[V2G4-018] The test control for testing an AC SECC shall execute all common and all AC SECC specific test cases for each PICS/PIXIT configuration, as defined in Table 12.

Table 12 — SECC AC PICS/PIXIT configuration

Configuration	EIM	PnC
1	PICS_CMN_CMN_V2gtpSdp := true and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_V2gtpSdp := true and PICS_CMN_CMN_ChargingMode := aC
2	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_TLS := false and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_ChargingMode := aC
3	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_TLS := true and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_V2gtpV2g := true and PICS_CMN_CMN_ChargingMode := aC
4	PICS_CMN_CMN_V2gtpV2g := true and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
5	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
6	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_InternetAccess := unknown and PICS_CMN_CMN_ChargingMode := aC
7	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_VAS := serviceDetail and PIXIT_SECC_CMN_TLS := true and PIXIT_SECC_CMN_InternetAccess := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_InternetAccess := internetAccess and PICS_CMN_CMN_ChargingMode := aC
8	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_VAS := serviceDetail and PIXIT_SECC_CMN_TLS := true and	PIXIT_SECC_CMN_VAS := none_ and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
	PIXIT_SECC_CMN_InternetAccess := internetAccess and PICS_CMN_CMN_ChargingMode := aC	
9	PIXIT_SECC_CMN_VAS := none and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := aC
10	PICS_CMN_CMN_IdentificationMode := eIM and PICS_CMN_CMN_ChargingMode := aC	PIXIT_SECC_CMN_CertificateHandling := certInstall and PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := aC
11	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC	PIXIT_SECC_CMN_CertificateHandling := certUpdate and PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := aC
12	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC	PIXIT_SECC_CMN_CertificateHandling := none and PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_ and PICS_CMN_CMN_ChargingMode := aC
13	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC
14	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC
15	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := aC
16	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC
17	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := aC
18	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
	PICS_CMN_CMN_ChargingMode := aC	
19	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := aC
20	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
21	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
22	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
23	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
24	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
25	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
26	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
27	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
28	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
29	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
30	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
31	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
32	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
33	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
34	PICS_SECC_CMN_EvStateInChargeProgress := C and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
35	PICS_SECC_CMN_EvStateInChargeProgress := D and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
36	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_MeterInfo := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_EvStateInChargeProgress := C and PICS_CMN_CMN_ChargingMode := aC
37	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_EvStateInChargeProgress := D and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
38	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := meterReading and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := false and PIXIT_SECC_CMN_MeterInfo := unknown and PICS_CMN_CMN_ChargingMode := aC
39	PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := false and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := unknown and PICS_CMN_CMN_ChargingMode := aC
40	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := false and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := meterReading and PICS_CMN_CMN_ChargingMode := aC
41	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := true and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_MeterInfo := unknown and PICS_CMN_CMN_ChargingMode := aC
42	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := true and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := unknown and PICS_CMN_CMN_ChargingMode := aC
43	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := true and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := meterReading and PICS_CMN_CMN_ChargingMode := aC
44	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
45	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
46	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
47	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
48	PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_TLS := true and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
49	PICS_CMN_CMN_IdentificationMode := eIM and PICS_SECC_CMN_EIMDone := v2gAuthorization and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
50	PIXIT_SECC_CMN_ChargeParameterDiscoveryOngoing := ongoing and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
51	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_PaymentOption := externalPayment and PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
52	PICS_CMN_CMN_ChargingMode := aC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := aC
53		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := false and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := aC
54		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_AuthorizationOngoing := ongoing and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
55		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_CertificateHandling := certInstall and PIXIT_SECC_CMN_AuthorizationOngoing := ongoing and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := aC
56		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_CertificateHandling := certUpdate and PIXIT_SECC_CMN_AuthorizationOngoing := ongoing and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := aC
57		PIXIT_SECC_CMN_ChargeParameterDiscoveryOngoing := ongoing and PICS_CMN_CMN_ChargingMode := aC
58		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_PaymentOption := contract and PICS_CMN_CMN_ChargingMode := aC
59		PICS_CMN_CMN_PkiType := PKI-1 and PIXIT_CMN_CMN_PkiType := PKI-1 and PICS_CMN_CMN_ChargingMode := aC
60		PICS_CMN_CMN_PkiType := PKI-2 and PIXIT_CMN_CMN_PkiType := PKI-2 and PICS_CMN_CMN_ChargingMode := aC
61		PICS_CMN_CMN_PkiType := PKI-3 and PIXIT_CMN_CMN_PkiType := PKI-3 and PICS_CMN_CMN_ChargingMode := aC
62		PICS_CMN_CMN_PkiType := PKI-4 and PIXIT_CMN_CMN_PkiType := PKI-4 and PICS_CMN_CMN_ChargingMode := aC
63		PICS_CMN_CMN_PkiType := PKI-5 and PIXIT_CMN_CMN_PkiType := PKI-5 and PICS_CMN_CMN_ChargingMode := aC
64		PICS_CMN_CMN_PkiType := PKI-6 and PIXIT_CMN_CMN_PkiType := PKI-6 and PICS_CMN_CMN_ChargingMode := aC
65		PICS_CMN_CMN_PkiType := PKI-7 and PIXIT_CMN_CMN_PkiType := PKI-7 and PICS_CMN_CMN_ChargingMode := aC
66		PICS_CMN_CMN_ChargingMode := aC

[V2G4-019] The test control for testing a DC SECC shall execute all common and all DC SECC specific test cases for each PICS/PIXIT configuration, as defined in Table 13.

Table 13 — SECC DC PICS/PIXIT configuration

Configuration	EIM	PnC
1	PICS_CMN_CMN_V2gtpSdp := true and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_V2gtpSdp := true and PICS_CMN_CMN_ChargingMode := dC
2	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_TLS := false and	PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_ChargingMode := dC

Configuration	EIM	PnC
	PICS_CMN_CMN_ChargingMode := dC	
3	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_TLS := true and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_V2gtpV2g := true and PICS_CMN_CMN_ChargingMode := dC
4	PICS_CMN_CMN_V2gtpV2g := true and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
5	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
6	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_InternetAccess := unknown and PICS_CMN_CMN_ChargingMode := dC
7	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_VAS := serviceDetail and PIXIT_SECC_CMN_TLS := true and PIXIT_SECC_CMN_InternetAccess := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_InternetAccess := internetAccess and PICS_CMN_CMN_ChargingMode := dC
8	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_VAS := serviceDetail and PIXIT_SECC_CMN_TLS := true and PIXIT_SECC_CMN_InternetAccess := internetAccess and PICS_CMN_CMN_ChargingMode := dC	PIXIT_SECC_CMN_VAS := none_ and PICS_CMN_CMN_ChargingMode := dC
9	PIXIT_SECC_CMN_VAS := none_ and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC
10	PICS_CMN_CMN_IdentificationMode := eIM and PICS_CMN_CMN_ChargingMode := dC	PIXIT_SECC_CMN_CertificateHandling := certInstall and PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC

Configuration	EIM	PnC
11	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC	PIXIT_SECC_CMN_CertificateHandling := certUpdate and PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC
12	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC	PIXIT_SECC_CMN_CertificateHandling := none_ and PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC
13	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC
14	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC
15	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := dC
16	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC
17	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := dC
18	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_ChargingMode := dC
19	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_ChargingMode := dC
20	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and

Configuration	EIM	PnC
	PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
21	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
22	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
23	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
24	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
25	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
26	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
27	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and

Configuration	EIM	PnC
	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
28	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
29	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
30	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
31	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
32	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
33	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
34	PICS_SECC_CMN_EvStateInChargeProgress := C and PIXIT_SECC_DC_CableCheckOngoing := unknown	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and

Configuration	EIM	PnC
	and PICS_CMN_CMN_ChargingMode := dC	PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
35	PICS_SECC_CMN_EvStateInChargeProgress := D and PIXIT_SECC_DC_CableCheckOngoing := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_SECC_CMN_Pause := true and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := dC
36	PICS_SECC_CMN_EvStateInChargeProgress := C and PIXIT_SECC_DC_CableCheckOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_EvStateInChargeProgress := C and PIXIT_SECC_DC_CableCheckOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC
37	PICS_SECC_CMN_EvStateInChargeProgress := D and PIXIT_SECC_DC_CableCheckOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_EvStateInChargeProgress := D and PIXIT_SECC_DC_CableCheckOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC
38	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_MeterInfo := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_EvStateInChargeProgress := C and PIXIT_SECC_DC_CableCheckOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC
39	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_EvStateInChargeProgress := D and PIXIT_SECC_DC_CableCheckOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC
40	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := meterReading and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := false and PIXIT_SECC_CMN_MeterInfo := unknown and PICS_CMN_CMN_ChargingMode := dC
41	PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := false and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := unknown and PICS_CMN_CMN_ChargingMode := dC
42	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := false and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := meterReading and PICS_CMN_CMN_ChargingMode := dC
43	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := true and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_MeterInfo := unknown and PICS_CMN_CMN_ChargingMode := dC

Configuration	EIM	PnC
44	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := true and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := unknown and PICS_CMN_CMN_ChargingMode := dC
45	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := true and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PIXIT_SECC_CMN_MeterInfo := meterInfo and PIXIT_CMN_CMN_MeterReading := meterReading and PICS_CMN_CMN_ChargingMode := dC
46	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
47	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
48	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
49	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
50	PICS_SECC_DC_WeldingDetection := true and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := false and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
51	PICS_SECC_DC_WeldingDetection := false and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
52	PIXIT_SECC_CMN_VAS := serviceDetail and PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_TLS := true and	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := false and PIXIT_SECC_CMN_SalesTariff := salesTariff and

Configuration	EIM	PnC
	PICS_CMN_CMN_ChargingMode := dC	PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
53	PICS_CMN_CMN_IdentificationMode := eIM and PICS_SECC_CMN_EIMDone := v2gAuthorization and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := salesTariff and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
54	PIXIT_SECC_CMN_ChargeParameterDiscoveryOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_CMN_MaxEntriesSAScheduleTuple := true and PICS_SECC_CMN_DepartureTime := true and PIXIT_SECC_CMN_SalesTariff := unknown and PICS_CMN_CMN_Renegotiation := true and PIXIT_CMN_CMN_Renegotiation := unknown and PICS_CMN_CMN_ChargingMode := dC
55	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_SECC_CMN_PaymentOption := externalPayment and PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_DC_WeldingDetection := true and PICS_CMN_CMN_ChargingMode := dC
56	PICS_CMN_CMN_ChargingMode := dC	PICS_SECC_DC_WeldingDetection := false and PICS_CMN_CMN_ChargingMode := dC
57		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_ReceiptRequired := true and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC
58		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_AuthorizationOngoing := ongoing and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC
59		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_CertificateHandling := certInstall and PIXIT_SECC_CMN_AuthorizationOngoing := ongoing and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC
60		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_CertificateHandling := certUpdate and PIXIT_SECC_CMN_AuthorizationOngoing := ongoing and PICS_CMN_CMN_PkiName := PKI_1 and PIXIT_CMN_CMN_PkiName := PKI_1 and PICS_CMN_CMN_ChargingMode := dC
61		PIXIT_SECC_CMN_ChargeParameterDiscoveryOngoing := ongoing and PICS_CMN_CMN_ChargingMode := dC
62		PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_SECC_CMN_PaymentOption := contract and PICS_CMN_CMN_ChargingMode := dC
63		PICS_CMN_CMN_PkiType := PKI-1 and PIXIT_CMN_CMN_PkiType := PKI-1 and PICS_CMN_CMN_ChargingMode := dC

Configuration	EIM	PnC
64		PICS_CMN_CMN_PkiType := PKI-2 and PIXIT_CMN_CMN_PkiType := PKI-2 and PICS_CMN_CMN_ChargingMode := dC
65		PICS_CMN_CMN_PkiType := PKI-3 and PIXIT_CMN_CMN_PkiType := PKI-3 and PICS_CMN_CMN_ChargingMode := dC
66		PICS_CMN_CMN_PkiType := PKI-4 and PIXIT_CMN_CMN_PkiType := PKI-4 and PICS_CMN_CMN_ChargingMode := dC
67		PICS_CMN_CMN_PkiType := PKI-5 and PIXIT_CMN_CMN_PkiType := PKI-5 and PICS_CMN_CMN_ChargingMode := dC
68		PICS_CMN_CMN_PkiType := PKI-6 and PIXIT_CMN_CMN_PkiType := PKI-6 and PICS_CMN_CMN_ChargingMode := dC
69		PICS_CMN_CMN_PkiType := PKI-7 and PIXIT_CMN_CMN_PkiType := PKI-7 and PICS_CMN_CMN_ChargingMode := dC
70		PICS_CMN_CMN_ChargingMode := dC

[V2G4-020] The test control for testing an AC EVCC shall execute all common and all AC EVCC specific test cases for each PICS/PIXIT configuration, as defined in Table 14.

Table 14 — EVCC AC PICS/PIXIT configuration

Configuration	EIM	PnC
1	PICS_CMN_CMN_V2gtpSdp := true and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_V2gtpSdp := true and PICS_CMN_CMN_ChargingMode := aC
2	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := none_ and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PICS_CMN_CMN_ChargingMode := aC
3	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := tls and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
4	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := unknown and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC

Configuration	EIM	PnC
5	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := none_ and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := pnC and PICS_EVCC_CMN_PmaxSchedulewithZeroPow := sleepWithoutCharge and PICS_CMN_CMN_CombinedTesting := true and par_SECC_Pmax0W < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
6	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := tIs and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := none_ and PICS_EVCC_CMN_PmaxSchedulewithZeroPow := sleepAfterCharge and PICS_CMN_CMN_CombinedTesting := true and par_SECC_Pmax0W < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
7	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := unknown and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_CMN_CMN_V2gtpV2g := true and PICS_CMN_CMN_ChargingMode := aC
8	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := none_ and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp > PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
9	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := tIs and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
10	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := unknown and PIXIT_EVCC_CMN_Pause := pause and PICS_CMN_CMN_CombinedTesting := true and PIXIT_CMN_CMN_WakeUp < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_EVCC_CMN_PmaxSchedulewithZeroPow := sleepWithoutCharge and PICS_CMN_CMN_CombinedTesting := true and par_SECC_Pmax0W < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC
11	PICS_CMN_CMN_IdentificationMode := eIM and PIXIT_EVCC_CMN_TLS := none_ and PICS_EVCC_CMN_PmaxSchedulewithZeroPow := sleepWithoutCharge and PICS_CMN_CMN_CombinedTesting := true and par_SECC_Pmax0W < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC	PICS_EVCC_CMN_PmaxSchedulewithZeroPow := sleepAfterCharge and PICS_CMN_CMN_CombinedTesting := true and par_SECC_Pmax0W < PICS_CMN_CMN_WakeUp and PICS_CMN_CMN_ChargingMode := aC