BS EN 16454:2015

BSI Standards Publication

Intelligent transport systems — ESafety — ECall end to end conformance testing

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National foreword

This British Standard is the UK implementation of EN 16454:2015. It supersedes PD CEN/TS 16454:2013 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/278, Intelligent transport systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Systèmes de transport intelligents - eSécurité - Essais de conformité du système " eCall " de bout en bout

Intelligente Verkehrssysteme - ESicherheit - Vollständige Konformitätsprüfungen für eCall

This European Standard was approved by CEN on 17 July 2015.

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European foreword

This document (EN 16454:2015) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2016, and conflicting national standards shall be withdrawn at the latest by March 2016.

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

This document supersedes CEN/TS 16454:2013.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

An *eCall* is an emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants*; when activated, to provide notification and relevant location information to the most appropriate *Public Safety Answering points* (PSAP), by means of *mobile wireless communications networks* and carries a defined standardized *minimum set of data*, notifying that there has been an incident that requires response from the emergency services and establishes an audio channel between the occupants of the vehicle and the *most appropriate PSAP*.

NOTE 1 EN 15722 specifies a standardized MSD for *eCall*, EN 16062 specifies high level application protocols for eCall and EN 16072 specifies pan-European *eCall* operating requirements. For third party systems, EN 16102 specifies third party services supporting *eCall* operating requirements. (See EC Communication on *eCall* Implementation 2009 [COM(2009) 434 final] for more information.)

The operating requirements for pan-European *eCall* are made using Public Land Mobile Networks (PLMN) (such as GSM and 3G), as specified in a number of ETSI Standards and Technical Specifications.

This deliverable provides tests to enable actors in the eCall chain to be able to claim conformance to the eCall Standards, even though they are unable to control the behaviour of systems of other actors in the eCall chain

NOTE 2 Conformance tests in this document allow demonstration that a system complies with the eCall Standards. Compliance to Standards is a prerequisite to providing an interoperable compliant system, but do not by themselves demonstrate that a system will function nor guarantee the quality of service.

NOTE 3 The term PSAP (Public Safety Assistance Point), which is most widely used in the *eCall* documentation, European Commission documents etc., is used throughout this document and equates to the term *emergency call response centre* used in the ITS Implementation Directive.

The European Committee for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this European Standard may involve the use of patents concerning eCall given in EN 16062 and various ETSI Standards for the network access device and cellular mobile networks.

CEN takes no position concerning the evidence, validity and scope of these patent rights.

1 Scope

This European Standard defines the key actors in the eCall chain of service provision as:

1) In-Vehicle System (IVS)/vehicle,

2) Mobile network Operator (MNO),

3) Public safety assistance point [provider](PSAP),

in some circumstances may also involve:

4) Third Party Service Provider (TPSP),

and to provide conformance tests for actor groups 1) – 4).

NOTE Conformance tests are not appropriate nor required for vehicle occupants, although they are the recipient of the service.

This European Standard covers conformance testing (and approval) of new engineering developments, products and systems, and does not imply testing associated with individual installations in vehicles or locations.

2 Normative references

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

EN 15722:2015, *Intelligent transport systems — ESafety — ECall minimum set of data*

EN 16062:2015, *Intelligent transport systems — ESafety — eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks*

EN 16072:2015, *Intelligent transport systems — ESafety — Pan-European eCall operating requirements*

EN 16102:2011, *Intelligent transport systems — eCall — Operating requirements for third party support*

ETSI TS 102 936-1, *eCall Network Access Device (NAD) conformance specification; Part 1: Protocol test specification*

ETSI TS 102 936-2, *eCall Network Access Device (NAD), conformance specification; Part 2: Test Suites*

ETSI TR 102 937, *eCall communications equipment; Conformance to EU vehicle regulations, R&TTE, EMC & LV Directives, and EU regulations for eCall implementation*

ETSI TS 122 001, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN) [Release 8 or later]*

ETSI TS 122 003, *Digital cellular communications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Circuit Teleservices supported by a Public Land Mobile Network (PLMN) (3GPP TS 22.003 version 12.0.0 Release 12) [Teleservice 12/TC12) /E12]*

ETSI TS 122 011, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Service accessibility (3GPP TS 22.011 version 8.9.0 Release 8)*

ETSI TS 122 101, *Universal Mobile Telecommunications System (UMTS); LTE ;Service aspects; Service principles (Release 8)*

ETSI TS 122 105, *Universal Mobile Telecommunications System (UMTS); Services and service capabilities (3GPP TS 22.105 version 8.4.0 Release 8)*

ETSI TS 123 107, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Quality of Service (QoS) concept and architecture (3GPP TS 23.107 version 6.4.0 Release 6)*

ETSI TS 123 122, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode (3GPP TS 23.122 version 8.12.0 Release 8)*

ETSI TS 124 008, *Digital cellular telecommunications system (Phase 2+);Universal Mobile Telecommunications System (UMTS); LTE; Mobile radio interface Layer 3 specification; Core network protocols; Stage 3*

ETSI TS 126 267, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer;In-band modem solution; General description [Version 8.6.0 or later]*

NOTE The provisions for eCall in Version 8.6.0 of ETSI TS 126 267 correspond to the provisions for eCall in versions 9.3.0, 10.0.0 and 11.0.0.

ETSI TS 126 269, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer; In-band modem solution; Conformance testing (Version 8.3.0 or later)*

ETSI TS 127 007, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; AT command set for User Equipment (UE)*

ETSI TS 131 102, *Universal Mobile Telecommunications System (UMTS); Characteristics of the Universal Subscriber Identity Module (USIM) application (3GPP TS 31.102 version 8.17.0 Release 8)*

ETSI TS 134 123-1, *Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (3GPP TS 34.123-1 version 8.6.0)*

3 Terms and definitions

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

3.1
112
single European emergency call number supporting 'Teleservice 12'

[SOURCE: ETSI TS 122 003]

3.2
call clear-down
act of ending a call, following call completion, the event is signalled in accordance with ISUP (ISDN User Part) 'Release Cause Codes'

Note 1 to entry: Usually achieved by hanging up the receiver or pressing 'end call' or similar on screen.

3.3
contracting MNO
mobile network operator which has responsibility for provisioning and managing a specific SIM

3.4
cellular network
wireless communications network consisting of multiple adjacent access points (cells) with the capability of homogeneous transfer of a communications session instance to an adjacent cell without significant interruption to the session

3.5
conformance test point
actual instantiation of equipment performing a conformance test process 'live', using 'live' equipment or equipment/systems that simulate behaviour of equipment at the point being tested in order to stimulate or observe the behaviour resultant from the stimulation and note the result of that stimulation

3.6
data
representations of static or dynamic objects in a formalised manner suitable for communication, interpretation, or processing by humans or by machines

3.7
data concept
group of *data* structures (i.e. object class, property, value domain, *data elements,* message, interface dialogue, *association*) referring to abstractions or things in the natural world that can be identified with explicit boundaries and meaning and whose properties and behaviour all follow the same rules

3.8
data element
single unit of information of interest (such as a fact, proposition, observation, etc.) about some (entity) class of interest (e.g. a person, place, process, property, concept, state, event) considered to be indivisible in a particular context

3.9
E112
emergency communications service using the single European emergency call number, 112, which is enhanced with location information of the calling user TS12

3.10
E164
ITU-T recommendation that defines the international public telecommunication numbering plan used in the PSTN and some other data networks and also defines the format of telephone number

Note 1 to entry: E.164 numbers can have a maximum of fifteen digits and are usually written with a + prefix.

3.11
eCall
emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants*; when activated it provides notification and relevant location information to the most appropriate *Public Safety Answering Point*, by means of *mobile wireless communications networks*, carries a defined standardized *minimum set of data* (MSD) notifying that there has been an incident that

requires response from the emergency services, and establishes an audio channel between the occupants of the vehicle and the most appropriate *Public Safety Answering point*

3.12
eCall+
provision of eCall service plus availability of wireless communication network to undertake other application services

3.13
eCall generator
occupant of a vehicle or equipment within a vehicle that has cause to trigger an *eCall* transaction by automatic or manual means

3.14
eCall flag
alternative term for eCall identifier

3.15
eCall identifier
one of two mandatory information element bits (flags) included in the emergency call set-up message that may be used by the mobile network to filter and route automatically and manually initiated *eCalls* to a designated PSAP

3.16
eCall service
end-to-end emergency service to connect occupants of an affected vehicle to the *most appropriate PSAP* via an audio link across a PLMN together with the transfer of a *minimum set of data* to the PSAP

3.17
eCall transaction
establishment of a *mobile wireless communications session* across a *public wireless communications network* and the transmission of a *minimum set of data* from a vehicle to a *public safety answering point* and the establishment of an audio channel between the vehicle and the PSAP

3.18
emergency call response centre
term used in ITS Implementation Directive to mean *Public Safety Answering point* (PSAP)

3.19
established
created or set up

3.20
Global Certification Forum
GCF
certification scheme for mobile phones and wireless devices that are based on 3GPP Standards; GCF aims to ensure that a mobile device will work effectively on mobile networks anywhere in the world

3.21
identifier
label, symbol or token that names or identifies an entity or a collection of *data* or the means of designating or referring to a specific instance of a *data concept*

3.22
In progress
taking place

3.23
in-vehicle equipment
equipment within the vehicle that provides or has access to in-vehicle *data* required for the *minimum set of data* and any other *data* that is to be sent as part of or complementary to the *minimum set of data* to effect the *eCall transaction* via a *public mobile wireless communications network* providing a link between the vehicle and a means of enacting the *eCall service* via a *public mobile wireless communications network*

3.24
in-vehicle system
in-vehicle equipment together with the means to trigger, manage and effect the *eCall transaction*

3.25
minimum set of data
standardized *data concept* comprising *data elements* of relevant vehicle generated *data* essential for the performance of the *eCall service*

[SOURCE: EN 15722:2015]

3.26
mobile wireless communications network
wireless communications network with homogeneous handover between network access points

3.27
most appropriate PSAP
PSAP defined beforehand by responsible authorities to cover emergency calls from a certain area or for emergency calls of a certain type

Note 1 to entry: See also PSAP.

Note 2 to entry: A number of different instantiations of PSAP service are supported within this European Standard. A PSAP can be a Public Authority or a private service provider operating on behalf of the responsible authorities.

3.28
network access device
NAD
see mobile wireless communications network device

3.29
network access points
beacon, antenna or similar source of signal propagation and receipt together with equipment to manage communication sessions with users operating within the operating reach of the *network access point* and provide connectivity for the users within the operating reach of the single *access point* to a wider communications network

Note 1 to entry: A network access point may, but does not need to provide homogeneous or heterogeneous handover to another network access point.

3.30
public mobile wireless communications network
mobile wireless communications network with access to a public telecommunications network

3.31
public safety answering point
PSAP
physical location working on behalf of the national authorities where emergency calls are first received under the responsibility of a public authority or a private organisation recognised by the national government

Note 1 to entry: See also *most appropriate PSAP*.

Note 2 to entry: A number of different instantiations of PSAP service are supported within this European Standard.

3.32
service provider
physical and functional component responsible for providing telematics based services to its subscribers

3.33
'Teleservice'
Teleservices supported by a PLMN described by a number of attributes which are intended to be largely independent

Note 1 to entry: They are grouped into three categories: - High layer attributes. - Low layer attributes (describing the Bearer capabilities which support the Teleservice). - Information transfer attributes. - Access attributes. - General attributes; examples include including fax-on-demand, voice mail computer telephone integration and emergency services support and include services such as TS11 and TS12.

[SOURCE: ETSI TS 122 003]

[SOURCE: ETSI TS 100 905]

3.34
test point
see 'conformance test point'

3.35
TPS-eCall short reference identification (TPS-eCall-SID)
shortened form of the TPS-eCall-UID, which is restricted to current and recent incidents, designed to be appropriate for forwarding verbally to a PSAP operator, to allow less-equipped PSAPs to refer to a specific TPS-eCall set of data for a current or recent incident

3.36
TS11
Teleservice 11, Telephony (normal telephone call)

[SOURCE: ETSI TS 100 905]

3.37
TS12
Teleservice 12, Emergency call (emergency service supported by PLMNs which is given priority in the network and presents additional data such as call location identification and other relevant data)

[SOURCE: ETSI TS 100 905]

3.38
vehicle manufacturer
entity which first assembles the vehicle and provides *eCall* equipment as part of its specification and subsequently sells the vehicle directly or via an agent

3.39
vehicle occupant(s)
person(s) inside the vehicle

3.40
wireless communications network
network operating using an air-interface capable of bi-directional transfer of *data* and or voice

Note 1 to entry: There are different types of wireless communications such as PAN, LAN, *cellular network*, etc.

4 Symbols and abbreviations

3G	third generation mobile telecommunication system
ACD	automatic call distribution
ACK	ACKnowledgement
AL-ACK	application layer acknowledgement
AIeC	automatic Initiated *eCall*
AT	attention (part of modem instruction to dial as specified in ETSI TS 127 007)
CLB	call-back and post eCall
CLR	call cleardown
CRC	cyclic redundancy check
CTP	conformance test point
EC	European Commission
ECI	eCall initiation
ECP	eCall in progress
ETSI	European Telecommunications Standards Institute
GCF	Global Certification Forum
GIS	Geographic Information System
GNSS	Global Navigation Satellite System
GSM	Global System for Mobile communications
HMI	human machine interface

IE	information entity
I-OFF	ignition off
I-ON	ignition on
IAM	Immediate Alert Message
IMSI	International Mobile Subscriber Identity
IVS	In-Vehicle System
LAN	Local Area Network
LL-ACK	link layer acknowledgement
LTE	Long Term Evolution (of 3G UMTS access network)
MIeC	Manually Initiated *eCall*
MSC	Mobile Switching Centre
MNO	Mobile Network Operator
MSISDN	Mobile Subscriber ISDN (integrated services digital network)
MSD	Minimum Set of Data (EN 15722)
NAD	Network Access Device (e.g. a GSM or UMTS module)
PAN	Personal Area Network
PE	Pan-European
PLMN	Public Land Mobile Network
PSAP	Public Safety Answering Point
RSSI	Received signal strength indicator
SID	Session identification
SIM	Subscriber Identity Module (GSM/3GPP)
SUT	System Under Test
TRG	Trigger
TPS	Third Party Service
TPS-eCall-SID	TPS-eCall short reference identification
TPSP	Third Party Service Provider
TPS-N	Third Party Service-Notifier

TPS-R	Third Party Service-Responder
TPS-SID	Third party service-short reference identification
TPS-UID	Third party service-unique reference identification
TS (i)	Technical Specification
TS (ii)	Teleservice
TS12	Teleservice 12 ETSI TS 122 003
TSD	TPS-eCall set of data
Tx	transmit
UMTS	Universal Mobile Telecommunication System
USIM	User Service Identity Module
VLR	Visited Location Register

5 Conformance

5.1 General

This European Standard provides conformance tests for each of the key actor groups such that each actor group may be able to ascertain if it is in conformance with the eCall Standards deliverables, and to demonstrate its conformance to eCall Standards requirements relevant to that actor group.

Where a supplier elects to claim conformance that its product or service is in accordance with the provisions of this document, it shall only do so if it can evidence that it has undertaken the test procedures relevant to its product(s) and/or service(s) as defined herein and has met all of the PASS criteria requirements defined in the tests appropriate to its product(s) and/or service(s) that are defined herein.

5.2 General conditions

A CTP-PASS condition is only confirmed if ALL individual pass conditions written in the “pass conditions” column of a given CTP (conformance test procedure) are observed.

A CTP-FAIL condition occurs if one or more of the given individual pass conditions written in the “pass conditions” column of a given CTP are *not* observed (failed).

To be explicitly clear, if a supplier has undertaken the test procedures relevant to its product(s) and/or service(s) as defined herein and has NOT MET all of the PASS criteria requirements defined in the tests appropriate to its product and/or service(s) that are defined herein, i.e. its product or service has failed ANY of the tests relevant to its product or service according to the methods and criteria determined herein, it SHALL NOT claim compliance to this document. A supplier shall not claim ‘partial compliance’ nor ‘compliance to selected tests’ of this document.

6 General overview of the eCall transaction for pan-European eCall

In the introduction to this European Standard, *eCall* was described as "an emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants* (the *eCall generator*); when activated, it provides notification and relevant location information to the most appropriate *Public Safety Answering point*, by means of *mobile wireless communications networks* and carries a defined standardized *minimum set of data*, notifying that there has been an incident that requires response from the emergency services and establishes an audio channel between the occupants of the vehicle and the most appropriate *Public Safety Answering point*.

EN 16072 defines the operating requirements for Pan European eCall. EN 16062 defines the 'high level application protocols' for Pan European eCall, EN 16102 defines the operating requirements for eCall provided by a third party service provider, and EN 15722 defines the data within the 'Minimum Set of Data'(MSD) which comprises the principal data payload of an eCall.

Pan-European *eCall* effects this service using a Circuit Teleservice supported by a Public Land Mobile Network (PLMN) (Teleservice 12/TS12) ETSI TS 122 003. eCall provided by a third party service provider will use other means of communication.

Figure 1 shows an illustrative view of the pan-European eCall service.

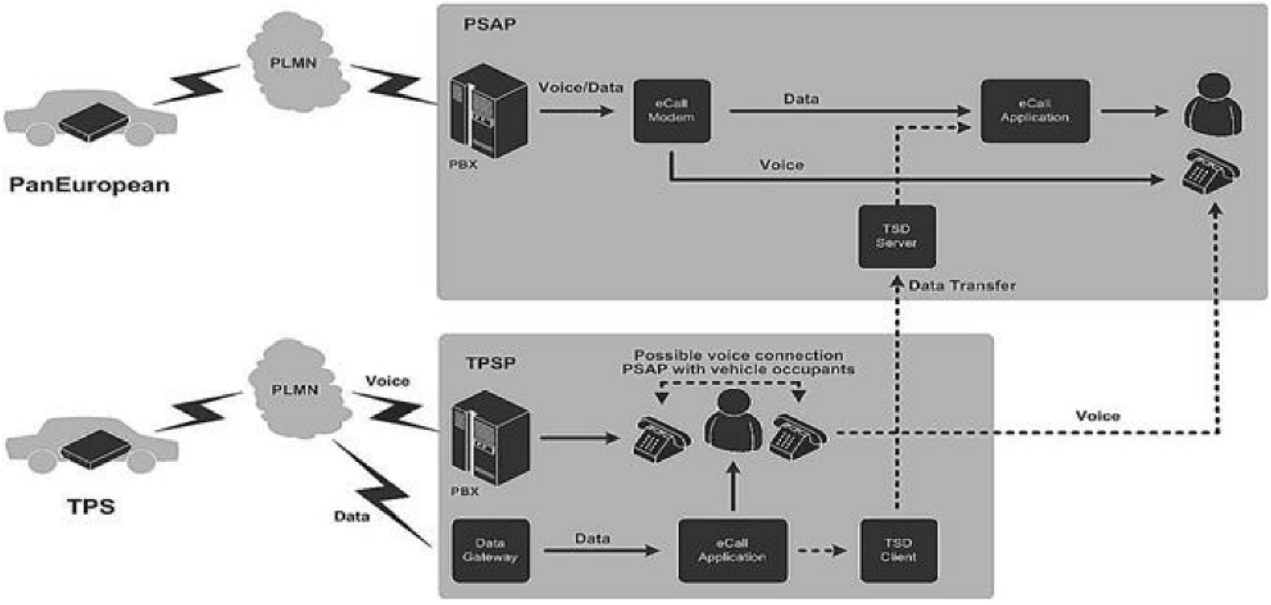

Figure 1 — End-to-end 'panEuropean eCall' and 'TPS-eCall' systems connected to an 'eCall' enabled PSAP

Figure 2, taken from EN 16062:2015, shows the relationship of the eCall transaction to Standards.

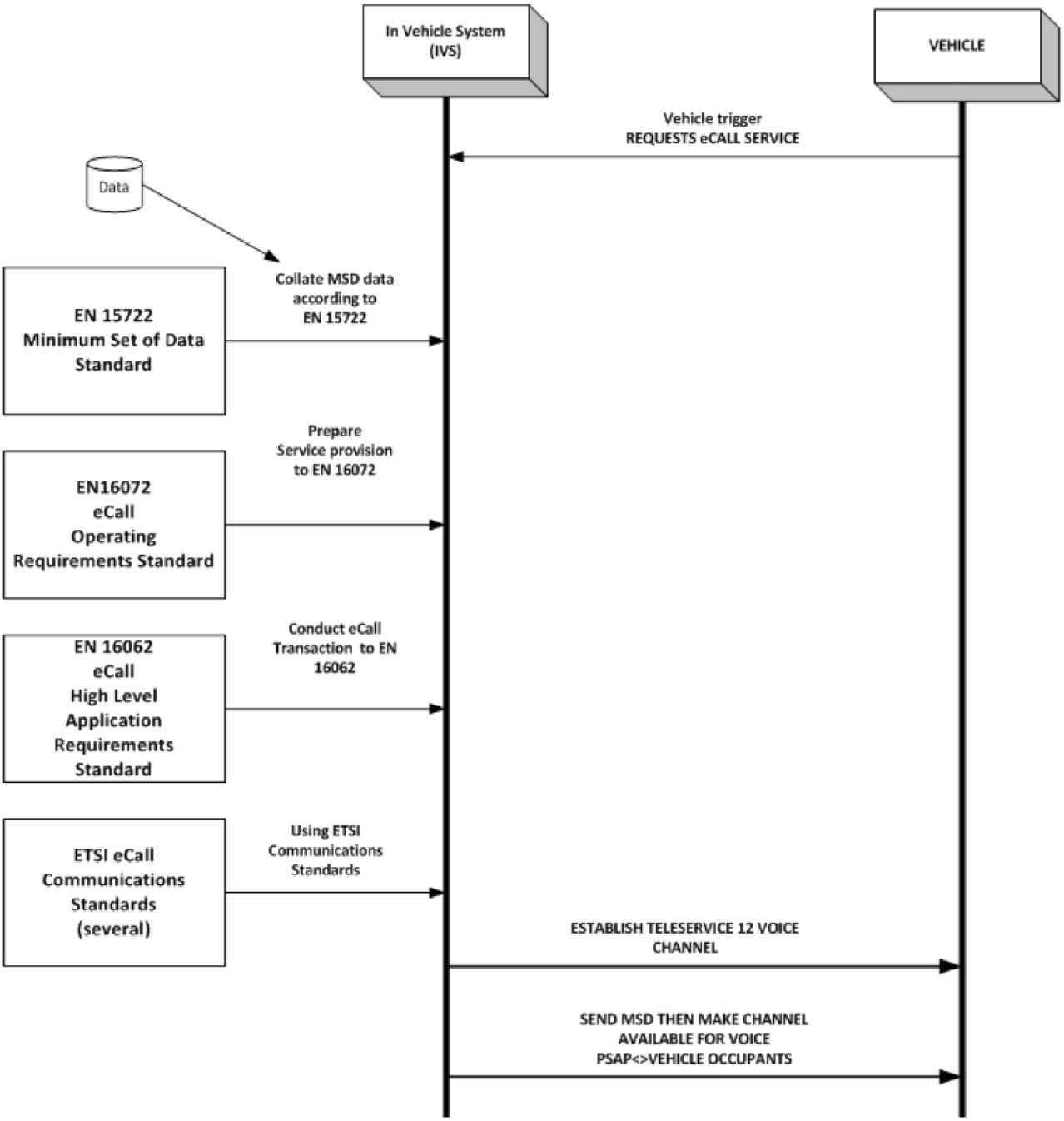

Figure 2 — Relationship of PE eCall transaction to Standards

After the establishment of an emergency voice call TS12 between a vehicle and a *Public Safety Answering point* (PSAP) the audio equipment comprising the microphone and loudspeaker in the vehicle is disconnected from the line whilst the MSD is transmitted, within the voice band, to the PSAP *data* processing equipment. An indication is given to the occupants of the vehicle that an *eCall* is in progress. On completion of the MSD transfer the in-vehicle audio system is reconnected to the line and a voice communication is established between the *vehicle occupants* and a PSAP operator. The incident related information associated with the TS12 voice call, contained within the MSD, is made available to the PSAP operator in the manner decided locally.

Following the initial resolution of the incident by the PSAP operator, the PSAP operator may clear-down the call, however, the *in-vehicle system* (IVS) remains registered on the mobile network, for the period specified in EN 16072 to enable the PSAP or rescue services to recall the *vehicle occupants*.

The key stages of eCall delivery can be represented as a high level state transition diagram as in Figure 3:

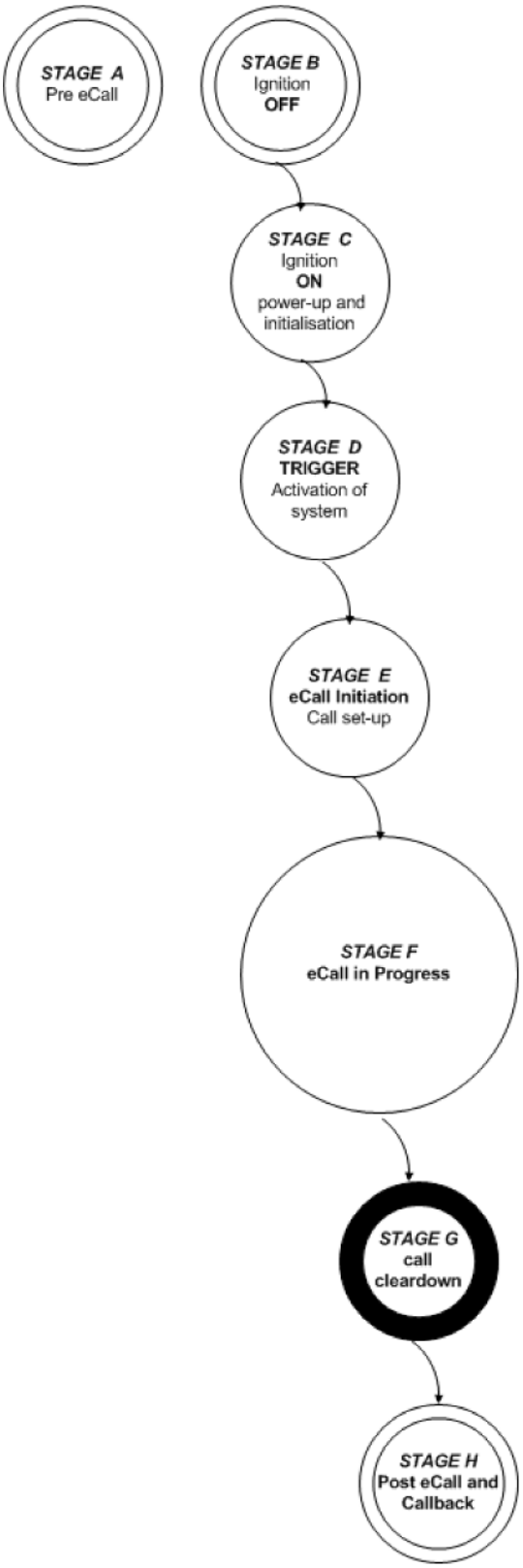

Figure 3 — High level state transition steps of eCall

Table 1 — Test suite structure

State transition Stage	Stage	Stage acronym	Actions
STAGE A	General conformance tests required before eCall is initiated, including relevant NAD conformance tests	PRE	General conformance tests required before eCall is initiated, including relevant conformance tests for: ETSI TS 102 936-1 ETSI TS 102 936-2
STAGE B	Ignition OFF	I-OFF	Start state before engine is started No actions
STAGE C	Ignition ON (no eCall) including power-up	I-ON	Ignition turned on by driver; Power-up and initialisation of system
STAGE D	Trigger	TRG	On-board equipment triggers automatic activation of eCall or occupant manually triggers eCall TRG may occur before Stage C in the case of a manual eCall
STAGE E	eCall Initiation	ECI	Network selection and registration (if not already registered on a network). Call set-up
STAGE F	eCall in progress	ECP	Data transfer Establish audio link Clarification of the overall emergency situation and location Initiate incident resolution In the case of PE eCall specifically: Request MSD, send MSD, error check), and link layer ACK (including stop MSD transmissions); Application layer ACK; Establish audio link (including check audio link to vehicle occupants, MSD visualisation, rerouting to another PSAP)
STAGE G	eCall Cleardown	CLR	Terminate call
STAGE H	Post eCall and Call-back	CLB	Remain registered on network to enable PSAP to call-back into vehicle if required

Some of these state transitions are under the control of one actor (for example 'activation of system'), however others require involvement of multiple actors (for example Call set up, MSD transfer, etc.)

The objective of this Standards deliverable is to view eCall from the point of each of the key actors in turn, and provide tests that encompass the aspects of eCall under their control. If they can demonstrate that they comply to all of the tests identified for their role, they are able to claim that they are compliant to the eCall Standards.

7 How to use this Standard

7.1 Layout and procedures

Clauses 8 to 12 define the requirements in order to claim compliance with the suite of eCall Standards described in Figure 2 above.

This European Standard is designed to support both self-declaration and independent conformance certification environments.

The full set of tests is defined so that each stage of the process under control of an actor can be tested (which is necessary if any part fails). 7.3 explains circumstances where the success of some tests may be assumed if others later in the chain have been passed.

Clause 8 describes and defines the general objectives of this conformance Standard and identifies the state transitions for the principal actor groups that need to ascertain or declare conformance: 'In-vehicle Systems' (IVS), Mobile Network Operators (MNO),' Public Safety Assistance Points/Providers' (PSAP) and 'Third Party Service Providers' (TPSP).

If you wish to demonstrate conformance of a pan European in-vehicle system to the European Standards defining eCall, work through the appropriate conformance tests in 9.1 to 9.6, using the appropriate checklist in Annex A. If the in-vehicle system passes all of the conformance tests defined in the appropriate column(s) of Table 4 (columns 3 and 4) in 8.2 (or the 'accelerated tests' of 7.3), then conformance of the pan European in-vehicle system to the eCall Standards has been demonstrated and the in-vehicle system can be said to be conformant with eCall Standards.

If you wish to demonstrate conformance of a TPS in-vehicle system to the European Standards defining eCall, work through the appropriate conformance tests in 9.7 to 9.9, using the appropriate checklist in Annex B. If the in-vehicle system passes all of the conformance tests defined in the appropriate column (column 5) of Table 4 in 8.2 , then conformance of the TPS in-vehicle system to the eCall Standards has been demonstrated and the in-vehicle system can be said to be conformant with eCall Standards.

If you wish to demonstrate conformance of a mobile network operator to the European Standards defining eCall, work through the conformance tests in Clause 10, using the appropriate checklist in Annex B. If the mobile network operator system passes all of the conformance tests defined in the appropriate column (column 6) of Table 4 in 8.2 (or the 'accelerated tests' of 7.5), then conformance of the mobile network operator system to the eCall Standards has been demonstrated and the mobile network operator can be said to be conformant with eCall Standards.

If you wish to demonstrate conformance of a PSAP to the European Standards defining Pan European eCall, work through the conformance tests in Clause 11, using the appropriate checklist in Annex D. If the system of the PSAP passes all of the conformance tests defined in the appropriate column (column 7) of Table 4 in 8.2,(or the 'accelerated tests' of 7.6), then conformance of the PSAP system to the pan European eCall Standards has been demonstrated and the PSAP system can be said to be conformant with eCall Standards.

If you wish to demonstrate conformance of a PSAP to the European Standards defining TPS eCall, work through the conformance tests in Clause 11, using the appropriate checklist in Annex D. If the system of the PSAP passes all of the conformance tests defined in the appropriate column (column 8) of Table 4 in 8.2, Table 4 (or the 'accelerated tests' of 7.7), then conformance of the PSAP system to the pan European eCall Standards has been demonstrated and the PSAP system can be said to be conformant with eCall Standards.

The tests for a conformant TPS-eCall cannot easily be split into very small steps due to the wide range of possible technical solutions for the IVS, TPS-eCall Responder, and TPS-eCall Notifier with supplier-dependent communications protocol and call-flow.

The individual conformance tests for TPS-eCall are generally more comprehensive and already reflect a pragmatic grouping of several conformance aspects into a given test, thus supporting efficient testing.

Except where explicitly stated within a given CTP that it does not apply to the system variant being tested, the full sequence of tests in Clause 12 shall be undertaken in order to claim conformance.

If you wish to demonstrate conformance of a TPS service to the European Standards defining eCall, work through the conformance tests in Clause 12, using the appropriate checklist in Annex E. If the system of the TPS passes all of the conformance tests defined in the appropriate column(s) (columns 9,10,11) of Table 4 in 8.2, then conformance of the TPS system to the eCall Standards has been demonstrated and the TPS system can be said to be conformant with eCall Standards.

7.2 System under test

This deliverable is focussed on the conformance of systems at the application level. The conformance test procedures defined herein are to ascertain conformance of the application, and therefore are focussed on the 'system' under test, and not the physical equipment components that comprise the *'system*'. The conformance test procedures (CTPs) defined herein relate, as far as possible, to tests of the *system* in operation under the control of one of the actor groups (for example: conformance tests for the IVS (any type) are referenced to the 'IVS' and not any components of the IVS, and test only those aspects within the control of the IVS).

These conformance tests therefore test the behaviour/inputs/outputs of the system and not how the components of the system operate, nor where they store their data, or how they are configured/designed to achieve the system performance. This allows maximum market flexibility in design and instantiation, yet provides assurance of compliant operation at the system level. This approach will also assist migration over time as equipment design improves and develops, and enables an open and competitive marketplace.

Any references to specific clauses of the Standards deliverables, to which these conformance tests are designed to confirm compliance, relate to the behaviour, inputs and outputs specified in the referenced deliverable at the *system* level. Any specification in any referenced Standards deliverable as to how a value is calculated, or the location of where data is stored, was not tested, nor required for 'system' level conformance so long as the results of behaviour and values of inputs and outputs are as required by the referenced Standards deliverable.

These conformance tests test conformance to the suite of CEN and ETSI Standards deliverables that together enable 'eCall' to be achieved in a consistent and interoperable way. They may assist but do not test nor provide GCF certification, and equipment manufacturers should be aware that their equipment may also have to get their product GCF certified in order to be allowed to be used on MNO networks.

7.3 Accelerated test procedures

General conditions:

A CTP-PASS condition is only confirmed if ALL individual pass conditions written in the "pass conditions" column of a given CTP are observed.

A CTP-FAIL condition occurs if one or more of the given individual pass conditions written in the "pass conditions" column of a given CTP are *not* observed (failed).

While conformance tests have been specified for each of the state transitions for each actor group involved in a eCall transaction, it is an objective of this Standard to make the compliance testing procedure as quick, inexpensive and simple as possible.

Each actor group Clause (IVS, MNO,PSAP, TPSP) contains a subclause 'Accelerated Test Procedures'.

This subclause identifies a number of key tests which, if they are successfully passed, mean that the tester can assume that many of the other state transitions have been successful, and may be considered as 'passed' without specifically separately undertaking each and every test procedure within the process.

For example, in respect of the IVS, conformance test procedure (CTP) 2.4.1, in order to reach this point CTPs 2.1.2, 2.1.3, 2.2.1.1, 2.2.2.1, 2.2.1.3 are conformant, without specifically undertaking the conformance tests at these transition points.

These accelerated test procedures speed up the testing process and minimise, in the event of successful results, the number of tests that have to be separately performed, thus also reducing the costs associated with the achievement of conformance status.

The remaining subclauses of Clause 7 detail the accelerated test procedures for each of the actor groups involved in eCall conformance testing.

7.4 Accelerated test procedures for IVSs

7.4.1 Accelerated test procedures for all types of PE eCall IVS

If the PE eCall IVS system under test has obtained a PASS to all of the tests in column A of 7.4.1, and is an 'eCall only' device, proceed to 7.4.2.

If the PE eCall IVS system under test has obtained a PASS to all of the tests in column A of 7.4.1, and was not an 'eCall only' system, no further testing is required in order to claim conformance with the requirements of this document.

A		B
PE eCall IVS All types: ESSENTIAL TESTS That SHALL ALWAYS Be completed		TESTS WHICH MAY BE ASSUMED TO BE PASSED IF TESTS IN THE SAME ROW OF ADJACENT COLUMN A HAVE BEEN SUCCESSFULLY PASSED
1.1.0.1		
1.1.0.2		

1.1.0.3		
1.1.2.2		1.1.1.1 1.1.2.1
1.1.2.3 1.1.2.4 1.1.2.5		
1.1.3.2		1.1.3.1
1.1.5.2		
1.1.5.3		
1.1.5.4		
1.1.5.5		
1.1.5.6		
1.1.5.7		
1.1.6.1		
1.1.7.1		
1.1.8.1		
1.1.9.1		1.1.4.1 1.1.5.1
1.1.10.1		
1.1.10.2		
1.1.10.3		
1.1.11.1		
1.1.12.1		
1.1.13.1		
1.1.14.1		
1.1.15.1		1.1.14.2
1.1.15.2		
1.1.15.3		
1.1.15.4		
1.1.15.5		
1.1.16.1		
1.1.16.2		
1.1.16.3		
1.1.17.2		1.1.17.1
1.1.17.3		
1.1.17.4		

7.4.2 Additional accelerated test procedures for PE eCall only IVS

A		B
PE eCall Only IVS: Additional ESSENTIAL TESTS That SHALL ALWAYS Be completed		TESTS WHICH MAY BE ASSUMED TO BE PASSED IF TESTS IN THE SAME ROW OF ADJACENT COLUMN A HAVE BEEN SUCCESSFULLY PASSED
1.1.1.2		
1.1.10.4		1.1.1.3
1.1.17.5		

If the IVS system under test has obtained a PASS to all of the tests in column A of 7.3.2, in addition to obtaining a PASS to all of the tests in column A of 7.4.1, no further testing is required in order to claim conformance with the requirements of this document.

7.5 Accelerated test procedures for MNOs

MNO ESSENTIAL TESTS That SHALL ALWAYS Be completed		TESTS WHICH MAY BE ASSUMED TO BE PASSED IF TESTS IN THE SAME ROW OF ADJACENT COLUMN A HAVE BEEN SUCCESSFULLY PASSED
2.0.1		
2.0.2		
2.0.3 2.0.4 2.11.1		2.2.1.2 2.11.2
2.1.1		
2.4.1		2.1.2 2.2.1.1 2.2.1.2 2.2.1.3
2.2.3.1		
2.2.3.2 2.2.3.3		
2.3.1		
2.5.1		2.6.1
2.7.1		

If the MNO system under test has obtained a PASS to all of the tests in column A, of 7.5, no further testing is required in order to claim conformance with this document.

Where a CTP is shown in the state transition diagrams, but does not appear in the above list, it may be assumed that that state transition does not require a separate physical test.

7.6 Accelerated test procedures for PSAPs – PE eCall

A		B
PSAP ESSENTIAL TESTS That SHALL ALWAYS Be completed		TESTS WHICH MAY BE ASSUMED TO BE PASSED IF TESTS IN THE SAME ROW OF ADJACENT COLUMN A HAVE BEEN SUCCESSFULLY PASSED
CTP 3.1.10		CTP 3.1.0.1 CTP 3.1.0.2 CTP 3.1.1.1 CTP 3.1.1.2 CTP 3.1.2 CTP 3.1.3.1 CTP 3.1.3.3 CTP 3.1.4 CTP 3.1.5.1 CTP 3.1.5.2 CTP 3.1.6 CTP 3.1.7.1 CTP 3.1.7.2 CTP 3.1.7.3 CTP 3.1.8 CTP 3.1.9
CTP 3.1.3.2 CTP 3.1.3.3		
CTP 3.1.7.4 CTP 3.1.7.5		
CTP 3.1.11		
CTP 3.1.12		
CTP 3.1.13		
CTP 3.1.14.1 CTP 3.1.14.2		
CTP 3.1.15		
CTP 3.1.16		

If the PSAP PE eCall system under test has obtained a PASS to all of the tests in column A, of 7.6, no further testing is required in order to claim conformance with the requirements of this document.

7.7 Accelerated test procedures for PSAPs – TPS-eCall

A		B
PSAP ESSENTIAL TESTS That SHALL ALWAYS Be completed		TESTS WHICH MAY BE ASSUMED TO BE PASSED IF TESTS IN THE SAME ROW OF ADJACENT COLUMN A HAVE BEEN SUCCESSFULLY PASSED
CTP 3.2.0.1 CTP 3.2.0.2.1 CTP 3.2.0.2.2 CTP 3.2.0.3 CTP 3.2.0.4 CTP 3.2.0.5.1 CTP 3.2.0.5.2 CTP 3.2.0.6		
CTP 3.2.4		CTP 3.2.1 CTP 3.2.2 CTP 3.2.3
CTP 3.2.5		
CTP 3.2.6		
CTP 3.2.9		CTP 3.2.7 CTP 3.2.8
CTP 3.2.10		
CTP 3.2.11		
CTP 3.2.12		

If the PSAP TPS-eCall system under test has obtained a PASS to all of the tests in column A, of 7.7, no further testing is required in order to claim conformance with the requirements of this document.

7.8 Accelerated test procedures for TPSPs

For the reasons explained in 7.1, there are no accelerated test procedures for TPSP aspects of eCall, and the full sequence in Clause 12 shall be followed and passed in order to claim conformance.

8 Requirements

8.1 Requirements - General objectives

8.1.1 State transitions

Service provision comprises the success of a series of state transitions. Conformance can therefore be ascertained at a system level by demonstration that the state transitions are successfully made,

NOTE 1 The advantages of a 'system under test' approach, rather than a 'device under test' approach include that fewer tests to be undertaken; many tests can be taken at a practical 'has it achieved the objective' level and are less complex (and therefore less costly), and at least in respect of MNO, PSAP, TPS-Notifier and TPS-Responder, test the system more than they test the equipment that a system happens to be using on a particular day which is a more effective approach.

In the scope, the key actors in the eCall chain of service provision are defined as:

1) In-vehicle system (IVS)/vehicle

2) Mobile network operator (MNO)

3) Public safety assistance point [provider](PSAP)

   in some circumstances may also involve

5) Third party service provider (TPSP)

   and to provide conformance tests for actor groups 1) – 4)

NOTE 2 Conformance tests are not appropriate nor required for vehicle occupants, although they are the recipient of the service.

The scope covers conformance testing (and approval) of new engineering developments, products and systems, and does not imply testing associated with individual installations in vehicles or locations.

To understand the roles more clearly, we can define the transaction as one between

— Vehicle occupants

— PSAPs

But in order to achieve this transaction, the following actors are required and involved:

— In-vehicle system provider (Vehicle manufacturers and providers of aftermarket equipment)

— Mobile network operators (to carry the radio transmissions)

And in some cases

— Third party service providers

The key systems may be described as:

— In-vehicle systems

— Mobile network operator systems

— PSAP systems

And in some cases

— Third party service provider systems

Service provision is an interdependent series of actions between the actors and the systems.

Each provision of service has a series of state transitions that it needs to successfully achieve, to provide its part of the service. System level conformance testing can therefore be achieved by demonstrating that a state transition, or sequence of state transitions, successfully achieve their transition.

In respect of the recipient of the eCall service – the occupants of the vehicle – they are largely passive in respect of service provision. It is true that they may be able to manually initiate an eCall, but eCall is designed to be provided in circumstances where the occupants of the vehicle may be incapacitated or even unconscious. In any event the occupants of the vehicle do not need to demonstrate that they are compliant to the eCall Standards.

Some of the key states and conformance areas for each of the four actor groups are shown to assist the reader in Figures 4 to 11, and a classification of testing is provided for all actor groups within 8.1.

These diagrams are not intended to fully describe all possible states and state transitions associated with a given actor group, but illustrate key areas where conformance may need to be tested.

Clauses 9 to 12 then, for each actor group in turn, analyse the tests required for that actor group to be able to claim compliance.

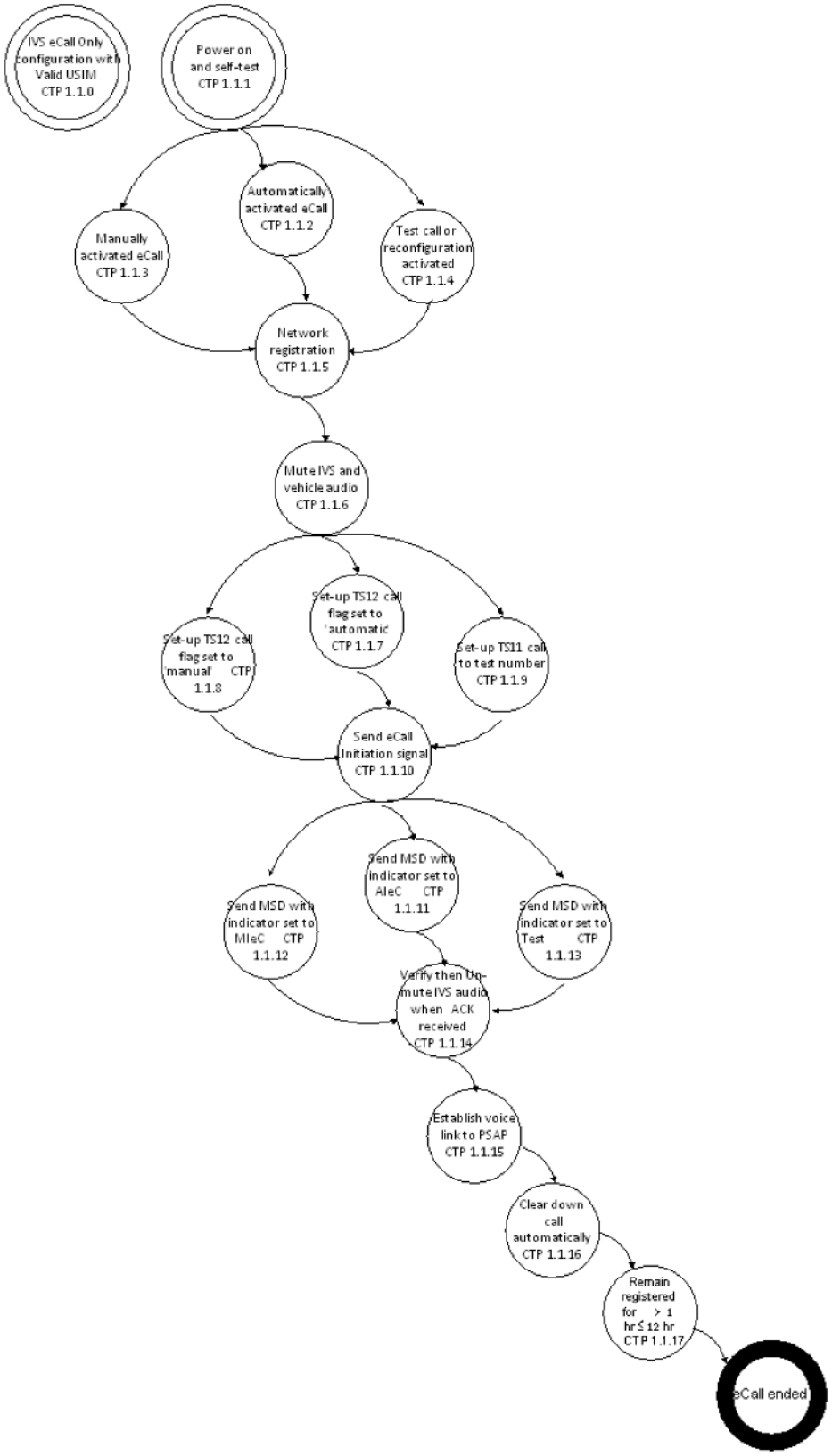

Figure 4 — In-vehicle system state transitions- Pan European eCall only

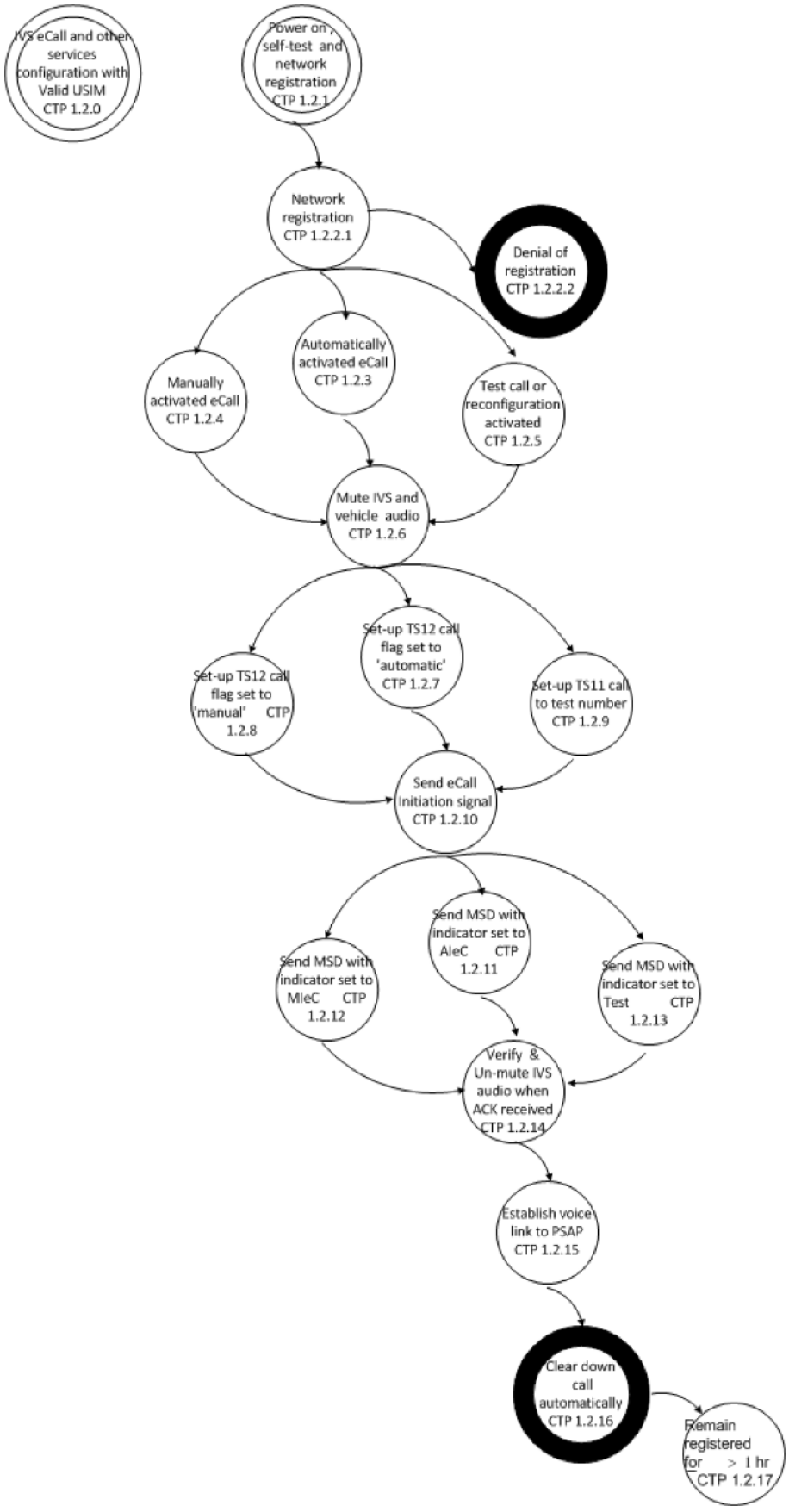

Figure 5 — In-vehicle system state transitions- Pan European eCall + other services

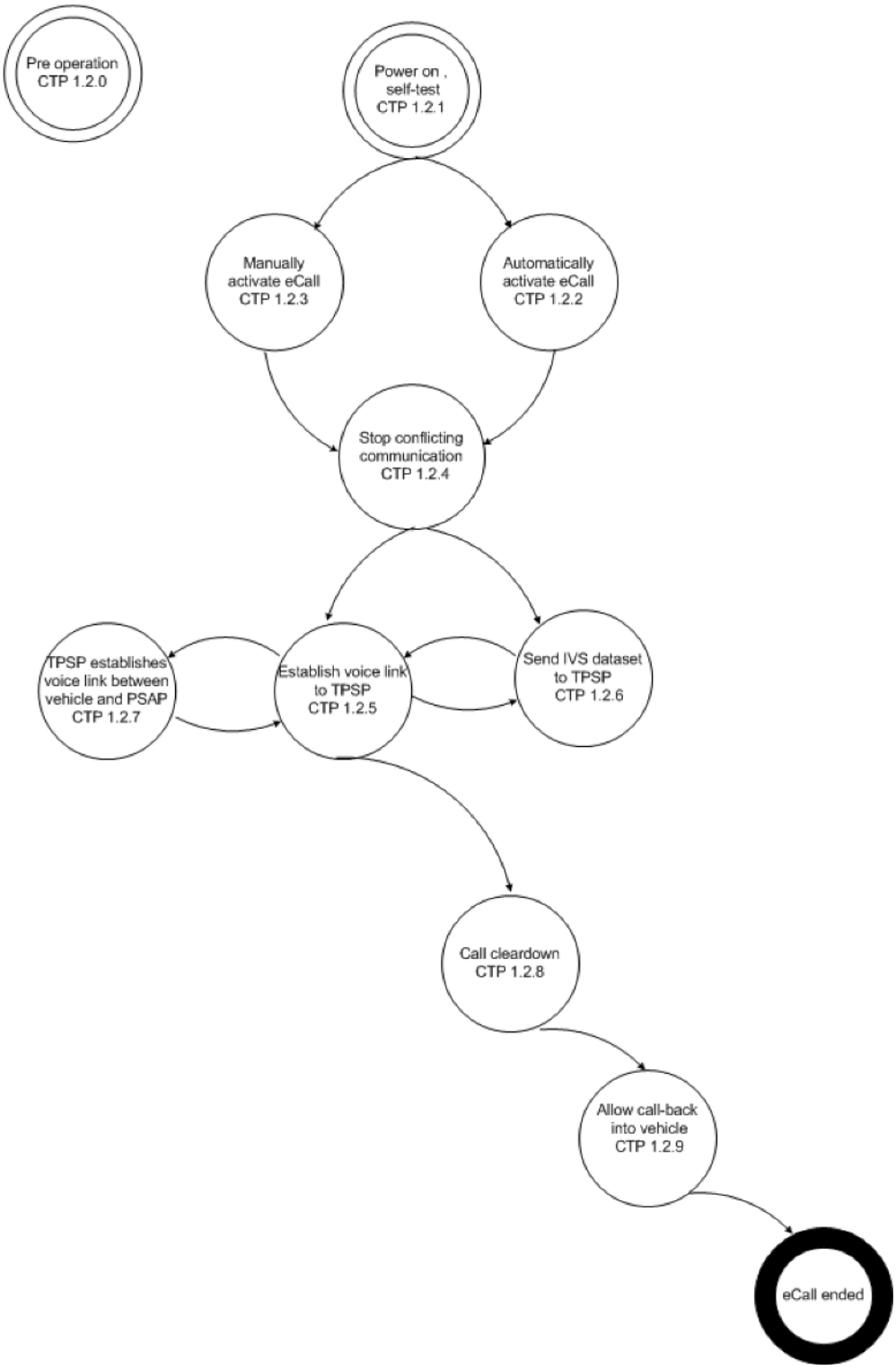

Figure 6 — In-vehicle system state transitions — Third party service provider (TPSP) eCall

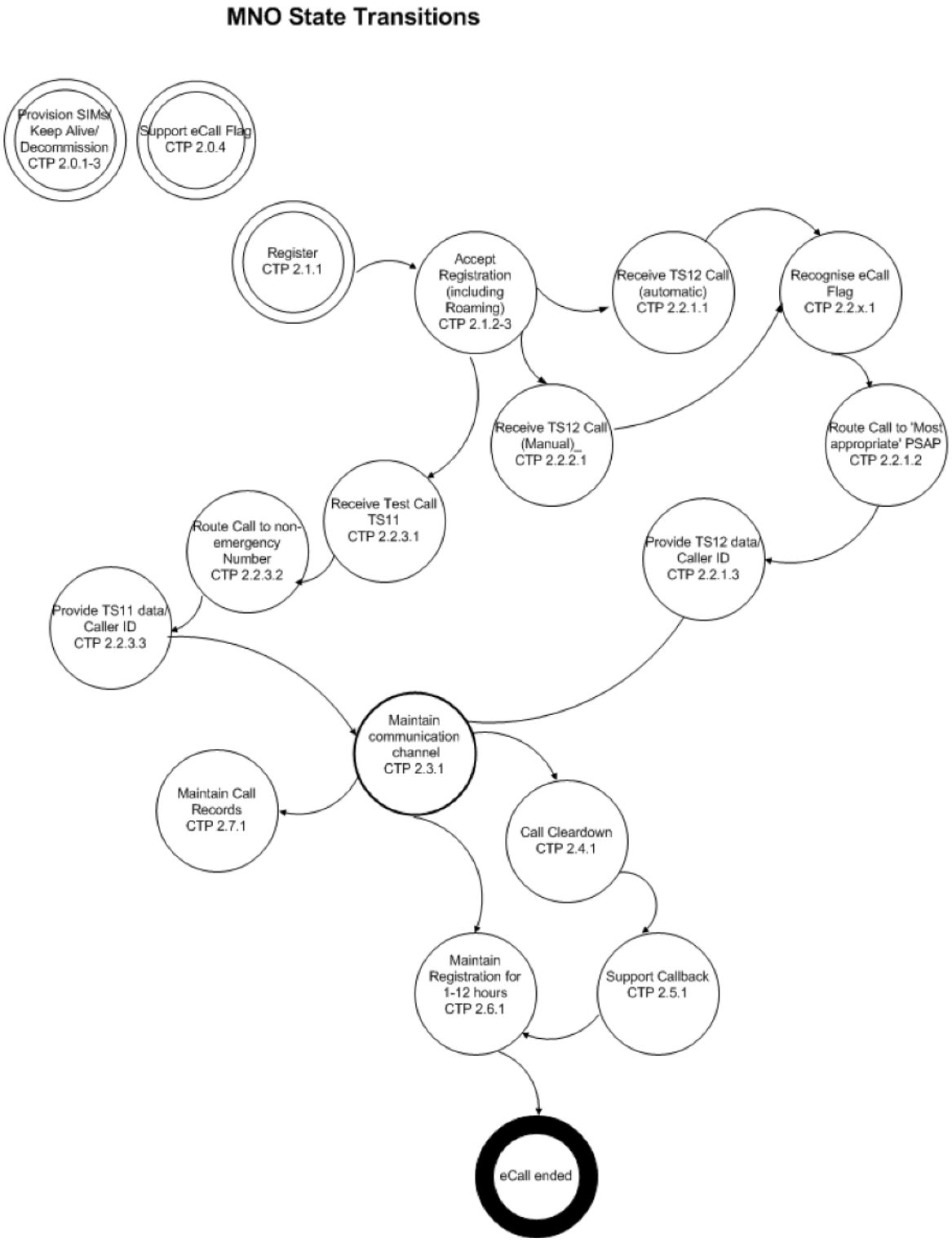

Figure 7 — MNO system state transitions

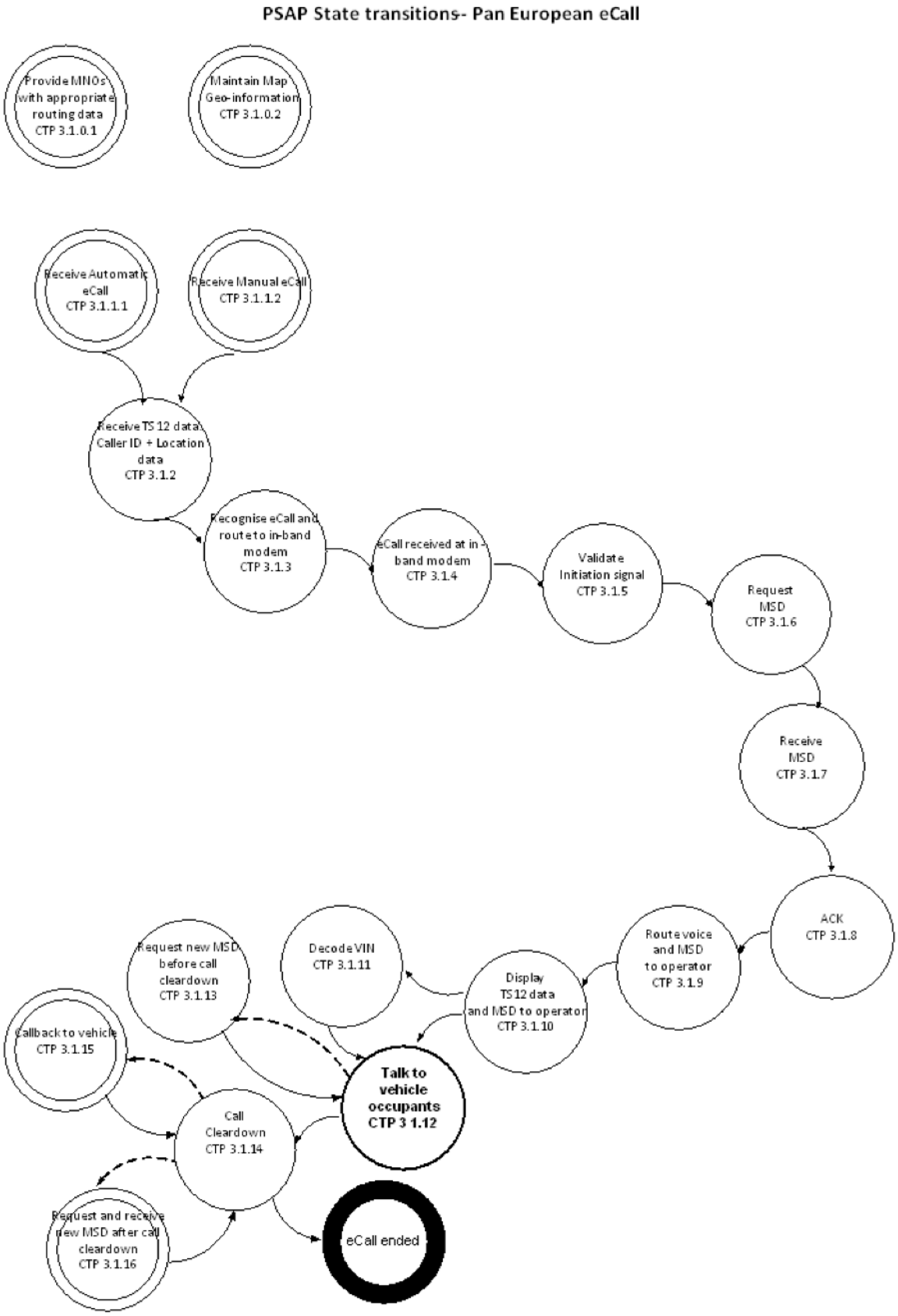

Figure 8 — PSAP State transitions- PE eCall

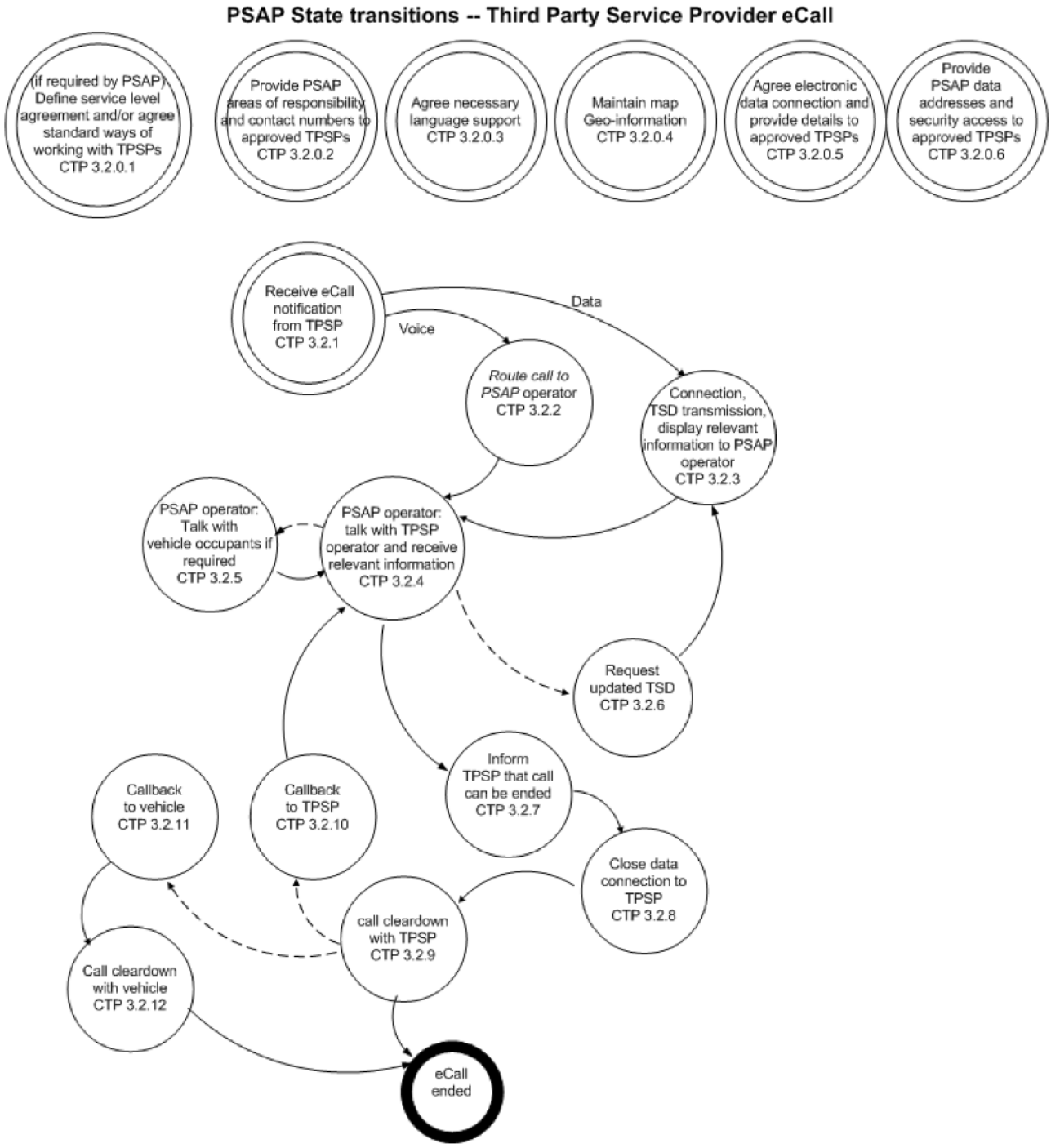

Figure 9 — PSAP State transitions- TPS-eCall

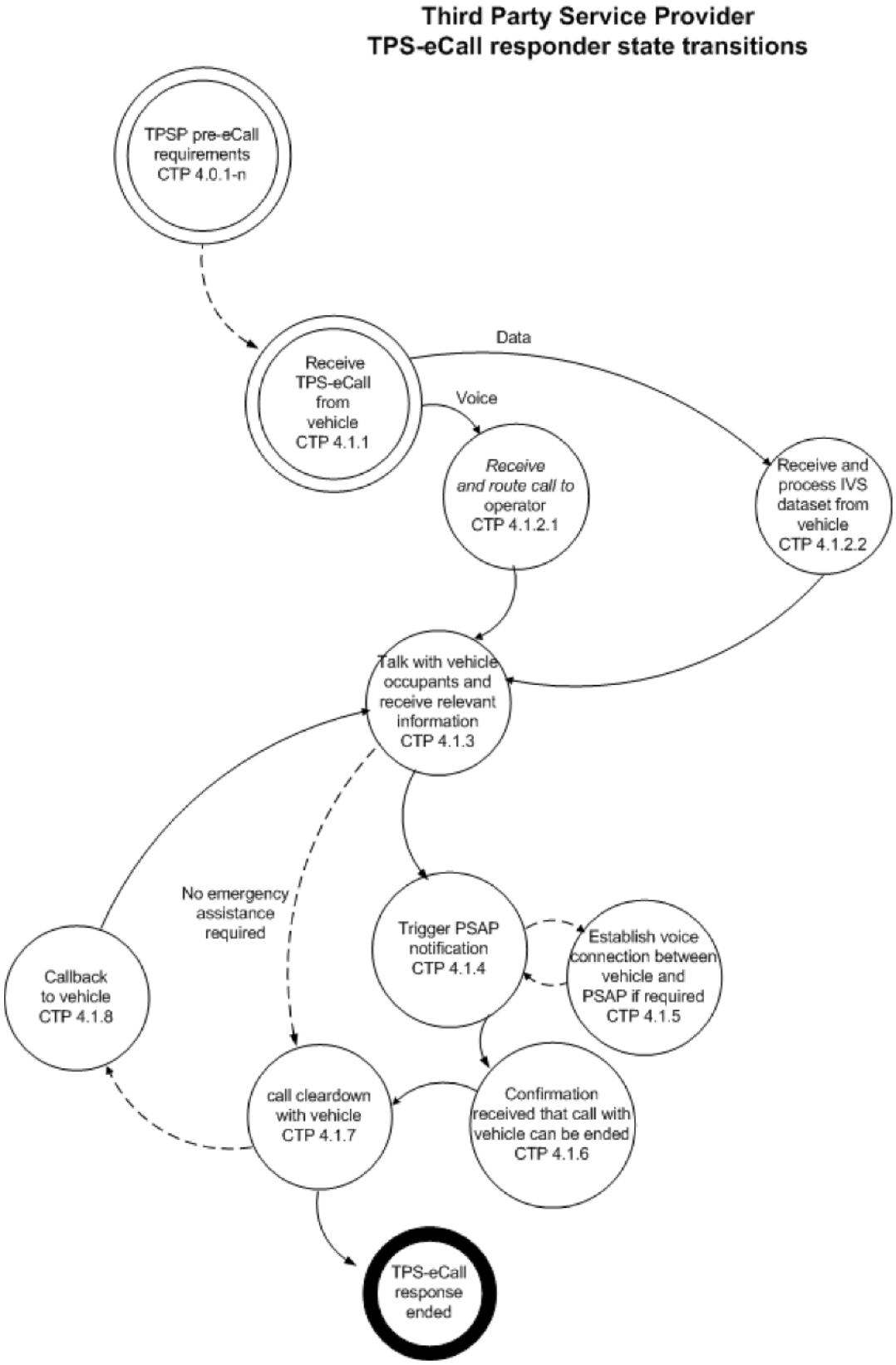

Figure 10 — TPS-Responder state transitions

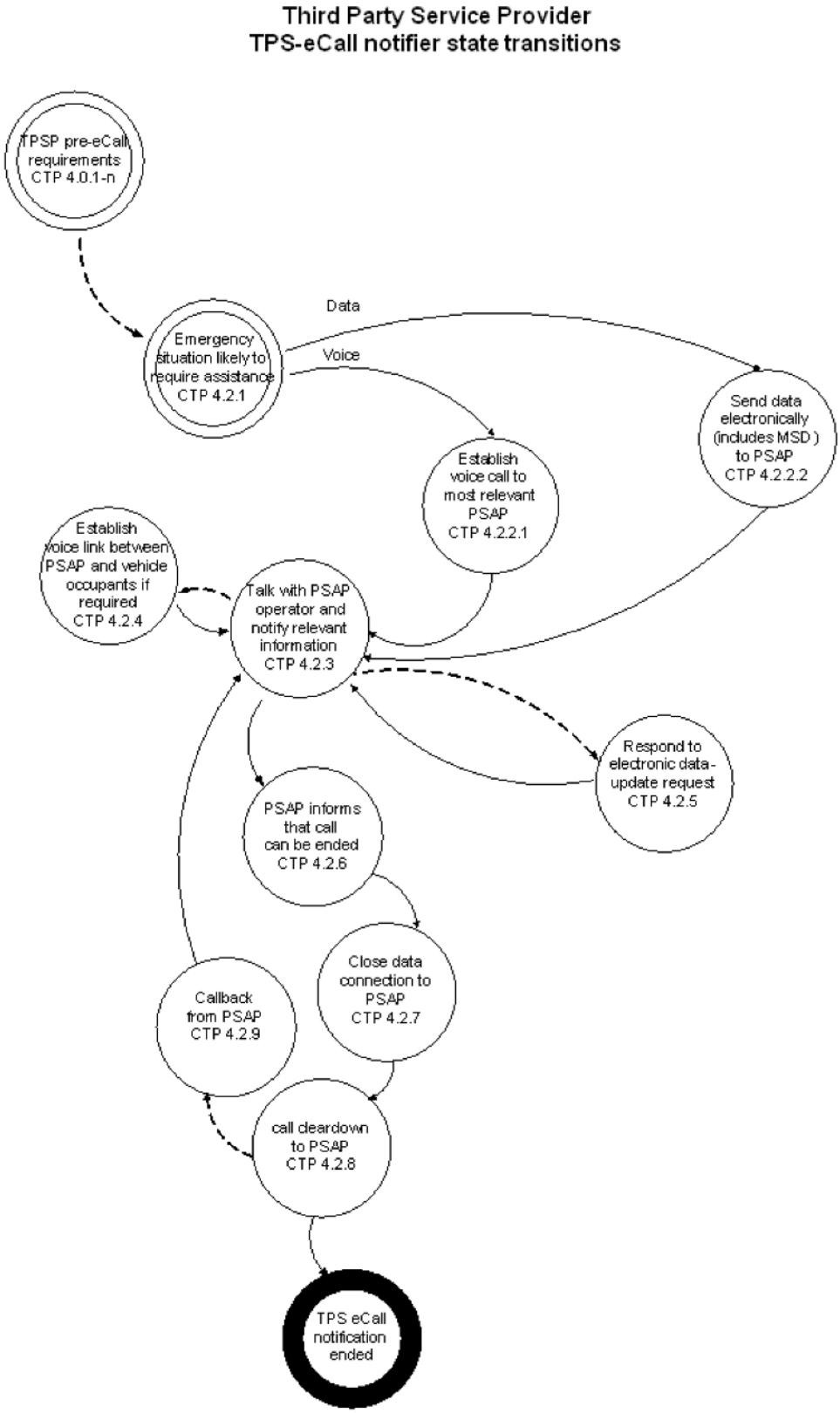

Figure 11 — TPS-Notifier state transitions

8.1.2 Classification of testing

Table 2 — Classification of testing

Conformance Area	In-vehicle System		MNO	TPSP		PSAP	
	IVS	TPS-IVS		TPS-eCall Responder	TPS-eCall Notifier	eCall PSAP	TPS-eCall PSAP
PRE: Availability of systems			X	X		?	
PRE: Training				X	X	X	X
PRE: Contact details					X	X	X
PRE: Geographical Information System				X		X	X
PRE: NAD conformance tests	X	X					
I-OFF: Ignition-off behaviour	X	X					
I-ON: Ignition-on and power- up behaviour	X	X					
I-ON: Network registration	X		X				
TRG: Trigger	X	X					
TRG: Network registration	X	X	X				
ECI: In-Vehicle HMI	X	X					
ECI: Car audio handling	X	X					
ECP: Post-crash performance	X	X					
ECP: Call car to PSAP	X		X			X	
ECP: Call car to TPSP		X	X	X			
ECP: Call TPSP to PSAP					X		X
ECP: Conference capability				X	X		
ECP: Voice retry car to PSAP	X		X			X	
ECP: Voice retry car to TPSP		X	X	X			
ECP: Qualification time				X		?	
ECP: Transfer MSD car to PSAP	X		X			X	
ECP: Transfer IVS-dataset car to TPSP		X	X	X			
ECP: Transfer MSD (TSD) TPSP to PSAP					X		X
ECP: Test call car to PSAP			X	X		?	
CLR: Call clear-down	X	X		X		X	
CLB: Network de-registration eCall only IVS	X						
CLB: Call-back PSAP to car	X		X			X	
CLB: Call-back TPSP to car		X	X	X			X
CLB: Call-back PSAP to TPSP					X		X

Figure 12 shows the test points that are valid for 'System Under Test'. At each test point it is possible to trigger particular action or to observe the system response on particular action.

A test point may be an actual instantiation of equipment performing the CTP 'live', using 'live' equipment. However, it may also be equipment/systems that simulate behaviour of equipment at the

point being tested in order to stimulate or observe the behaviour resultant from the stimulation and note the result of that stimulation. The objective of using 'test points' (in addition to not placing a burden on live systems) is to obviate the possibility of error being introduced into the SUT from elsewhere, so that we are sure of the SUT behaviour. However, in some situations where this is not a concern, the test may be, at the discretion of the tester, simply made on a live system so long as it does not place a burden on other actors. Although in terms of the total eCall transaction, the IVS is the generator of input to the other actors, the MNO is a highway for the eCall and the PSAP is the recipient, within the actual transaction and of the actors may be at a particular stage conduct communication in either direction, as appropriate.

For example, when testing whether the IVS equipment transmits an eCall to a PSAP, the objective of the test is to verify that the IVS is working according to the requirements. The behaviour of the MNO carrying the message was not under test in this particular CTP and may therefore be simulated, and what is done with the eCall by the PSAP was not under test in this particular CTP and may also therefore be simulated.

Such simulation will be necessary, for example, to ensure that PSAPs do not receive calls from IVS equipment under CTP test. Similarly, to study the behaviour of the system in the event of a crash impact, simulation tools may be used to avoid the necessity of physically having to crash a car in order to prove that the system passes that CTP test.

The following test points are identified and used in this specification:

— IVS test point

This test point represents the behaviour of the system installed in the vehicle, or is a simulation of the output from the vehicle on the MNO and/or PSAP. The test point is representing the in-vehicle system and is used only for test purposes related to Pan European eCall.

— TPS-IVS test point

This test point represents the IVS represents the behaviour of the system installed in the vehicle. The infrastructure like vehicle dashboard, microphone, loudspeaker create this test point. TPS-IVS test point is used only for test purposes related to TPS-eCall.

— MNO test point

This test point represents the 'Public Land Mobile Network' (PLMN) of the 'Mobile network Operator'(MNO) or is a simulation of the behaviour of the PLMN with the IVS and/or the PSAP. The test point can be located at any network element that creates PLMN and is used for particular test purpose. Because some of the test purposes will be difficult to be executed in real mobile network, a MNO test point may mode land operate the MNO system software in a simulated environment. The MNO PLMN test point is used only for test purposes related to both Pan European eCall and TPS-eCall.

The MNO PLMN test point is used only for test purposes related to both Pan European eCall and TPS-eCall. The MNO test point acts either as an endpoint for IVS testing, or as starter for PSAP testing.

— PSAP test point

This test point represents the PSAP located either at eCall application or PSAP voice terminal. The PSAP test point is used for test purposes related to both Pan European eCall and TPS-eCall. The test point is representing the PSAP system and is used only for test purposes related to Pan European eCall.

— TPS-R test point (TPS-eCall Responder)

This test point represents the TPSP located either at eCall application or TSP voice terminal. TPS-R test point is used only for test purposes related to TPS-eCall.

— TPS-N test point (TPS-eCall Notifier)

This test point represents the stage between TPSP and PSAP. It aims to verify the connection between TSD client and TSD server. TPS-N test point is used only for test purposes related to TPS-eCall.

See Figure 12.

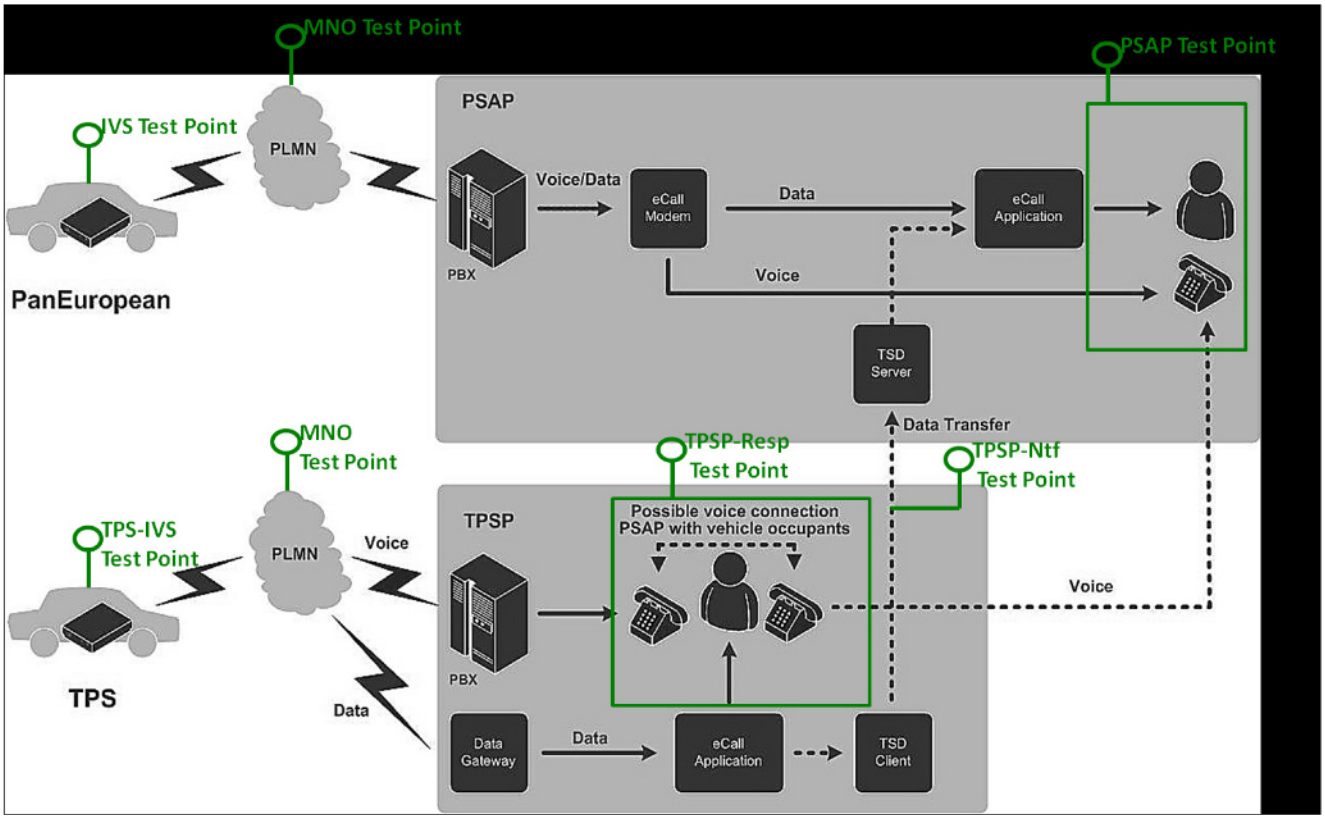

Figure 12 — Test points

8.1.3 CTP naming conventions

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

CTP/<actor>/<stage>/<n.n.n.n>

CTP : to indicate that it is a 'Conformance Test Procedure';

Actor : IVS, MNO, PSAP, TPSP (TPS-Notifier, TPS-Responder)

<stage> : which stage the CTP belongs to;

<nn> : Decimal numbered state transition reference/ CTP number (x.x.x.x)

The naming conventions are as described in Table 3.

8.1.4 CTP naming convention for IVS conformance tests

Table 3 — CTP naming convention

Identifier: CTP/<actor><stage>/<n.n.n.n>		
		<stage>
STAGE A NAD conformant to ETSI Standards		**PRE**
STAGE B Ignition OFF		**I-OFF**
STAGE C Ignition on - Power up and initialisation		**I-ON**
STAGE D TRIGGER		**TRG**
STAGE E eCALL initialisation call set up		**ECI**
STAGE F eCall in Progress Send MSD Receive ACK Connect audio Clarify overall emergency situation and location Incident resolution and inform occupants verbally		**ECP**
STAGE G Call cleardown		**CLR**
STAGE H Post eCall and Call-back		**CLB**
<n.n.n.n> = sequential number	(n.n.n.n)	Test Purpose Number

8.2 CTP structure

Table 4 shows the' Test Suite Structure' (TSS)

Table 4 — Test suite structures

Group	Group acronym	State transition reference all PE eCall	State transition reference eCall only Additional tests	State transition reference TPSP eCall	State transition reference MNO	State transition reference PSAP PE eCall	State transition reference PSAP TPSP eCall	TPSP pre-eCall	TPSP Responder	TPSP Notifier
Prior to eCall including Provision SIMs/keep alive/decommision NAD Conformance tests in accordance with ETSI TS 102 936-1 ETSI TS 102 936-2	PRE	CTP 1.1.0.1		CTP 1.2.0.1 CTP 1.2.0.2	CTP 2.0.1 CTP 2.0.2 CTP 2.0.3 CTP 2.0.4 CTP 2.11.1 CTP 2.11.2	CTP 3.1.0.1 CTP 3.1.0.2	CTP 3.2.0.1 CTP 3.2.0.2.1 CTP 3.2.0.2.2 CTP 3.2.0.3 CTP 3.2.0.4 CTP 3.2.0.5.1 CTP 3.2.0.5.2 CTP 3.2.0.6	CTP 4.0.1 CTP 4.0.2 CTP 4.0.3.1 CTP 4.0.3.2 CTP 4.0.4 CTP 4.0.5.1 CTP 4.0.5.2 CTP 4.0.5.3 CTP 4.0.6 CTP 4.0.7 CTP 4.0.8 CTP 4.0.9 CTP 4.0.10		
Ignition OFF	I-OFF	CTP 1.1.0.2 CTP 1.1.0.3		CTP 1.2.0.1 CTP 1.2.0.2						
Ignition ON (no eCall) including power-up	I-ON	CTP 1.1.1.1	CTP 1.1.1.2 CTP 1.1.1.3	CTP 1.2.1.1 CTP 1.2.0.2	CTP 2.1.1 CTP 2.1.2					
Trigger	TRG	CTP 1.1.2.1 CTP 1.1.2.2 CTP 1.1.2.3 CTP 1.1.2.4 CTP 1.1.2.5 CTP 1.1.3.1 CTP 1.1.3.2		CTP 1.2.2.2.1 CTP 1.2.2.2 CTP 1.2.2.3 CTP 1.2.2.4 CTP 1.2.2.5 CTP 1.2.3.1 CTP 1.2.3.2 CTP 1.2.3.3 CTP 1.2.4.1 CTP 1.2.4.2						
		CTP 1.1.4.1								
		CTP 1.1.5.1. CTP 1.1.5.2 CTP 1.1.5.3 CTP 1.1.5.4 CTP 1.1.5.5 CTP 1.1.5.6 CTP 1.1.5.7								
eCall Initiation	ECI	CTP 1.1.6.1	CTP 1.1.10.4	CTP 1.2.5.1 CTP 1.2.5.2 CTP 1.2.5.3 CTP 1.2.5.4 CTP 1.2.5.5	CTP 2.2.1.1	CTP 3.1.1.1	CTP 3.2.1		CTP 4.1.1.1 CTP 4.1.1.2	CTP 4.2.2.1 CTP 4.2.2.2.1 CTP 4.2.2.2.2
		CTP 1.1.7.1 CTP1.1.8.1 CTP1.1.9.1			CTP 2.2.1.2 CTP 2.2.1.3 CTP 2.2.1.4	CTP 3.1.1.2 CTP 3.1.2 CTP 3.1.3.1 CTP 3.1.3.2 CTP 3.1.3.3	CTP 3.2.2 CTP 3.2.3			
		CTP 1.1.10.1 CTP 1.1.10.2 CTP 1.1.10.3			CTP 2.2.2.1	CTP 3.1.4 CTP 3.1.5.1 CTP 3.1.5.2				
eCall in progress	ECP	CTP 1.1.11.1 CTP 1.1.12.1 CTP 1.1.13.1 CTP 1.1.14.1 CTP 1.1.14.2		CTP 1.2.6.1 CTP 1.2.6.2 CTP 1.2.6.3 CTP 1.2.7	CTP 2.2.3.1 CTP 2.2.3.2 CTP 2.2.3.3	CTP 3.1.6 CTP 3.1.7.1 CTP 3.1.7.2 CTP 3.1.7.3 CTP 3.1.7.4 CTP 3.1.7.5	CTP 3.2.4 CTP 3.2.5 CTP 3.2.6		CTP 4.1.2.1 CTP 4.1.2.2 CTP 4.1.3.1 CTP 4.1.3.2 CTP 4.1.3.3 CTP 4.1.4 CTP 4.1.5 (CTP 4.2.4.1 CTP 4.2.4.2)	CTP 4.2.3 CTP 4.2.4.1 CTP 4.2.4.2 CTP 4.2.5.
		CTP 1.1.15.1 CTP 1.1.15.2			CTP 2.3.1	CTP 3.1.8 CTP 3.1.9 CTP 3.1.10 CTP 3.1.11 CTP 3.1.12				
		CTP 1.1.15.3				CTP 3.1.13				
		CTP 1.1.15.4								
		CTP 1.1.15.5								
eCall Cleardown	CLR	CTP 1.1.16.1 CTP 1.1.16.2 CTP 1.1.16.3		CTP 1.2.8.1	CTP 2.4.1	CTP 3.1.14.1 CTP 3.1.14.2	CTP 3.2.7 CTP 3.2.8 CTP 3.2.9		CTP 4.1.6 CTP 4.1.7	CTP 4.2.6 CTP 4.2.7 CTP 4.2.8
Post eCall and Callback	CLB	CTP 1.1.17.1 CTP 1.1.17.2 CTP 1.1.17.3	CTP 1.1.17.5	CTP 1.2.9.1 CTP 1.2.9.2 CTP 1.2.9.3	CTP 2.5.1 CTP 2.6.1 CTP 2.7.1	CTP 3.1.15 CTP 3.1.16	CTP 3.2.10 CTP 3.2.11 CTP 3.2.12		CTP 4.1.8	CTP 4.2.9
		CTP 1.1.17.4								

9 Conformance test requirements for in-vehicle user equipment and systems (IVS)

9.1 Conformance test requirements for in-vehicle user equipment and systems for Pan European eCall

Test requirements for IVS are defined as test objectives and purposes (see 9.2), classification of testing (see 9.3); and State transition conformance tests (see 9.4, 9.5, 9.6, 9.7, 9.8).

9.2 Test objectives and purposes

The test objectives are to demonstrate that the equipment provided in a vehicle is capable of triggering an eCall, sending the MSD, and making a voice channel available between the PSAP and the occupants of the vehicle.

9.3 Classification of testing and referenced tests for in-vehicle user equipment for Pan European eCall IVS

9.3.1 Taxonomy of testing

Tests are provided, and are arranged into the state transition points.

Conformance requirements and objectives are provided in 9.4.

In-vehicle Pan-European eCall system equipment may be set up in one of two ways:

a) pan European eCall –both eCall only and eCall +(other service provision) IVS (9.5) 1.1.x;

b) pan European eCall + only IVS (9.6), additional tests for PE eCall only tests also numbered with the convention 1.1.x;

c) third party service provider eCall (9.8), tests numbered with the convention 1.2.x.

The state transition points for Pan European eCall (eCall only) IVS are provided in Figure 4 above.

The state transition points for Pan European eCall (eCall + other services) IVS are provided in Figure 5 above.

The state transition points for TPS-eCall IVS are provided in Figure 6 above.

9.3.2 Referenced tests

9.3.2.1 Pre eCall including conformance to ETSI In-vehicle network access device tests

Tests to ascertain the conformance of the in-vehicle network access device (NAD) to ETSI Standards deliverables are to be found in:

ETSI TS 102 936-1 V1.1.1 (2011-04), Technical Specification, eCall Network Access Device (NAD) conformance specification; Part 1: Protocol test specification; and

ETSI TS 102 936-2 V1.1.1 (2011-04), Technical Specification, eCall Network Access Device (NAD), conformance specification; Part 2: Test Suites;

Conformance to EU vehicle regulations, &TTE, EMC & LV Directives, are to be found in ETSI TR 102 937 V1.1.1 eCall communications equipment; Conformance to EU vehicle regulations, R&TTE, EMC & LV Directives, and EU regulations for eCall implementation;

and these documents provide conformance test requirements and test suites in respect of this physical in-vehicle equipment NAD and its installation and operation in respect of telecommunications aspects.

9.3.2.2 In-vehicle eCall system conformance tests

The Pan European eCall system and its data are standardized in EN 15722, EN 16062 and EN 16072.

9.4 State transition conformance tests for in-vehicle equipment and system to comply to Standards for pan European eCall

9.4.1 Conformance requirement

In order to demonstrate or claim compliance to Pan European eCall, the system shall be subjected to the conformance tests specified in 9.5, the results being noted using the appropriate check lists in Annex A . If the system is 'eCall only' the system shall also be subjected to the conformance tests specified in 9.6, and the results being noted using the appropriate check lists in Annex A

9.4.2 Use case test objectives by stage

9.4.2.1 NAD Conformance tests in accordance with ETSI TS 102 936-1 ETSI TS 102 936-2 (NAD)

NAD Conformance test behaviour and inputs and outputs, with the behaviour, inputs and outputs as defined in ETSI TS 102 936-1 and ETSI TS 102 936-2, are applicable for the IVS. All of them are referred in a test purpose (CTP 1.1.0.1) entitled' Test for conformance to ETSI TS 102 936-1 and ETSI TS 102 936-2'.

9.4.2.2 Ignition OFF I-OFF

No tests required.

9.4.2.3 Ignition ON (no eCall) including power-up I-ON

I-ON stage objective:

— to test the power on and self-test procedure;

— to test the behaviour of the IVS in relation to network selection, registration and mobility management when no eCall was initiated;

— to test the behaviour of the eCall only IVS in relation to non-eCall outgoing calls.

9.4.2.4 Trigger TRG

TRG stage objective:

— to test the manual and automatic eCall triggering when ignition is on/off;

— to test the activation of test eCall;

— to test the behaviour of the IVS when trigger occurs while eCall is in progress;

— to test the content of MSD data with respect to eCall activation type.

9.4.2.5 eCall initiation ECI

ECI group objective:

— to test the behaviour of IVS in relation to set-up of TS12 and TS11 calls;

— to test the behaviour of the IVS in relation to network registration when eCall was initiated.

9.4.2.6 eCall in progress ECP

ECP group objective:

— to test the MSD transfer;

— to test the MSD transfer when conversation is ongoing;

— to test the behaviour of IVS in relation to audio mute/un-mute and voice link establishment to PSAP operator;

— to test the behaviour of IVS when eCall was dropped;

— to test the behaviour of IVS in relation to events which occurred when eCall is in progress;

— to test mobility management procedures during an eCall.

9.4.2.7 eCall Cleardown CLR

CLR group objective:

— to test the behaviour of IVS in relation to eCall cleardown;

— to test the behaviour of IVS in relation to manual eCall termination;

— to test the behaviour of IVS in relation to switching off the ignition while eCall is in progress.

9.4.2.8 Post eCall and Call-back CLB

CLB group objective:

— to test the behaviour of IVS in relation to remaining registered after eCall;

— to test the behaviour of IVS in relation to answering the call-back;

— to test the behaviour of IVS in relation to MSD transfer during call-back;

— to test logging of recent eCalls by IVS.

State transition test scripts for in-vehicle equipment and system to comply to Standards for pan European eCall- both eCall only and eCall+

Figure 13 shows the state transition bubbles for both cases of eCall IVS, and lists the relevant conformance test references against them

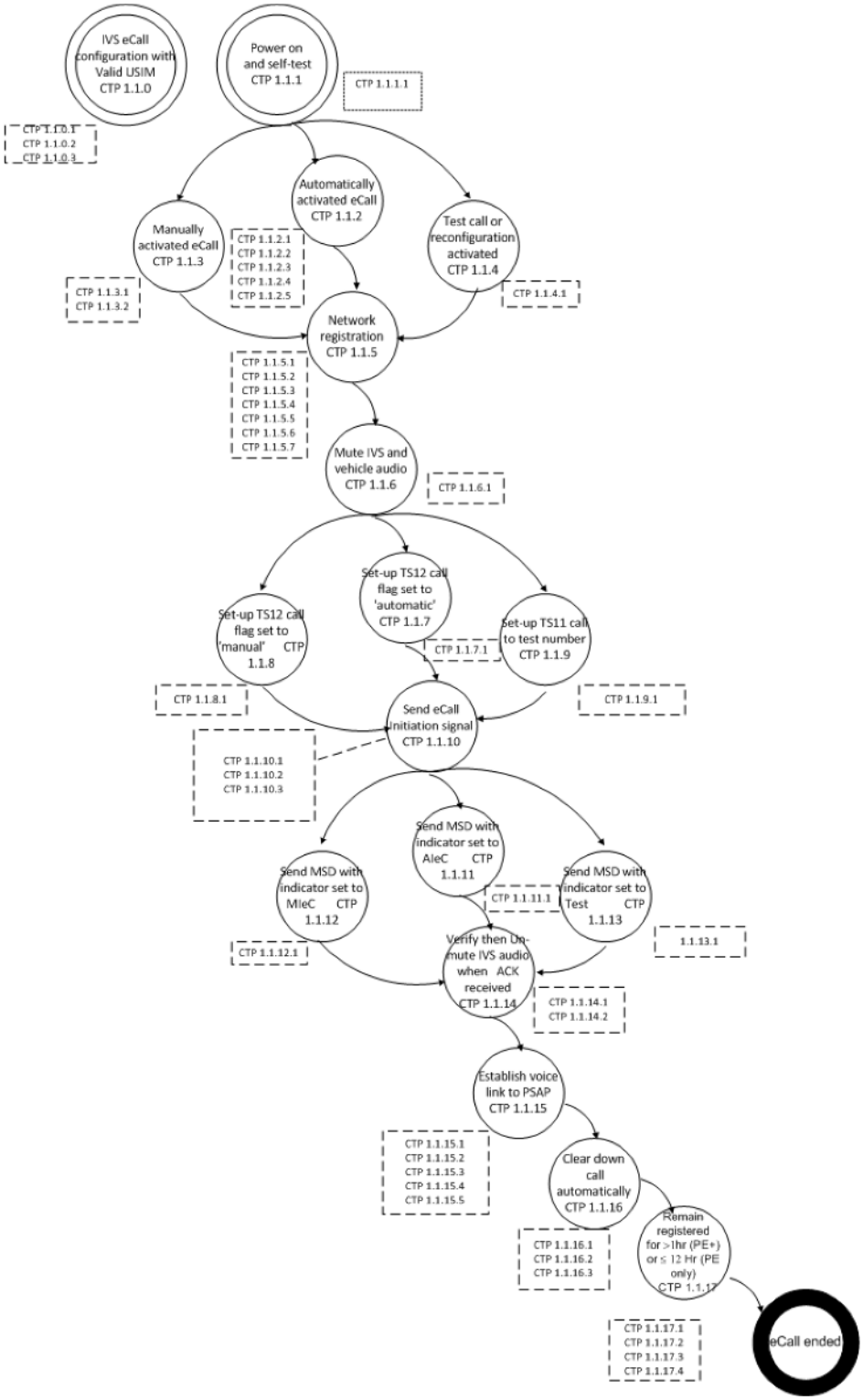

Figure 13 — State transitions for both cases of Pan European eCall with associated CTP references

9.4.3 CTP 1.1.0.1 Conformance to ETSI TS 102 936-1 and ETSI TS 102 936-2 – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/PRE/1.1.0.1	Test for conformance to ETSI TS 102 936-1 and ETSI TS 102 936-2
SUT test objective	Confirm IVS NAD conforms to ETSI eCall IVS NAD conformance tests
CTP origin	Original
Reference requirement	ETSI TS 102 936-1 ETSI TS 102 936-2
Initial conditions	Behaviour, inputs and outputs at the system level as defined in ETSI TS 102 936-1 and ETSI TS 102 936-2 Configure applicable IVS settings at the system level in accordance with the behaviour and inputs/outputs required by ETSI TS 131 102

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS SUT	1	Perform tests at the system level with the behaviour, inputs and outputs as defined in ETSI TS 102 936-1 and ETSI TS 102 936-2, or provide certification from NAD supplier that such tests have been met	IVS in conformance with the behaviour, inputs and outputs at the system level as defined in ETSI TS 102 936-1 and ETSI TS 102 936-2 required results THEN CTP PASS ELSE CTP FAIL

.

NOTE For reasons of maintenance and copyright the ETSI eCall IVS NAD tests are not repeated in this document. However in order to claim compliance with this Standard it is a prerequisite that the IVS system and equipment under test comply to the behaviour and inputs/outputs required by ETSI TS 102 936-1 and ETSI TS 102 936-2.

9.4.4 CTP 1.1.0.2 Test for conformance to valid SIM/USIM – PE eCall

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/I-ON/1.1.0.2	Test for conformance to valid SIM/USIM
SUT test objective	Confirm IVS NAD SIM/USIM is valid (i.e. IVS can register on the network)
CTP origin	Original
Reference requirement	EN 16062:2015, 7.1.2 paragraph 2; 7.12.2
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Configure applicable IVS settings at the system level in accordance with the behaviour and inputs/outputs required by ETSI TS 131 102

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Perform necessary steps for the IVS to attempt to register on the network in accordance with the manufacturer's instructions (e.g. in the case of e-Call only IVS, initiate a manual eCall)	
MNO test point PSAP test point	2	Wait for network registration	IVS NAD has registered on the network
MNO test point PSAP test point	3		If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.5 CTP 1.1.0.3 Automatic eCall triggering does not occur when ignition OFF – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.0.3	Test conformance that automatic eCall triggering does not occur when ignition is OFF
SUT test objective	The automatic eCall system shall be armed when ignition is ON, and disarmed when ignition is OFF
CTP origin	Original
Reference requirement	EN 16072:2015, 7.10.1 paragraph 4
Initial conditions	Ignition is OFF and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	With the vehicle ignition set to OFF, attempt to trigger an eCall automatically in accordance with the manufacturer's instructions	
IVS SUT	2	Verify that visual and/or audible information of eCall activation was not provided	Visual and/or audible information of eCall activation was not provided AND
PSAP test point or MNO test point	3	Verify that IVS did not initiate an automatic eCall	IVS did not initiate an automatic eCall If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.6 CTP 1.1.1.1 Power on and self test – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/I-ON/1.1.1.1	Test for power on and self-test
SUT test objective	Verify that when powered on, an indication that the IVS is functioning correctly is provided or that no faults are indicated
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.1.5
Initial conditions	Ignition is ON and IVS is in mobile network coverage

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS SUT	1	On power-up the IVS shall, in accordance with manufacturer instructions/design, conduct a self test to assure that it is functioning correctly	
IVS SUT	2	Verify that an indication that the IVS is functioning correctly is provided and/or that no faults are indicated	An indication that the IVS is functioning correctly was provided and/or no faults are indicated If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.7 CTP 1.1.2.1 eCall automatically activated – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.2.1	Test for automatic activation of eCall
SUT test objective	Verify that when activated automatically an eCall is initiated
CTP origin	CEN
Reference requirement	EN 16072:2015, 7.10.1 paragraph 1, also EN 16062:2015, 7.2.1 paragraph 1
Initial conditions	Ignition is ON and IVS is in mobile network coverage There is no ongoing eCall in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall automatically in accordance with the manufacturer's instructions	
IVS SUT	2	Verify that an IVS visual or audible indication of eCall activation is provided	An IVS visual or audible indication of eCall activation was provided
PSAP test point or MNO test point	3	Verify that eCall is successfully initiated	eCall established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.8 CTP 1.1.2.2 Automatically triggered eCall in progress was not disconnected upon a new eCall trigger – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.2.2	Verify that an automatic eCall in progress was not disconnected upon a new eCall trigger
SUT test objective	If the IVS receives during an ongoing automatically or manually triggered eCall a new trigger, the ongoing eCall shall take priority and shall not be disconnected
CTP origin	Original
Reference requirement	EN 16072:2015, 7.11
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Automatically triggered eCall is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Apply a new trigger while eCall is in progress	
IVS SUT PSAP test point	2	Verify that the eCall in progress was not disconnected	The eCall in progress was not disconnected If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.9 CTP 1.1.2.3 Post-side-crash performance of automatic trigger - IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.2.3	Post-side-crash performance of automatic trigger - IVS
SUT test objective	Test the post-side-crash performance of the automatic trigger
CTP origin	CEN
Reference requirement	EN 16072:2015, 6.1.1 paragraph 4; 7.10.1 paragraph 4, paragraph 6, paragraph 8; 7.5 paragraph 1, paragraph 2, paragraph 3, paragraph 4
Initial conditions	No error is present or detected on the IVS Ignition ON Automatic eCall is enabled and armed IVS is in good mobile network coverage MNO and PSAP test points are available Tests can be carried out using real crash-tests or with simulated equipment

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS SUT	1	Verify that the automatic eCall is enabled and armed	
IVS SUT	2	Generate a lateral shock load by one of the following methods to test the IVS crash robustness: a) lateral crash: Directive 96/27 (or equivalent ECE R95-02) b) Simulated equivalent shock condition using a shock-test rig or similar	
IVS SUT	3	Apply necessary trigger conditions according to manufacturer's instructions for an automatic emergency call (if not already triggered via the above shock profile) Check that an automatic trigger is activated	
IVS SUT, PSAP test point	4	Check whether the IVS attempts to establish a "hands-free" voice connection, and whether the necessary equipment has been disabled in the crash (or equivalent shock-test)"	a 'hands-free' conversation between the vehicle and the PSAP test point was attempted **OR** Hands-free equipment was disabled in the crash test/simulation
PSAP test point	5	Check that the IVS causes a dataset to be sent	Dataset has reached the PSAP test point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.10 CTP 1.1.2.4 Post-frontal-crash performance of automatic trigger - IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.2.4	Post-frontal-crash performance of automatic trigger - IVS
SUT test objective	Test the post-frontal-crash performance of the automatic trigger
CTP origin	CEN
Reference requirement	EN 16072:2015, 6.1.1 paragraph 4; 7.10.1 paragraph 4, paragraph 6, paragraph 8; 7.5 paragraph 1, paragraph 2, paragraph 3, paragraph 4
Initial conditions	No error is detected on the IVS Ignition ON Automatic eCall is enabled and armed IVS is in good mobile network coverage MNO and PSAP test points are available Tests can be undertaken using real crash-tests or with simulated equipment

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS SUT	1	Verify that the automatic eCall is enabled and armed	
IVS SUT	2	Generate a frontal shock load by one of the following methods to test the IVS crash robustness: a) frontal crash test according to Directive 96/79, amended by Directive 1999/98 (or equivalent ECE R94-01) b) Simulated equivalent shock condition using a shock-test rig or similar	
IVS SUT	3	Apply necessary trigger conditions according to manufacturer's instructions for an automatic emergency call (if not already triggered via the above shock profile) Check that an automatic trigger is activated	
IVS SUT, PSAP test point	4	Check that the IVS attempts to establish a "hands-free" voice connection if the equipment has not been destroyed in the crash (or equivalent shock-test)	a 'hands-free' conversation between the vehicle and the PSAP test point was attempted **OR** Hands-free equipment was destroyed in the crash test/simulation.
PSAP test point	5	Check that the IVS causes a dataset to be sent	Dataset has reached the PSAP test point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.11 CTP 1.1.2.5 Performance of automatic trigger – different crash types - IVS

SUT reference	'PE-IVS'
CTP/ PE-IVS/TRG/1.1.2.5	Performance of automatic trigger – different crash types
SUT test objective	Test that the automatic trigger is activated by different crash types
CTP origin	CEN
Reference requirement	EN 16072:2015, 6.1.1 paragraph 4; 7.10.1 paragraph 4, paragraph 6, paragraph 8; 7.5 paragraph 1, paragraph 2, paragraph 3, paragraph 4
Initial conditions	No error is present or detected on the IVS Ignition ON Automatic eCall is enabled and armed IVS is in good mobile network coverage MNO and PSAP test points are available Tests can be undertaken using real crash-tests or with simulated equipment

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS SUT	1	Verify that the automatic eCall is enabled and armed	
IVS SUT	2	Generate invalid trigger (below relevant threshold) for one of the supported crash-types, in accordance with the manufacturer's instructions	
IVS SUT	3	Check that NO automatic trigger is activated	
IVS SUT	4	Check that no audio/visual alert is provided to occupants	No audio/visual alert of activated eCall
IVS SUT PSAP test point	5	Check that the IVS does not cause the dataset to be sent	No data send by IVS and no data received by the PSAP test point
IVS SUT	6	Generate a valid trigger (above relevant threshold) for one of the supported different crash types, in accordance with the manufacturer's instructions	
IVS SUT	7	Check that an automatic eCall trigger is activated	
IVS SUT, PSAP test point	8	Check that the IVS causes a dataset to be sent	Dataset reached the PSAP test point
IVS SUT or PSAP test point	9	Terminate the eCall successfully according to manufacturer's instructions	eCall was ended
IVS SUT	10	Repeat the above test sequence for each different supported crash type (e.g. front, side, ...) in accordance with manufacturer's instructions	All steps of the above sequence are passed for each relevant crash type.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

9.4.12 CTP 1.1.3.1 eCall manually activated – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.3.1	Test for manual activation of eCall
SUT test objective	Verify that when activated manually an eCall is initiated
CTP origin	CEN
Reference requirement	EN 16072:2015, 7.10.2 paragraph 2 also EN 16062:2015, 7.2.1 paragraph 1
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall manually in accordance with the manufacturer's instructions	
IVS SUT	2	Verify that an IVS visual or audible indication of eCall activation is provided	An IVS visual or audible indication of eCall activation was provided
PSAP test point or MNO test point	3	Verify that the eCall was established	eCall established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.13 CTP 1.1.3.2 Manually triggered eCall in progress was not disconnected upon a new eCall trigger – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.3.2	Verify that a manually triggered eCall in progress was not disconnected upon new eCall trigger
SUT test objective	If the IVS receives during an ongoing automatically or manually triggered eCall a new trigger, the ongoing eCall shall take priority and shall not be disconnected.
CTP origin	Original
Reference requirement	EN 16072:2015, 7.11
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Manually initiated eCall is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Apply new trigger while eCall is in progress	
IVS SUT PSAP test point	2	Verify that the eCall in progress was not disconnected	The eCall in progress was not disconnected If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.14 CTP 1.1.4.1 Test eCall activated – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.4.1	Verify activation of test eCall
SUT test objective	Verify that when activated a test eCall is initiated
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.2.2 paragraph 1
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS is programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate a test eCall in accordance with the manufacturer's instructions	
IVS SUT PSAP test point	2	Verify that a test eCall was established	eCall established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.15 CTP 1.1.5.1 Network registration – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECI/1.1.5.1	Test for network registration
SUT test objective	Verify that when an eCall or test call is initiated that the IVS registers or has already registered on the MNO test point
CTP origin	CEN
Reference requirement	EN 16072:2015, 7.3.2 7.3.4
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall (manually or automatically) or a test eCall in accordance with the manufacturer's instructions	
MNO test point	2	Verify that when an eCall or test call is initiated that the IVS registers or has already registered on the MNO test point	IVS registers or has already registered on the MNO test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.16 CTP 1.1.5.2 Manual termination of eCall by vehicle occupants not allowed (automatically triggered eCall) – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLR/1.1.5.2	Verify that manual termination of eCall by vehicle occupants was not allowed (automatically triggered eCall)
SUT test objective	Verify that an automatically initiated eCall cannot be terminated manually by vehicle occupants
CTP origin	Original
Reference requirement	EN 16072:2015, 7.10.3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Automatically triggered eCall is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Attempt to disconnect eCall using vehicle HMI	HMI did not permit manual termination of automatically initiated eCalls
IVS SUT PSAP test point	2	Verify that eCall in progress was not disconnected	The eCall in progress was not disconnected If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.17 CTP 1.1.5.3 Manual termination of eCall by vehicle occupants not allowed (manually triggered eCall) – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLR/1.1.5.3	Verify that manual termination of eCall by vehicle occupants was not allowed (manually triggered eCall)
SUT test objective	Verify that, following the expiration of the permitted 'false activation cancellation' period (T1), that a manually initiated eCall in progress cannot be terminated manually by vehicle occupants Reference requirement text:'...once the eCall trigger has been confirmed within the IVS and therefore the eCall has been activated, the eCall transaction shall not be terminated by the vehicle occupants.'
CTP origin	Original
Reference requirement	EN 16072:2015, 7.10.3 paragraph 2
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Manually triggered eCall is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Attempt to disconnect eCall using vehicle HMI	HMI did not (following false activation cancellation grace period) permit manual termination of manually initiated eCall in progress
IVS SUT PSAP test point	2	Verify that the eCall in progress was not disconnected	The eCall in progress was not disconnected If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.18 CTP 1.1.5.4 Automatically triggered eCall in progress was not disconnected when ignition is switched to OFF – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLR/1.1.5.4	Verify that ongoing automatically triggered eCall was not disconnected when ignition is switched to OFF
SUT test objective	The automatic eCall system shall be armed when ignition is ON and disarmed when ignition is OFF Additionally any eCall in progress (manual or automatically triggered) shall not be disconnected when ignition is switched to OFF
CTP origin	Original
Reference requirement	EN 16072:2015, 7.10.1 paragraph 5
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Automatically triggered eCall is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Switch OFF ignition	Ignition is OFF
IVS SUT PSAP test point	2	Verify that the eCall is still in progress	eCall is still in progress If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.19 CTP 1.1.5.5 Manually triggered eCall in progress was not disconnected when ignition is switched to OFF – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLR/1.1.5.5	Verify that ongoing manually triggered eCall was not disconnected when ignition is switched to OFF
SUT test objective	The automatic eCall system shall be armed when ignition is ON and disarmed when ignition is OFF Additionally any eCall in progress (manual or automatically triggered) shall not be disconnected when ignition is switched to OFF
CTP origin	Original
Reference requirement	EN 16072:2015, 7.11
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Manually triggered eCall is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Switch OFF ignition	Ignition is OFF
IVS SUT PSAP test point	2	Verify that eCall is still in progress	eCall is still in progress If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.20 CTP 1.1.5.6 Priority over conflicting communication – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECI/1.1.5.6	Priority over conflicting communication
SUT test objective	Show that an eCall has priority over conflicting communication
CTP origin	CEN
Reference requirement	EN 16072:2015, 7.4
Initial conditions	No error is detected on the-IVS Ignition ON IVS is in good mobile network coverage MNO and PSAP test points are available A conflicting communication is running on the IVS

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS SUT	1	Apply a confirmed manual or automatic eCall trigger condition in accordance with the manufacturer's instructions	
IVS SUT	2	Check that an HMI alert is provided to occupants, according to manufacturer's specification, that an eCall is being started	HMI output indicates = eCall started".eCall will be sent
IVS SUT	3	Check that all components of the IVS, which are necessary for an eCall, are available and not influenced by the previously-running communication (HMI, Audio,...)	All components of the IVS, which are necessary for an eCall, are available and not influenced by the previously-running communication (HMI, Audio,...)
IVS SUT	4	Check that the eCall is initiated	eCall was initiated by IVS
PSAP test point	5	Answer call and issue SEND MSD message to IVS	
IVS SUT	6	Send MSD	
IVS SUT MNO test point or PSAP test point	7	Check that MSD is sent	IVS dataset reached PSAP test point
IVS SUT	8	Verify that immediately following successful transmission of the MSD and receipt of a positive application layer acknowledgement (AL-ACK), that the IVS microphone and loudspeaker are reconnected	Following receipt of a positive application layer acknowledgement (AL-ACK), that the IVS microphone and loudspeaker were reconnected
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.21 CTP 1.1.5.7 Network registration is re-tried when network registration attempt was not successful – PE eCall IVS

No test required. (This eventuality is covered by ETSI TS 134 123-1, Clause 6).

9.4.22 CTP 1.1.6.1 Mute IVS and vehicle audio – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.6.1	Test for mute IVS audio including entertainment audio
SUT test objective	Verify that when an eCall or test eCall is activated the IVS audio, including entertainment audio, is muted so as not to cause interference to the call whilst the MSD is being transmitted, and was not un-muted before an MSD acknowledgment is received from the PSAP
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.2.1 EN 16072:2015, 7.17.3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall (manually or automatically) or a test eCall in accordance with the manufacturer's instructions	
IVS SUT	2	Verify that, following call connection, and whilst the MSD is being transmitted, the IVS audio is muted. The IVS audio shall remain muted until an MSD acknowledgement has been received from the PSAP.	
PSAP test point	3	Answer call, verify eCall Initiation signal, request SEND MSD, monitor audio output from the call whilst MSD is being transmitted from the IVS and verify that voice communication with the IVS operator cannot be established, prior to a PSAP MSD acknowledgment has been sent to the IVS, or after 20 s from when the call is first answered.	IVS audio, including entertainment audio, was muted following call connection AND remained muted until the eCall is completed THEN CTP PASS ELSE CTP FAIL

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9.4.23 CTP 1.1.7.1 Set-up TS12 call with eCall identifier (flag) set to 'automatic' – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECI/1.1.7.1	Test for set-up TS12 call with eCall identifier (flag) set to 'automatic'
SUT test objective	Verify that when activated automatically a TS12 call is established with the correct eCall identifier (flag) routing bit set in the call set-up service category information element
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.3.6 Paragraph 2
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available MNO test point is able to recognise and route manually initiated and automatically initiated eCalls to different destination numbers

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall automatically in accordance with the manufacturer's instructions	
MNO	2	Check that the IVS NAD sets the "Service Category Request" message information element (IE) to automatically initiated eCall (AIeC) in accordance to ETSI TS 122 101 (Release 8 or later).	Optional IE "Service category" was present and set to automatically initiated eCall (AIeC)
PSAP test point or MNO test point	3	Verify that the received eCall has been routed to the test point number designated for automatically initiated eCalls	eCall has been routed to the test point number designated in the network for automatically initiated eCalls
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.24 CTP 1.1.8.1 Set-up TS12 call with eCall identifier (flag) set to 'manual' – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECI/1.1.8.1	Test for set-up TS12 call with eCall identifier (flag) set to 'manual'
SUT test objective	Verify that when activated manually a TS12 call is established with the correct eCall identifier (flag) routing bit set in the call set-up service category information element
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.3.6 paragraph 2
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available MNO test point is able to recognise and route manually initiated and automatically initiated eCalls to different destination numbers

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall manually in accordance with the manufacturer's instructions	
MNO test point	2	Check that the IVS NAD sets the "Service Category Request" message information element (IE) to manually initiated eCall (MIeC) in accordance to ETSI TS 122 101 (Release 8 or later).	Optional IE "Service category" was present and set to manually initiated eCall (AIeC)
PSAP test point or MNO test point	3	Verify that the received eCall has been routed to the number designated for manually initiated eCalls	eCall has been routed to the test number designated in the network for manually initiated eCalls
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.25 CTP 1.1.9.1 Set-up TS11 call to test number – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECI/1.1.9.1	Test for set-up TS11 call to test number
SUT test objective	Verify that when activated a test eCall is initiated to the E.164 number provisioned for test calls
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.2.2
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate a test eCall in accordance with the manufacturer's instruction	
PSAP test point or MNO test point	2	Verify that the received test eCall has been routed to the PSAP test point non-emergency number designated for test call	The received test eCall has been routed to the PSAP test point non-emergency number designated for test calls If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.26 CTP 1.1.10.1 eCall is attempted when no networks are available (limited service condition) – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECI/1.1.10.1	Verify that an eCall is attempted when IVS is in mobile network coverage but no networks are available for registration (limited service condition)
SUT test objective	To verify that if network registration fails but networks are present (limited service / emergency calls only condition) the IVS attempts to make the eCall
CTP origin	Original
Reference requirement	EN 16062:2015, 7.3.5; 7.14.2
Initial conditions	Ignition is ON and IVS is in mobile network coverage (limited service condition as specified in ETSI 124.008) MNO test point is only available for emergency call PSAP test point is available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate a test eCall (to the provisioned non-emergency number) in accordance with the manufacturer's instructions	MNO test point did not respond to registration request. The test call was not connected through to the PSAP test point
IVS SUT PSAP test point	2	Initiate an eCall (manually or automatically) in accordance with the manufacturer's instructions	The eCall was connected through to the PSAP test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.27 CTP 1.1.10.2 Re-dial attempt completed within 2 minutes after eCall is dropped – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.10.2	Re-dial attempt completed within 2 minutes after eCall is dropped
SUT test objective	In case of a dropped call, prior to the MSD being received and acknowledged, all redial attempts shall be completed within two minutes
CTP origin	Original
Reference requirement	EN 16062:2015, 7.12.3 EN 16072:2015, 7.17.2; 7.17.3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall (manually or automatically) in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call and issue SEND MSD message to IVS	
IVS SUT PSAP test point	3	Proceed with MSD transfer according to EN 16062 Interrupt the call before the MSD LL-ACK message is received	eCall failure occurs
PSAP test point	4	Monitor incoming calls but do not answer calls	Recognise presence of redial attempts
PSAP test point	5	Verify that following the initial call being dropped prior to the MSD being received and acknowledged, all redial attempts are completed within 2 minutes of identification that the call has been dropped	All redial attempts are completed within 2 minutes If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.28 CTP 1.1.10.3 Duration of eCall Initiation signal – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.10.3	Test for duration of eCall Initiation signal
SUT test objective	Verify that the IVS sends a valid eCall Initiation signal to the PSAP and that the calling tone does not persist for longer than 2 s from when the call is answered
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.4.2 paragraph 2; Annex A Table A.1 T3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall (manually or automatically) in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call and monitor incoming audible eCall Initiation signal. Do not send (SEND MSD) response. The audible eCall Initiation signal shall not persist for longer than 2 s from when the call is answered	The received audible Initiation signal did not persist for longer than 2 s from when the call is answered If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.29 CTP 1.1.11.1 Send MSD with indicator set to 'Automatically Initiated eCall' (AleC) – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.11.1	Test for 'Send MSD' with indicator set to 'Automatically Initiated eCall' (AIeC)
SUT test objective	Verify that the MSD received from the IVS contains the correct eCall initiation indicator
CTP origin	CEN
Reference requirement	EN 15722:2015, 6.3.1
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall automatically in accordance with the manufacturer's instructions	
PSAP test point	2	Open the received MSD and verify that Block 3 contains an indication that the eCall was automatically initiated (automaticActivation = true) (testCall = false)	The received MSD Block 3 contained an indication that the eCall was automatically initiated If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.30 CTP 1.1.12.1 Send MSD with indicator set to 'Manually Initiated eCall' (MleC) – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.12.1	Test for Send MSD with indicator set to 'Manually Initiated eCall' (MIeC)
SUT test objective	Verify that the MSD received from the IVS contains the correct eCall initiation indicator
CTP origin	CEN
Reference requirement	EN 15722:2015, 6.3.1
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall manually in accordance with the manufacturer's instructions	
PSAP test point	2	Open the received MSD and verify that Block 3 contains an indication that the eCall was manually initiated (automaticActivation = false) (testCall = false)	The received MSD Block 3 contained an indication that the eCall was manually initiated If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.31 CTP 1.1.13.1 Send MSD with indicator set to 'Test Call' – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/TRG/1.1.13.1	Test for Send MSD with indicator set to 'Test'
SUT test objective	Verify that the MSD received from the IVS contains the correct test eCall indicator
CTP origin	CEN
Reference requirement	EN 15722:2015, 6.3.1
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate a test eCall in accordance with the manufacturer's instructions	
PSAP test point	2	Open the received MSD and verify that Block 3 contains an indication that the eCall is a test eCall (testCall = true)	The received MSD Block 3 contained an indication that the eCall is a test eCall If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.32 CTP 1.1.14.1 Verify MSD transfer – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.14.1	Verify MSD transfer
SUT test objective	'High Level Application Layer' procedure for MSD transfer is verified eCall modem conformance tests are out of scope of this specification and shall be verified according to ETSI TS 126 269.
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4, 7.5
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or a test call in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call Start T4 (PSAP wait for INITIATION signal period, 2 s) timer	
IVS SUT	3	IVS sends eCall Initiation signal	
PSAP test point	4	Confirm that eCall Initiation signal is received and validated before timer T4 expires	Initiation message was received and validated before timer T4 expires
PSAP test point	5	Send 'SEND MSD' request message Start Timer T8 (PSAP MSD maximum reception time, 20 s)	
IVS SUT	6	MSD transmission is started	
PSAP test point	7	Confirm MSD is received before timer T8 expires.	MSD received before T8 expires
PSAP test point	8	Send LL-ACK message	
IVS SUT	9	Stops sending MSD Start timer T6 (IVS wait for AL-ACK period, 5 s)	
PSAP test point	10	PSAP test point performs a format check of MSD data according to EN 15722 and sends an AL-ACK with status set to 'positive' to the IVS	
IVS SUT	11	IVS receives an AL-ACK with status set to 'positive' before time T6 expires	IVS received an AL-ACK with status set to 'positive' before time T6 expires If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.33 CTP 1.1.14.2 Un-mute IVS audio when AL-ACK received – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.14.2	Test for un-mute IVS audio when AL-ACK received
SUT test objective	Verify that following transmission of the MSD and receipt of an application layer acknowledgement (AL-ACK) from the PSAP, the IVS microphone and loudspeaker are reconnected
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.5.1 paragraph 3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
IVS SUT	2	Verify that immediately following successful transmission of the MSD and receipt of a positive application layer acknowledgement (AL-ACK), that the IVS microphone and loudspeaker are reconnected	Following receipt of a positive application layer acknowledgement (AL-ACK), that the IVS microphone and loudspeaker were reconnected If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.34 CTP 1.1.15.1 Establish voice link to PSAP – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.15.1	Test for establish voice link to PSAP operator
SUT test objective	Verify that a voice call can be established with the PSAP operator following the transmission, and acknowledgement, of the eCall MSD
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.5.1
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test call in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call, verify and acknowledge receipt of MSD	
IVS SUT	3	Reconnects IVS audio following receipt of positive AL-ACK or, if not received, within 5 s following receipt of a positive LL-ACK	
PSAP test point	4	PSAP test point loudspeaker and microphone are un-muted following transmission of AL-ACK or, if not sent, within 5 s from when the positive LL-ACK was sent	
IVS SUT PSAP test point	5	Confirm that the audio/voice line has been reconnected and the IVS loudspeakers and microphone are working correctly	2-way speech made possible between the IVS and PSAP test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.35 CTP 1.1.15.2 MSD transfer request while eCall conversation in progress – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.15.2	Verify MSD transfer while eCall conversation is in progress
SUT test objective	Verify that the IVS is able to recognise and act upon a request from the PSAP, during an ongoing speech conversation, to send or re-send an updated MSD The acknowledgement and its time of transmission of the MSD shall be stored within the IVS The location of such storage shall be an issue of product design Relevant reference requirement text: '….When receiving the "SEND MSD" message ….'
CTP origin	Original
Reference requirement	EN 16062:2015, 7.6.2
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available An eCall has been established and a speech conversation is in progress between the IVS and PSAP

Stimulus and expected behaviour

Test point		Tester action	Pass condition
PSAP test point	1	Mute PSAP test point microphone and loudspeaker. Send 'SEND MSD' request message. Start timer T8 (PSAP MSD maximum reception time, 20 s)	
IVS SUT	2	Upon receipt of SEND MSD request, mute the IVS audio	IVS muted the IVS audio
IVS SUT	3	Start MSD transmission. Start timer T7 (IVS MSD maximum transmission time, 20 s)	MSD transfer starts
PSAP test point	4	Confirm MSD is received before timer T8 expires. Send LL-ACK message	
IVS SUT	5	Stops sending MSD. Stop timer T7. Start timer T6 (IVS wait for AL-ACK period, 5 s)	IVS stopped sending MSD
PSAP test point	6	PSAP test point performs a format check of MSD data according to EN 15722 and sends an AL-ACK with status set to 'positive' to the IVS	
IVS SUT	7	IVS receives an AL-ACK with status set to 'positive' before time T6 expires	IVS received an AL-ACK with status set to 'positive' before time T6 expires
IVS	8	Reconnects IVS audio following receipt of positive AL-ACK or, if not received, within 5 s following receipt of a positive LL-ACK	IVS audio was reconnected within 5 s from when MSD transmission ended (positive LL-ACK received) or no later than 20 s from start of MSD transmission
PSAP test point	9	PSAP test point loudspeaker and microphone are un-muted following transmission of AL-ACK or, if not sent, within 5 s from when the positive LL-ACK was sent. If the MSD was not received within 20 s following 'SEND MSD' request the PSAP test point audio is un-muted	
IVS SUT PSAP test point	10	Confirm that the audio/voice line has been reconnected and the IVS loudspeakers and microphone are working correctly	2-way speech was possible between the IVS and PSAP test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.36 CTP 1.1.15.3 eCall continuation when SEND MSD request not received (T5 expired) – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.15.3	Verify that the IVS audio is un-muted if SEND MSD request was not received and timer T5 has expired
SUT test objective	If the IVS eCall modem does not receive or recognise a valid 'SEND MSD' message from the PSAP eCall modem within 2 s (T5 - IVS wait for SEND MSD period, 2 s) from the time that it receives an indication that the call has been answered, it shall reconnect the IVS loudspeaker and microphone in the vehicle
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.4; 7.12.10; Annex A Table A1 T5
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall call in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call and route call to PSAP test point operator audio (microphone and speaker).	
PSAP test point	3	Do not send MSD request.	
IVS SUT	4	Start timer T5 (IVS wait for SEND MSD period, 2 s) and wait for SEND MSD request	
IVS SUT	5	SEND MSD not received within 2 s from when the eCall was first answered (ISUP CONNECT message) and timer T5 has expired. IVS loudspeaker and microphone are reconnected	
IVS SUT PSAP test point	6	Confirm that the audio/voice line has been reconnected and the IVS loudspeakers and microphone are working correctly	2-way speech was possible between the IVS and PSAP test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.37 CTP 1.1.15.4 Call continuation when AL-ACK not received (T6 expired) – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.15.4	Verify MSD transfer upon T6 expiration
SUT test objective	If an AL-ACK was not received within T6 (T6 - IVS wait for AL-ACK period, 5 s) from receipt of the link layer ACK, the speaker and microphone in the vehicle shall be reconnected to the line in order to enable the call to revert to a voice call
CTP origin	Original
Reference requirement	EN 16062:2015, 7.5.3; 7.12.5.2; Annex A, Table A1 T6
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
PSAP test point	2	MSD received and LL-ACK sent	
IVS SUT	3	LL-ACK received. Start timer T6 (IVS wait for AL-ACK period, 5 s)	
PSAP test point	4	PSAP test point does not send an application layer acknowledgement (AL ACK)	
IVS SUT	5	Verify that IVS microphone and loudspeaker are reconnected within T6 from receipt, of a positive LL-ACK, or after T6 has expired, and that two way speech is possible	IVS microphone and loudspeaker are reconnected within T6 from receipt, of a positive LL-ACK, or after T6 has expired, and that two way speech is possible If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.38 CTP 1.1.15.5 MSD is transferred continuously until T7 expires and IVS reconnects loudspeaker and microphone on its expiry – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECP/1.1.15.5	Verify that MSD is transferred continuously until T7 expires and IVS reconnects loudspeaker and microphone on its expiry
SUT test objective	The IVS modem shall continue to transmit the MSD for a period not exceeding 20 s. If the link layer acknowledgement was not received within 20 s after receipt of the "Send MSD' request, then the IVS shall re-connect its loudspeaker and microphone to the line enabling voice communication between the vehicle occupants and the PSAP operator
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.7; Annex A Table A.1 T7
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call. Verify eCall Initiation signal Send 'SEND MSD' message Start timer T8 (PSAP MSD maximum reception time, 20 s)	
IVS SUT	3	SEND MSD' message received Start sending MSD Start timer T7 (IVS MSD maximum transmission time, 20 s)	
PSAP test point	4	Wait until T8 expires Do not send positive LL-ACK Route call to PSAP test point operator microphone and speaker	Continuous MSD transmission from IVS until T8 expires
IVS SUT	6	Continue MSD transmission from IVS until T7 expires	
IVS SUT	7	Timer T7 expired. Verify that the IVS loudspeaker and microphone are reconnected 20 s after 'SEND MSD' request received	IVS loudspeaker and microphone were reconnected 20 s after SEND MSD request received
IVS SUT PSAP test point	8	Confirm that the audio/voice line has been reconnected and the IVS loudspeakers and microphone are working correctly	2-way speech was possible between the IVS and PSAP test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.4.39 CTP 1.1.16.1 Clear down call automatically – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLR/1.1.16.1	Test for Clear-down call automatically
SUT test objective	Verify that when the PSAP clears down the eCall, or sends an application layer clear down message to the IVS, that the IVS clears down the call
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.5
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call	
PSAP test point	3	Voice call established	Line connected. .conversation possible
PSAP test point	4	PSAP clears down call normally.	IVS cleared down the call following receipt of a clear down message from the network
IVS SUT	5	Verify that the IVS also clears down	Line disconnected
IVS SUT	6	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
PSAP test point	7	Answer call	
PSAP test point	8	Voice call established	Line connected. .conversation possible
IVS SUT	9	PSAP sends AL ACK CLEAR DOWN message. Verify that the IVS clears down	IVS cleared down the call following receipt of an AL ACK CLEAR DOWN message from the PSAP If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS SUT	1	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
IVS SUT	2	PSAP clears down call normally. Verify that the IVS also clears down	IVS cleared down the call following receipt of a clear down message from the network
IVS SUT	3	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
IVS SUT	4	PSAP sends AL ACK CLEAR DOWN message. Verify that the IVS clears down	IVS cleared down the call following receipt of an AL ACK CLEAR DOWN message from the PSAP If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.40 CTP 1.1.16.2 IVS clears down the eCall upon T2 expiry – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLR/1.1.16.2	Verify that IVS clears down the eCall upon T2 expiry
SUT test objective	If the IVS NAD does not receive a call clear-down indication from the mobile network, or an application layer clear-down message from the PSAP and the call clear-down fall-back timer has reached 60 minutes, the call shall be cleared down (T2 – IVS' Call Clear-down Fallback Timer' (CCFT), 60 minutes) (see Annex A [of EN 16062:2015])
CTP origin	Original
Reference requirement	EN 16062:2015, 7.9; 7.12.3; 7.12.16; 7.3.1;Annex A Table A.1 T2
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call	
IVS SUT	3	Start T2 (IVS Call Clear-down Fallback, 60 minutes) timer	
IVS SUT PSAP test point	4	Proceed with MSD transfer	
IVS SUT PSAP test point	5	Proceed with voice call after MSD data was successfully transferred	
IVS SUT	6	Wait until T2 expires	
IVS SUT	7	Verify that the IVS clears down the call after 60 minutes after call was answered by PSAP test point	IVS cleared down call 60 minutes after call was answered If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.41 CTP 1.1.16.3 IVS registers recent eCalls – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLB/1.1.16.3	Verify that IVS registers recent eCalls, stores the fact of the AL-ACK receipt and its timestamp
SUT test objective	The fact of the acknowledgement and its time shall be stored within the IVS The location of such storage shall be an issue of product design
CTP origin	Original
Reference requirement	EN 16062:2015, 7.5.2 paragraph 3 also EN 16072:2015, 7.17.4
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available IVS has been programmed with the number to be used for test calls Tester has access to where the data is stored in the IVS

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test eCall in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call	
IVS SUT PSAP test point	3	Proceed with MSD transfer according to EN 16062:2015, 7.4 MSD Transfer shall be finished with AL-ACK message	
IVS SUT	4	Clear down call on receiving AL-ACK (clear down)	
IVS SUT	5	Verify that IVS microphone and loudspeaker are reconnected within T6 from receipt, of a positive LL-ACK, or after T6 has expired, and that two way speech is possible	A record of the received time stamped AL-ACK has been stored in the IVS If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.42 CTP 1.1.17.1 Call-back allowed and able to be answered by IVS – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLB/1.1.17.1	Verify that the call-back is allowed by IVS
SUT test objective	If an eCall has been successfully terminated by the PSAP, then the IVS shall allow a call-back into the vehicle
CTP origin	Original
Reference requirement	EN 16062:2015, 7.10 (except point c which is covered by another CTP) also EN 16072:2015, 7.17.3
Initial conditions	Ignition is ON and IVS is in mobile network coverage PSAP test point is able to place the call to the IVS call-back number MNO and PSAP test points are available MNO supporting IVS SIM/USIM number structure. IVS has been programmed with the non-emergency number to be used for test calls eCall has been successfully terminated by the PSAP T9 not expired

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
PSAP test point	1	Initiate call-back procedure	
IVS SUT	2	Answer the call	
IVS SUT PSAP test point	3	Confirm that the audio/voice line has been reconnected and the IVS loudspeakers and microphone are working correctly	2-way speech was possible between the IVS and PSAP test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.43 CTP 1.1.17.2 Call-back answered by IVS in the event of abnormal termination – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLB/1.1.17.2	Verify that the call-back is answered automatically by IVS in the event of abnormal termination
SUT test objective	If an eCall has been abnormally terminated, then the IVS shall allow a call-back into the vehicle
CTP origin	Original
Reference requirement	EN 16062:2015, 7.10 (including point c) also EN 16072:2015, 7.17.3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available eCall was abnormally terminated and IVS does not make reconnection attempts anymore

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test call in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call	
PSAP test point	3	Call is abnormally terminated	
PSAP test point	4	Initiate call-back procedure in 3rd minute after eCall was terminated abnormally	
IVS SUT	5	Answer the call automatically	Call answered automatically
IVS SUT	6	Confirm that the audio/voice line has been reconnected and the IVS loudspeakers and microphone are working correctly	2-way speech was possible between the IVS and PSAP test point If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.44 CTP 1.1.17.3 MSD transfer occurs upon PSAP request during call-back – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLB/1.1.17.3	Verify that the MSD transfer occurs upon PSAP request during call-back
SUT test objective	In the event that the PSAP operator decides that he/she requires that the latest version of the MSD is sent/re-sent by the IVS to the PSAP after call clear-down, he/she shall first attempt to establish a call to the relevant vehicle, via an appropriate interface made available to them by the PSAP application
CTP origin	Original
Reference requirement	EN 16062:2015, 7.6.3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Call-back is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
PSAP test point	1	Send 'SEND MSD' request message. Start Timer T8 (PSAP MSD maximum reception time, 20 s)	
IVS SUT	2	Disconnect the audio channels in the vehicle from the call	Microphone was muted
IVS SUT	3	MSD transmission is started	
PSAP test point	4	Confirm MSD is received before timer T8 expires.	MSD received before T8 expires
PSAP test point	5	Send LL-ACK message	
IVS SUT	6	Stops sending MSD. Start timer T6 (IVS wait for AL-ACK period, 5 s)	
PSAP test point	7	PSAP test point performs a format check of MSD data according to EN 15722 and sends an AL-ACK with status set to 'positive' to the IVS	
IVS SUT	8	IVS receives an AL-ACK with status set to 'positive' before time T6 expires	IVS received an AL-ACK with status set to 'positive' before time T6 expires
IVS SUT PSAP test point	9	Confirm that the audio/voice line has been reconnected and the IVS loudspeakers and microphone are working correctly and entainment system is muted for the duration of the call	2-way speech was possible between the IVS and PSAP test point and entainment system is muted for the duration of the call If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.4.45 CTP 1.1.17.4 Remain registered for ≥1 hr – PE eCall IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLB/1.1.17.4	Test for the IVS remains registered on the selected PLMN for at least 60 minutes
SUT test objective	Verify that following completion and clear down of an eCall or test call, that the IVS has the capability to remain registered on the mobile network for at least 60 minutes, to allow call back from the PSAP if required
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.9 esp para 6;7.10 (c); Annex A Table A.1 T9 EN 16072:2015, 7.17.3
Initial conditions	Ignition is ON and IVS is in mobile network coverage MNO and PSAP test points are available Ignition is ON all the time and power was not exhausted while test purpose is executed

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test call in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call and note the CLI MSISDN	
PSAP test point	3	Clear down the call and note the time that the call was ended	
PSAP test point	4	After 55 minutes initiate a call-back to the IVS using the MSISDN derived from the previous call	
IVS SUT	5	Answer the call automatically	Call was answered automatically
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.5 State transition test scripts for in-vehicle equipment and system to comply to Standards for pan European eCall – additional tests for eCall only systems

9.5.1 General

Pan European eCall only systems require additional tests, because the system does not register on the network until an eCall is triggered. Figure 14 reproduces Figure 13, but with the additional CTPs required for 'eCall only' system IVS (highlighted in **bold**).

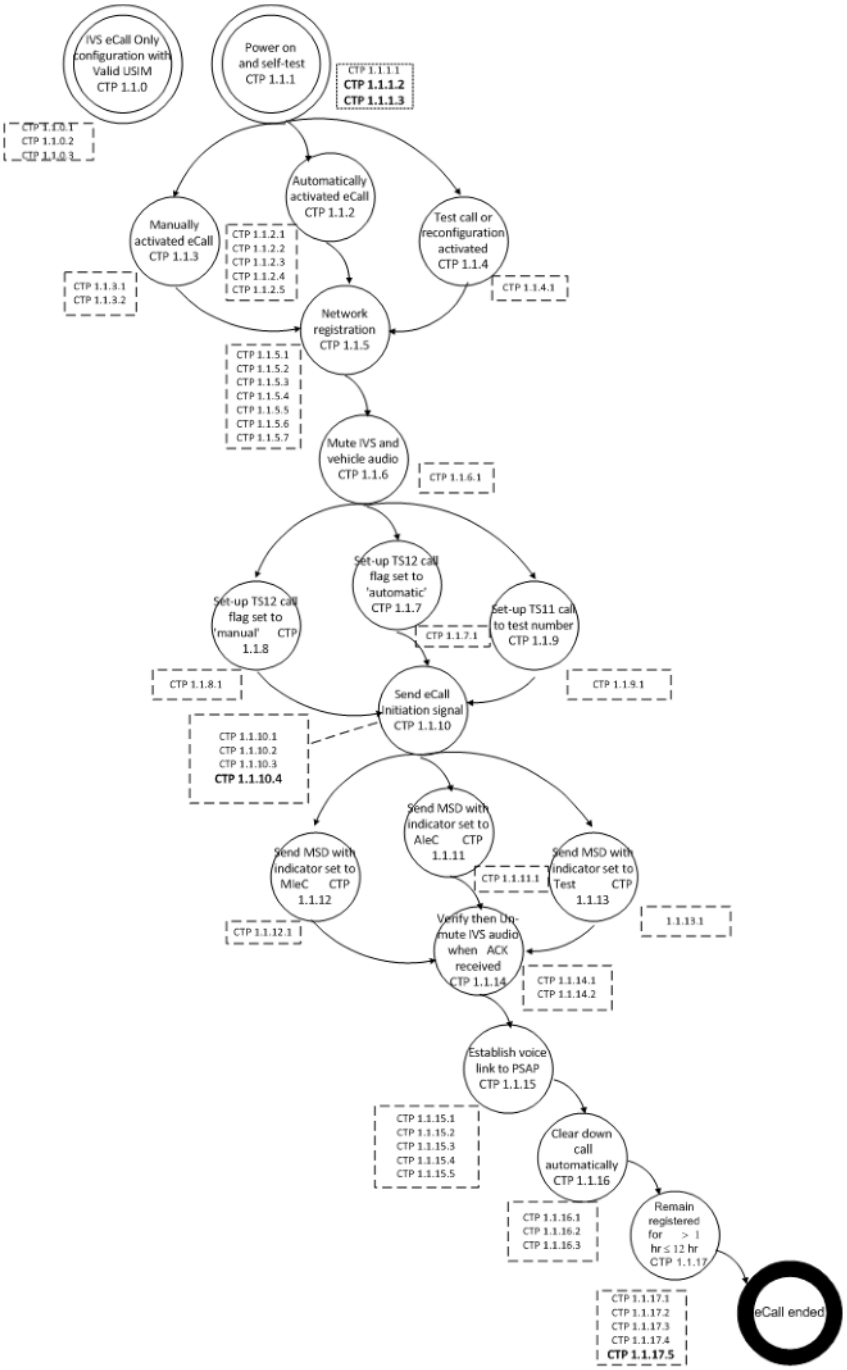

Figure 14 — State transitions for pan European 'eCall only' with associated CTP references

9.5.2 CTP 1.1.1.2 IVS does not perform registration after power-up – PE eCall only IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/I-ON/1.1.1.2	Verify that IVS does not perform PLMN registration after power-up
SUT test objective	IVS NAD which is eCall only shall not perform registration after power-up
CTP origin	Original
Reference requirement	EN 16062:2015, 7.1.4 paragraph 1 7.1.6 paragraph 1
Initial conditions	Ignition is OFF MNO Test point is operating MNO Test point is set to accept registrations IVS has privileges to register only on this network

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Turn on ignition	Ignition is turned on
IVS SUT	2	Wait 60 s	
MNO test point	3	Verify that IVS NAD has not attempted to register with the MNO test point i.e. verify that the UE does not send RRC CONNECTION REQUEST message with the IE "Establishment cause" set to "Registration" for a period of 120 s.	IVS NAD has not attempted to register with the MNO test point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.5.3 CTP 1.1.1.3 IVS periodically scans and maintains a list of available PLMNs – PE eCall only

No test required. Covered by ETSI TS 122 011 and ETSI TS 123 122, therefore if compliance has been achieved to CTP 1.1.1.0.1, is automatically compliant.

9.5.4 CTP1.1.10.4 Verify that PLMN registration procedure is executed upon initiating an eCall – PE eCall only IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/ECI/1.1.10.4	Verify that PLMN registration procedure is executed upon initiating an eCall (eCall only IVS)
SUT test objective	The IVS shall perform the network selection and registration procedures, using the highest priority allowed PLMN found during the most recent background scan when eCall is initiated
CTP origin	Original
Reference requirement	EN 16062:2015, 6 (c) ; 7.3.4; 7.3.5
Initial conditions	Ignition is ON and IVS is in mobile network coverage IVS was not registered on a PLMN MNO test points is available MNO test point behaves as the home network of the IVS

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall in accordance with the manufacturer's instructions	
MNO test point	2	Verify that PLMN registration was performed successfully	PLMN registration performed successfully If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.5.5 CTP 1.1.17.5 Remain registered for ≥1 hr ≤12 hr – PE eCall only IVS

SUT reference	'In-Vehicle System'
CTP/ PE-IVS/CLB/1.1.17.5	Test for IVS remains registered for a minimum of 1 hour and a maximum of 12 hours
SUT test objective	Verify that following clear down the IVS, configured for eCall Only service, has the capability to remain registered on the mobile network for at least 60 minutes, to allow call back from the PSAP when required. Verify that the IVS de-registers from the mobile network within 12 hours following call clear-down
CTP origin	CEN Use case conformance tests for in-vehicle equipment
Reference requirement	EN 16062:2015, 7.9
Initial conditions	Ignition is ON and IVS is in mobile network coverage IVS was not registered on a PLMN MNO and PSAP test points are available IVS has been programmed with the non-emergency number to be used for test calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS SUT	1	Initiate an eCall or test call in accordance with the manufacturer's instructions	
PSAP test point	2	PSAP test point: Answer call and note the CLI. PSAP test point: Clear down the call and note the time that the call was ended PSAP test point: After 55 minutes initiate a call-back to the IVS using the MSISDN derived from the previous call	
IVS SUT	3	Verify that the IVS automatically answers and sustains incoming calls received within 60 minutes from when the previous eCall or test call was completed	The IVS automatically answered and sustained incoming calls received within 60 minutes from when the previous eCall or test call was completed
MNO test point	4	Verify that the IVS de-registers from the mobile network within 12 hours following call clear-down	The IVS de-registered from the mobile network within 12 hours following call clear-down If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.6 State transition conformance test requirements for in-vehicle user equipment for eCall TPS-IVS via a third party service provider

9.6.1 General

The Third party service provider eCall system and its data are standardized in EN 16102 and EN 15722.

In order to demonstrate or claim compliance of TPS IVS to eCall, the IVS shall be subjected to the conformance tests specified in this subclause, the results being noted using the appropriate check list in Annex B.

The state transition points for third party service provider eCall TPS-IVS are provided in Figures 6 and 9 above.

9.6.2 Test objectives and purposes

The test objectives are to demonstrate that the equipment provided in a vehicle is capable of correctly triggering a manual or automatic TPS-eCall, correctly sending the IVS dataset, and establishing a voice channel between the occupants of the vehicle and the TPS-eCall Responder.

Additional roles involved are the TPS-eCall Responder (TPS-R) and, in some circumstances, the TPS-eCall Notifier (TPS-N).

9.6.3 Taxonomy of testing and referenced tests

The test objectives are to demonstrate that TPSP equipment provided in a vehicle is capable of triggering an eCall, together with data (TSD), to a TPSP, who then completes the MSD, identifies if the call is a true eCall and if so establishes contact with, and passes the relevant information to, the most appropriate PSAP, and if required by the PSAP, making a voice channel available between the PSAP and the occupants of the vehicle.

Additional roles involved are the TPS-Responder and TPS-Notifier.

9.6.4 Taxonomy of testing

Tests are provided, and are arranged into the state transition points.

Conformance requirements and objectives are provided in 9.9.

The state transition points for TPS-eCall IVS are provided in Figure 15 below.

9.7 Use case conformance tests for in-vehicle equipment and system to comply to Standards for third party service provider eCall

9.7.1 Conformance requirement

In order to demonstrate or claim compliance to third party services supported eCall (TPS-eCall) the TPS in-vehicle system (TPS-IVS) shall be subjected to the conformance tests specified in 9.9, the results being noted using the appropriate check lists in Annex B.

General conditions:

A CTP-PASS condition is only confirmed if ALL individual pass conditions written in the “pass conditions” column of a given CTP are observed.

A CTP-FAIL condition occurs if one or more of the given individual pass conditions written in the "pass conditions" column of a given CTP are *not* observed (failed).

9.7.2 Use case test objectives by stage

9.7.2.1 Pre eCall PRE

PRE stage objective:

— to demonstrate that necessary hardware is included;

— to demonstrate adequate personal data protection;

— to demonstrate adequate education of users.

9.7.2.2 Ignition OFF I-OFF

I-OFF stage objective:

— to test that the TPS-IVS does not start an automatic TPS-eCall if the trigger is received whilst the vehicle ignition is off.

9.7.2.3 Ignition ON (no eCall) including power-up I-ON

I-ON stage objective:

— to test the self-test procedure.

9.7.2.4 Trigger TRG

TRG stage objectives:

— to test the manual and automatic TPS-eCall triggering;

— to test the normal sequence of behaviour following a TPS-eCall trigger;

— to test the post-crash behaviour of the TPS-IVS;

— to test for adequate manual trigger marking and accidental trigger avoidance.

9.7.2.5 eCall initiation ECI

ECI group objectives:

— to test that TPS-eCall has priority over any other conflicting services;

— to test that a TS12 call is made as required if the TPSP cannot be contacted;

— Note that some TPS-eCall initiation aspects are already covered in the TRG group.

9.7.2.6 eCall in progress ECP

ECP group objectives:

— to test voice call reliability;

— to test that a running TPS-eCall cannot be interrupted or terminated by the TPS-IVS;

— to test that any redial attempts (upon disconnection) are limited;

— to test that the transmitted data content is adequate;

— to test data transmission reliability.

9.7.2.7 eCall Cleardown CLR

CLR group objectives:

— to test that no automatic redial is made after a successful termination;

— to test that a running TPS-eCall cannot be interrupted by the TPS-IVS.

9.7.2.8 Post eCall and Call-back CLB

CLB group objective:

— to test that the TPS-IVS can receive a call-back when required;

— to test that the TPS-IVS can automatically answer call-backs when required.

9.8 State transition test scripts for TPS in-vehicle equipment and system to comply to Standards for third party services supported eCall

9.8.1 General

Figure 15 shows the state transition chart with the relevant CTP references for each transition point.

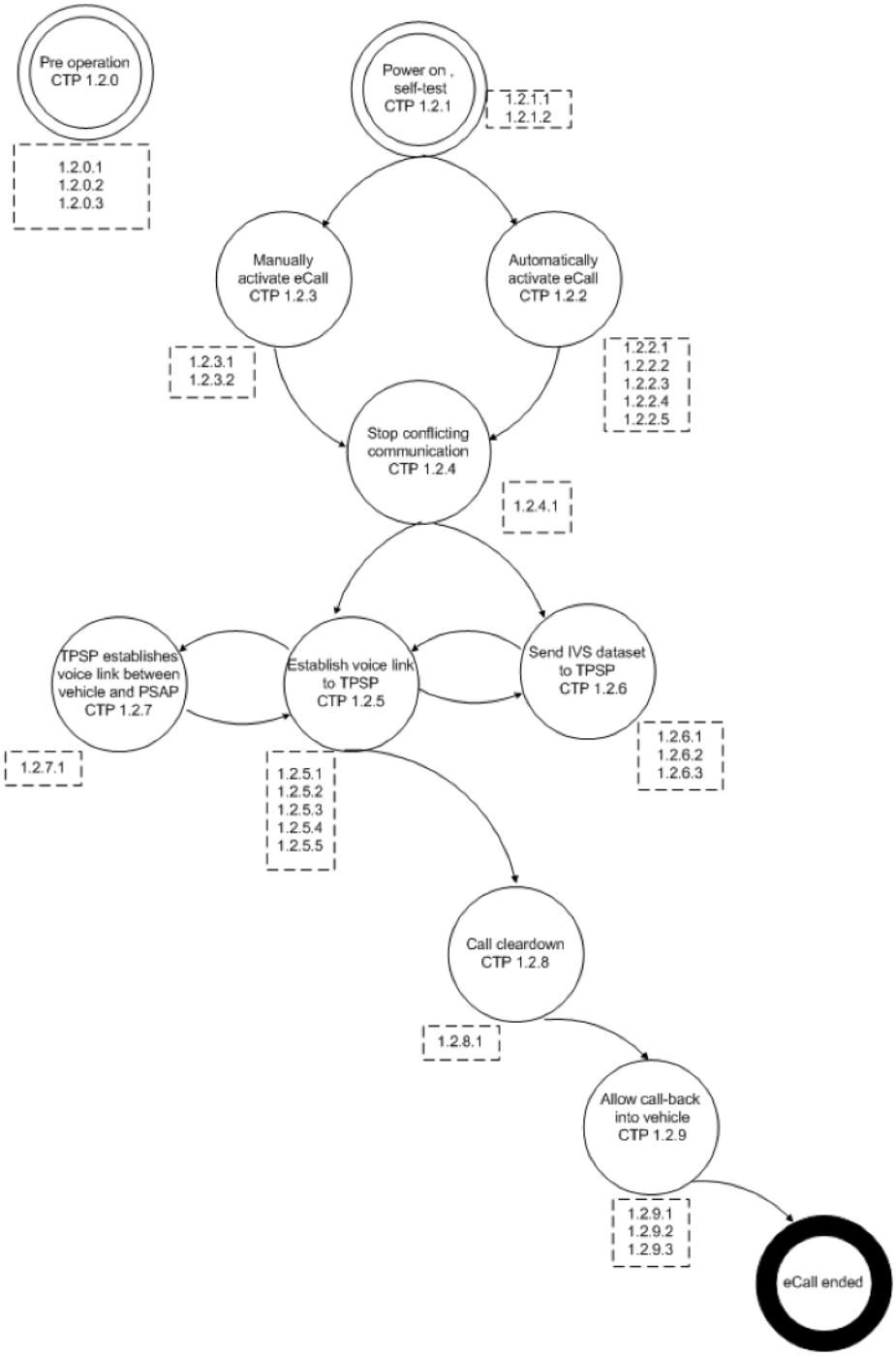

Figure 15 — State transitions for TPS- IVS with associated CTP references

9.8.2 CTP 1.2.0 Pre operation - TPS-IVS

9.8.2.1 CTP 1.2.0.1 TPS-IVS includes necessary hardware - TPS-IVS

SUT reference	'TPS-IVS'
CTP/* TPS-IVS/*PRE/1.2.0.1	TPS-IVS includes necessary hardware
SUT test objective	Show that an NAD and GNSS system is included
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 4; 8.1
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Obtain TPS-IVS supplier declaration that an NAD and a GNSS system are included	Written declaration that an NAD and a GNSS system are included is received
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.2.2 CTP 1.2.0.2 Protection of privacy - TPS-IVS

SUT reference	'TPS-IVS'
CTP/* TPS-IVS/*PRE/1.2.0.2	Protection of privacy
SUT test objective	Verify that the TPS-IVS complies with data protection directives Verify that vehicle speed cannot be determined from recent vehicle locations
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.4 paragraph 1; 7.2.3 paragraphs 2 and 3
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Obtain written declaration from supplier that vehicle speed cannot be interpreted from recent location information, including a brief summary of how this ensured	Written declaration is obtained
TPS-IVS SUT	2	Obtain written declaration from supplier that relevant data protection directives are observed	Written declaration is obtained
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.3 CTP 1.2.1 Power on self test - TPS-IVS

9.8.3.1 CTP 1.2.1.1 Test conformance for indication that TPS-IVS was not functioning properly - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/I-ON/1.2.1.1	Test conformance for indication that TPS-IVS was not functioning properly
SUT test objective	Test that the driver is informed when the TPS-IVS was not functioning properly
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.10 paragraph 1
Initial conditions	No error is detected on the TPS-IVS Manufacturer has supplied a complete list of detectable errors which would affect compliance with functional requirements of EN 16102

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Create an error for the TPS-IVS in accordance with the manufacturer's instructions (detection of errors could be for example during start up or during shutdown, or by a permanent monitoring) (e.g. disconnect or shorting of external mobile network antenna, disconnect the means of automatic or manual eCall activation …)	
TPS-IVS SUT	2	Ignition ON	
TPS-IVS SUT	3	Check that an HMI alert , according to manufacturer's specification, is provided to occupants that the TPS-IVS was not functioning properly	HMI output indicated TPS-IVS was not functioning properly
TPS-IVS SUT	4	Ignition OFF	
TPS-IVS SUT	5	Do not solve the error on the TPS-IVS	
TPS-IVS SUT	6	Ignition ON	
TPS-IVS SUT	7	Check that an HMI alert is provided to occupants again, according to manufacturer's specification, that the TPS-IVS was not functioning properly	HMI output indicated TPS-IVS was not functioning properly
TPS-IVS SUT	8	Repeat test sequence with all possible detectable errors (as declared by the manufacturer).	If the above pass conditions are met for every relevant detectable error type THEN CTP PASS ELSE CTP FAIL

.

9.8.3.2 CTP 1.2.1.2 Test conformance for TPS-IVS is functioning properly - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/I-ON/1.2.1.2	Test conformance that no error indication is given if TPS-IVS is functioning properly
SUT test objective	Test that the driver was not informed about errors when the TPS-IVS is functioning properly
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.10 paragraph 1
Initial conditions	No error (which would affect compliance with the requirements in EN 16102) is detected on the TPS-IVS.

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Ignition ON	
TPS-IVS SUT	2	Check that no HMI alert is provided to occupants, according to manufacturer's specification (implicitly indicates TPS-IVS is functioning properly)	No HMI alert indicating error
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.4 CTP 1.2.2 Automatically activate eCall - TPS-IVS

9.8.4.1 CTP 1.2.2.1 Test conformance for automatically triggered TPS-eCall sequence - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/TRG/1.2.2.1	Test conformance for automatically triggered TPS-eCall sequence
SUT test objective	Test that an automatic eCall is performed correctly, i.e. : Test that a TPS-eCall can be triggered automatically Test that the generation sequence is started within 1 s Test that the occupants are alerted that eCall will be sent out Test that an IVS dataset is sent to the TPS-eCall responder Test that data transmission is completed within 20 s Test that a hands-free connection is attempted Confirm clear visual and/or audible information about voice connection status
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 2, paragraph 4 'Upon triggering...';

	6.3.1 paragraph 1, paragraph 3; 8.2; 8.5 paragraph 1; 8.10.2
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage Position confidence is good MNO and TPSP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Apply a confirmed automatic trigger condition in accordance with the manufacturer's instructions Start timing eCall generation time	
TPS-IVS SUT	2	Check that an HMI alert is provided to occupants, according to manufacturer's specification, that an eCall is being started (message will be sent and voice attempt will be made)	HMI output indicated eCall will be sent
TPS-IVS SUT	3	Check that the confirmed trigger is accepted by the TPS-IVS and the eCall sequence starts within one second (time between trigger and HMI alert)	HMI output (indicating eCall will be sent) was observed within 1 s of confirmed trigger
TPS-R test point	4	Check that the TPS-IVS attempts a "hands-free" voice connection	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder test point was attempted
TPS-R test point	5	Check that the TPS-IVS establishes a "hands-free" voice connection Start a timer to measure the data transmission	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder test point was established
TPS-IVS SUT	6	Check that a HMI alert according to the manufacturer's specifications is provided for the voice connection status	Clear visual and/or audible indication was provided that the voice connection has been established
TPS-IVS SUT TPS-R test point	7	Time how long the data transmission took. Check if the IVS dataset reaches the TPSP test point within 20s after the voice connection is established	IVS dataset reached the TPSP test point within 20 s, after the voice link was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.4.2 CTP 1.2.2.2 Post-side-crash performance of automatic trigger - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/TRG/1.2.2.2	Post-side-crash performance of automatic trigger
SUT test objective	Test the post-side-crash performance of the automatic trigger
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 2; 8.2; 8.3.2 paragraph 2, paragraph 3, paragraph 4; 8.8 paragraph 1, paragraph 2, paragraph 3, paragraph 4; 8.9; 8.11
Initial conditions	No error is present or detected on the TPS-IVS Ignition ON Automatic TPS-eCall is enabled and armed TPS-IVS is in good mobile network coverage MNO and TPSP test points are available Tests can be carried out using real crash-tests or with simulated equipment

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-IVS SUT	1	Verify that the automatic TPS-eCall is enabled and armed	
TPS-IVS SUT	2	Generate a lateral shock load by one of the following methods to test the IVS crash robustness: c) lateral crash: Directive 96/27 (or equivalent ECE R95-02) d) Simulated equivalent shock condition using a shock-test rig or similar	
TPS-IVS SUT	3	Apply necessary trigger conditions according to manufacturer's instructions for an automatic emergency call (if not already triggered via the above shock profile) Check that an automatic trigger is activated	
TPS-IVS SUT, TPS-R test point	4	Check that the TPS-IVS TPS-eCall generator attempts to establish a "hands-free" voice connection if the equipment has not been destroyed in the crash (or equivalent shock-test)	a 'hands-free' conversation between the vehicle and the TPS-eCall responder test point was attempted OR Hands-free equipment was destroyed in the crash test/simulation
TPS-R test point	5	Check that the TPS-IVS TPS-eCall generator triggers the sending of an IVS dataset	IVS dataset has reached the TPS-R test point
TPS-IVS SUT	6	Terminate the TPS-eCall successfully according to manufacturer's instructions	
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.4.3 CTP 1.2.2.3 Post-frontal-crash performance of automatic trigger - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/TRG/1.2.2.3	Post-frontal-crash performance of automatic trigger
SUT test objective	Test the post-frontal-crash performance of the automatic trigger
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 2; 8.2; 8.3.2 paragraph 2, paragraph 3; 8.8 paragraph 1, paragraph 2, paragraph 3, paragraph 4; 8.9; 8.11
Initial conditions	No error is detected on the TPS-IVS Ignition ON Automatic TPS-eCall is enabled and armed TPS-IVS is in good mobile network coverage MNO and TPSP test points are available Tests can be undertaken using real crash-tests or with simulated equipment

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-IVS SUT	1	Verify that the automatic TPS-eCall is enabled and armed	
TPS-IVS SUT	2	Generate a frontal shock load by one of the following methods to test the IVS crash robustness: a) frontal crash test according to Directive 96/79, amended by Directive 1999/98 (or equivalent ECE R94-01) b) Simulated equivalent shock condition using a shock-test rig or similar	
TPS-IVS SUT	3	Apply necessary trigger conditions according to manufacturer's instructions for an automatic emergency call (if not already triggered via the above shock profile) Check that an automatic trigger is activated	
TPS-IVS SUT, TPS-R test point	4	Check that the TPS-IVS TPS-eCall generator attempts to establish a "hands-free" voice connection if the equipment has not been destroyed in the crash (or equivalent shock-test)	a 'hands-free' conversation between the vehicle and the TPS-eCall responder test point was attempted OR Hands-free equipment was destroyed in the crash test/simulation.
TPS-R test point	5	Check that the TPS-IVS TPS-eCall generator triggers the sending of an IVS dataset	IVS dataset has reached the TPS-R test point
TPS-IVS SUT	6	Terminate the TPS-eCall successfully according to manufacturer's instructions	
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.4.4 CTP 1.2.2.4 Performance of automatic trigger – different crash types - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/TRG/1.2.2.4	Performance of automatic trigger – different crash types
SUT test objective	Test that the automatic trigger is activated by different crash types
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 2; 8.2; 8.3.2 paragraph 2, paragraph 3, paragraph 4
Initial conditions	No error is detected on the TPS-IVS Ignition ON Automatic TPS-eCall is enabled and armedTPS-IVS is in good mobile network coverage MNO and TPSP test points are available Tests can be undertaken using real crash-tests or with simulated equipment

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-IVS SUT	1	Verify that the automatic TPS-eCall is enabled and armed	
TPS-IVS SUT	2	Generate invalid trigger (below relevant threshold) for one of the supported crash-types, in accordance with the manufacturer's instructions	
TPS-IVS SUT	3	Check that NO automatic trigger is activated	
TPS-IVS SUT	4	Check that no audio/visual alert is provided to occupants	No audio/visual alert of activated eCall
TPS-IVS SUT TPS-R test point	5	Check that the TPS-IVS does not cause the sending of an IVS dataset	No data send by TPS-IVS and no data received by the TPSP test point
TPS-IVS SUT	6	Generate a valid trigger (above relevant threshold) for one of the supported different crash types, in accordance with the manufacturer's instructions	
TPS-IVS SUT	7	Check that an automatic TPS-eCall trigger is activated	
TPS-IVS SUT TPS-R test point	8	Check that the TPS-IVS causes the IVS dataset to be sent	IVS dataset reached the TPSP test point
TPS-IVS SUT	9	Terminate the TPS-eCall successfully according to manufacturer's instructions	TPS-eCall was ended
TPS-IVS SUT	10	Repeat the above test sequence for each different supported crash type (e.g. front, side, …) in accordance with manufacturer's instructions	All steps of the above sequence are passed for each relevant crash type.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.4.5 CTP 1.2.2.5 Disarmed automatic TPS-eCall - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/I-OFF/1.2.2.5	Disarmed automatic TPS-eCall
SUT test objective	Test that a TPS-eCall cannot be triggered automatically if ignition is off
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.3.2 paragraph 2
Initial conditions	No error is detected on the TPS-IVS Ignition OFF TPS-IVS is in good mobile network coverage Position confidence is good MNO and TPSP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Apply a confirmed automatic trigger condition in accordance with the manufacturer's instructions	
TPS-IVS SUT	2	Check that no audio/visual alert is provided to occupants	No audio/visual alert of activated eCall
TPS-IVS SUT	3	Check that the TPS-IVS does not attempt a "hands-free" voice connection	No voice call attempted
TPS-IVS SUT TPS-R test point	4	Check that the TPS-IVS does not establish a "hands-free" voice connection	No voice call established
TPS-IVS SUT TPS-R test point	5	Check that the TPS-IVS TPS-eCall management does not trigger the sending of the IVS dataset	No data sent by TPS-IVS and no data received by the TPSP test point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.5 CTP 1.2.3 Manually activate eCall - TPS-IVS

9.8.5.1 CTP 1.2.3.1 Manually triggered TPS-eCall sequence - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/TRG/1.2.3.1	Manually triggered TPS-eCall sequence
SUT test objective	Test the manually triggered TPS-eCall sequence i.e.: Test that a TPS-eCall can be triggered manually Test that the generation sequence is started within 1 s Test that the occupants are alerted that eCall will be sent out Test that an IVS dataset is sent to the TPS-eCall responder Test that data transmission is completed within 20 s Test that a hands-free connection is attempted Confirm clear visual and/or audible information about voice connection status
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 3, paragraph 4 'Upon triggering...'; 6.3.1 paragraph 1, paragraph 3; 8.2; 8.3.3 paragraph 1; 8.5 paragraph 1; 8.10.2
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage Position confidence is good MNO and TPSP test points are available

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-IVS SUT	1	Apply a confirmed manual trigger condition in accordance with the manufacturer's instructions (See CTP 1.2.3.2) Start timing eCall generation time.	
TPS-IVS SUT	2	Check that an HMI alert is provided to occupants, according to manufacturer's specification, that an eCall is being started (message will be sent and voice attempt will be made)	HMI output indicated eCall will be sent
TPS-IVS SUT	3	Check that the confirmed trigger is accepted by the IVS and the eCall sequence starts within one second (time between trigger and HMI alert)	HMI output (indicating eCall will be sent) was observed within 1 s of confirmed trigger
TPS-R test point	4	Check that the TPS-IVS attempts a "hands-free" voice connection	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder test point was attempted
TPS-R test point	5	Check that the TPS-IVS establishes a "hands-free" voice connection Start a timer to measure the data transmission	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder test point was established
TPS-IVS SUT	6	Check that a HMI alert according to the manufacturer's specifications is provided for the voice connection status	Clear visual and/or audible indication was provided that the voice connection was established
TPS-IVS, TPS-R	7	Time how long the data transmission took. Check if the IVS dataset reaches the TPSP within 20s after the voice connection is established	IVS dataset reached the TPSP within 20 s, after the voice link was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.5.2 CTP 1.2.3.2 Manual trigger marking and performance - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/TRG/1.2.3.2	Manual trigger marking and performance
SUT test objective	Show adequate manual trigger mechanisms i.e.: Show that manual trigger marking is compatible with the applicable European Recommendations Show that the TPS-eCall manual trigger mechanism avoids accidental triggering
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 3; 6.3.1 paragraph 1; 8.3.3 paragraph 1, paragraph 2; 8.10.1
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage MNO and TPSP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Check that the manual trigger is marked clearly, and in conformance with the European Recommendation on 'Human Machine Interactions' (ESOP HMI, current version: C(2006) 7125 final, 22 Dec 2006)	Manual trigger is marked appropriately
TPS-IVS SUT	2	Obtain a description of precautions taken by the TPS-IVS supplier to avoid accidental triggers Check that the manual trigger has reasonable precautions against accidental triggers	Accidental triggering can be avoided by the TPS-IVS supplier's precautions
TPS-IVS SUT	3	Attempt a manual TPS-eCall trigger in accordance with manufacturer's instructions	
TPS-IVS SUT	4	If a countdown or similar mechanism is invoked allowing the user to cancel their request, cancel the request according to manufacturer's instructions	IF a cancel possibility was offered, TPS-eCall was cancelled. IF no cancel possibility is offered, test-step is passed.
TPS-IVS SUT	5	If the preceding mechanism was used to cancel the manual trigger request, attempt a new manual TPS-eCall trigger in accordance with manufacturer's instructions	
TPS-IVS SUT	6	If an explicit user-confirmation is required for the manual trigger, DO NOT confirm the request according to manufacturer's instructions	IF an explicit confirmation was required, TPS-eCall was cancelled IF no explicit confirmation is required, test-step is passed.

TPS-IVS SUT	7	If the preceding mechanism was used to cancel the manual trigger request, attempt a new manual TPS-eCall trigger in accordance with manufacturer's instructions	
TPS-IVS SUT	8	If a user-confirmation is required for the manual trigger, confirm the request according to manufacturer's instructions	
TPS-IVS SUT	9	If a countdown or similar mechanism is invoked allowing the user to cancel their request, wait an appropriate time according to manufacturer's instructions until the trigger is confirmed (chance to cancel is over)	
TPS-IVS SUT	10	A <u>confirmed</u> manual trigger has now been applied. After the manual trigger is confirmed, check that a manual TPS-eCall is activated i.e.:	
TPS-IVS SUT	11	: Check that an HMI alert is provided to occupants, according to manufacturer's specification, that an eCall is being started (message will be sent and voice attempt will be made)	HMI output indicated eCall will be sent
TPS-IVS SUT TPS-R test point	12	: Check that the TPS-IVS establishes a "hands-free" voice connection	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder test point was established
TPS-IVS SUT TPS-R test point	13	: Check that an IVS dataset is sent	IVS dataset reaches TPS-R test point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.6 CTP 1.2.4 Stop conflicting communication – TPS-IVS

9.8.6.1 CTP 1.2.4.1 Priority over conflicting communication – TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECI/1.2.4.1	Priority over conflicting communication
SUT test objective	Show that an eCall has priority over conflicting communication
CTP origin	CEN
Reference requirement	EN 16102:2011, 6.7
Initial conditions	Test only applicable if the TPS-IVS supports additional communication No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage Position confidence is good MNO and TPSP test points are available A conflicting communication is running on the TPS-IVS

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-IVS SUT	1	Apply a confirmed manual (See CTP 1.2.3.2) or automatic trigger condition in accordance with the manufacturer's instructions Start timing eCall generation time	
TPS-IVS SUT	2	Check that an HMI alert is provided to occupants, according to manufacturer's specification, that an eCall is being started (message will be sent and voice attempt will be made)	HMI output indicated eCall will be sent
TPS-IVS SUT	3	Check that the confirmed trigger is accepted by the IVS and the eCall sequence starts within one second (time between trigger and HMI alert)	HMI output (indicating eCall will be sent) was observed within 1 s of confirmed trigger.
TPS-IVS SUT	4	Check that all components of the TPS-IVS, which are necessary for an eCall, are available and not influenced by the previously-running communication (HMI, Audio,...)	
TPS-IVS SUT	5	Check that the eCall sequence runs through successfully i.e.:	
TPS-IVS SUT TPS-R test point	6	Check that the TPS-IVS establishes a "hands-free" voice connection	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder test point was established
TPS-IVS SUT TPS-R test point	7	: Check that an IVS dataset is sent	IVS dataset reached TPS-R test point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.7 CTP 1.2.5 Establish voice link to TPSP - TPS-IVS

9.8.7.1 General

Note that tests for voice link establishment are also included in 1.2.2.1 and 1.2.3.1.

9.8.7.2 CTP 1.2.5.1 Voice call reliability - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.5.1	Voice call reliability
SUT test objective	Show that a reliable means of voice call establishment is used
CTP origin	CEN
Reference requirement	EN 16102:2011, 6.1 paragraph 6
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage (at least -99dBm or equivalent) Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is triggered Repeat the test at least 20 times with at least 95% passes.

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Check that the TPS-IVS starts to attempt a voice call	
TPS-IVS SUT MNO test point	2	Check that the voice call attempt is accepted by the MNO test point	
TPS-IVS SUT MNO test point	3	If the MNO test point does not report a positive result, check that the voice call is attempted again (if necessary)	
TPS-IVS SUT MNO test point	4	Check that the MNO test point routes the voice call attempt to the TPSP	
TPS-IVS SUT TPSP test point	5	Check that the TPSP test point accepts the call	A voice connection was established
TPS-IVS SUT TPS-R test point	6	Repeat above sequence at least 20 times	In at least 95% from at least 20 test-runs a voice connection was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.7.3 CTP 1.2.5.2 Test conformance that a TS12 voice connection is made in the event of a failure - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.5.2	Test conformance that a TS12 is made in the event of a failure (where system is not configured to support PE eCall)
SUT test objective	Test that a TS12 call is made upon voice and data connection failure Test that (if Pan-EU-eCall not supported) the eCall flags are not set
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.5 paragraph 3, paragraph 5
Initial conditions	TPS-IVS is configured NOT to support pan-European eCall in the event of a failure No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage MNO, PSAP and TPSP test points are available TPS-IVS is not configured to support Pan-European eCall [Test is only applicable where TPS-IVS can be configured without default to Pan-European eCall]

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Apply a confirmed manual or automatic trigger condition in accordance with the manufacturer's instructions	
TPS-IVS SUT	2	Prevent TPS-IVS from attempting a voice call to the TPS-R and prevent that the TPS-IVS starts to send the dataset to the TPS-R (incl. multiple attempts)	
TPS-IVS SUT MNO test point	3	MNO test point does not accept voice call and dataset (incl. multiple attempts)	
MNO or PSAP test point	4	Verify whether TS12 call was received at the MNO or PSAP test point	TS12 call was attempted
PSAP test point	5	Test whether PSAP test point receives eCall initiation signal	No initiation signal received
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.7.4 CTP 1.2.5.3 Test conformance that a TS12 PE eCall is made in the event of a failure - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECI/1.2.5.3	Test conformance that a TS12 is made in the event of a failure (where system is configured to support PE eCall)
SUT test objective	Test that a TS12 PE eCall is made upon voice and data connection failure
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.5 paragraph 3, paragraph 5
Initial conditions	TPS-IVS is configured to support pan-European eCall in the event of a failure No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage MNO, PSAP and TPSP test points are available TPS-IVS is configured to support Pan-European eCall [Test is only applicable if TPS-IVS can be configured with Pan-European eCall]

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Apply a confirmed manual or automatic trigger condition in accordance with the manufacturer's instructions	
TPS-IVS SUT	2	Prevent TPS-IVS from attempting a voice call to the TPS-R and prevent that the TPS-IVS starts to send the dataset to the TPS-R (incl. multiple attempts)	
TPS-IVS SUT MNO test point	3	MNO test point does not accept voice call and dataset (incl. multiple attempts)	
TPS-IVS SUT	4	Observe whether TS12 call is attempted	TS12 call was attempted
PSAP test point	5	Test whether PSAP test point receives eCall initiation signal NOTE: Where the system supports PE eCall, all other CTPs related to PE eCall also apply.	PE eCall Initiation signal received
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.7.5 CTP 1.2.5.4 Running eCall sequence cannot be interrupted or terminated by - TPS-IVS

SUT Reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.5.4	Running eCall sequence cannot be interrupted or terminated by the TPS-IVS
SUT test objective	Show that a call cannot be interrupted, including: Test that a TPS-eCall cannot be terminated by switching off the ignition Test that the system only disarms after the TPSP has requested termination
CTP origin	EN 16102:2011, 6.6; 8.4
Reference requirement	CEN
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is running, voice connection established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
TPS-IVS SUT	1	Try to hang up/interrupt the voice connection via the vehicle's HMI	The voice call cannot be interrupted by the IVS
TPS-IVS SUT	2	Ignition OFF	
TPS-IVS SUT	3	Check that the voice connection is still established	The voice call was not terminated automatically by the TPS-IVS
TPS-IVS SUT	4	Ignition ON	
TPS-IVS SUT	5	Check that the voice connection is still established	The voice call was not terminated automatically by the TPS-IVS
TPS-IVS SUT	6	TPSP requests to terminate TPS-eCall	The voice call was terminated
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.7.6 CTP 1.2.5.5 Test conformance for limited redial attempts - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.5.5	Test conformance for limited redial attempts Test only applicable if a redial mechanism is configured
SUT test objective	Show that any voice retries are limited
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.7 paragraph 1
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage Position confidence is good MNO and TPSP test points are available TPS-IVS is configured with a redial mechanism, and the maximum of redial attempts is defined A manual or automatic eCall sequence is running, voice connection established The maximum number of redial attempts was not yet reached.

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT TPS-R test point	1	TPS-eCall receiver test point does not provide a confirmation for TPS-eCall termination until now	
TPS-IVS SUT MNO test point, TPS-R test point	2	Voice connection dropped unexpectedly (caused by a network issue or TPS-R test point terminates voice connection without confirmation) If maximum number of redial attempts has not been reached, redial mechanism starts.	Redial mechanism started
TPS-IVS SUT TPS-R test point	3	Repeat the above sequence until the maximum defined number of redial attempts has been reached	Redial mechanism started
TPS-IVS SUT TPS-R test point	4	Repeat the sequence of points 1 and 2 when the maximum defined number of redial attempts has been reached	No redial attempt is made
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.8 CTP 1.2.6 Send IVS dataset to TPSP - TPS-IVS

9.8.8.1 General

Note that tests for data transmission also included in 1.2.2.1 and 1.2.3.1.

9.8.8.2 CTP 1.2.6.1 Dataset content - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.6.1	Dataset content
SUT test objective	Show that the IVS dataset contains all necessary information including: Test that the last known location is sent Test that a location reliability information element is sent Test that driving direction can be determined
CTP origin	CEN
Reference requirement	EN 16102:2011, 7.1 paragraph 2; 7.2.1 paragraph 2; 7.2.2 paragraph 1, paragraph 2; 7.2.3 paragraph 1
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in good mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is running Repeat the test at different locations Repeat the test at locations where the position confidence was not good (e.g. tunnel, underground car park, ...) Repeat the test with different driving directions

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-IVS SUT TPSP test point	1	Check that the IVS dataset contains all necessary information (needed by the TPSP)	The TPSP test point received all mandatory MSD information (either received in the IVS dataset or otherwise obtained)
TPS-IVS SUT TPSP test point	2	Check that the last-known location is sent. In case of inadequate quality of information, this will be based on a best-estimate.	The TPSP test point received the last-known (best estimate) vehicle location
TPS-IVS SUT TPSP test point	3	Check that a location reliability information element is sent	The TPSP test point received position-reliability information
TPS-IVS SUT TPSP test point	4	Check that driving direction can be correctly determined	The TPS-eCall can reliably determine the driving direction / carriageway of the vehicle.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.8.3 CTP 1.2.6.2 Data re-transmission - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.6.2	Data re-transmission
SUT test objective	Test that it is possible to verify whether data has been properly received Test that a mechanism exists to retransmit the data if necessary
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.3 paragraph 7
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is triggered, voice connection established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-R test point	1	The TPSP test point does not properly receive the dataset	TPS-R test point operator confirms that IVS-dataset has not been received
TPS-R test point	2	TPSP test point sends a retransmission request to the IVS, or IVS has not received an acknowledgement of successful receipt	
TPS-R test point	3	The transmission technology used accepts the data request from the TPSP test point	
MNO test point, TPS-R test point	4	The transmission technology used sends the data request from the TPSP to the MNO test point OR If the MNO test point does not accept the data request, the data request is transmitted again or another data request is sent	
TPS-IVS SUT TPS-R test point	5	If the TPS-IVS does not answer the data request, send another data request from the TPSP test point (In this case, TPSP test point has no confirmation, that data request was received by the TPS-IVS, although the MNO test point accepted the data request)	
TPS-IVS	6	IVS dataset is retransmitted	The data request transmission was successful and the data request was received and accepted by the TPS-IVS
TPS-IVS,	7	Check that the data transmission is successful and the data is received by the	Updated IVS dataset was

TPS-R test point		TPSP test point	received at the TPS-R test point TPS-R test point operator confirms reception
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

9.8.8.4 CTP 1.2.6.3 Data transmission reliability - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.6.3	Data transmission reliability
SUT test objective	Show that a reliable means of data transmission from vehicle to TPSP is used including: Show that it is possible to verify whether data has been properly received Show that a mechanism exists to retransmit the data if necessary
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.3 paragraph 7; 6.1 paragraph 1, paragraph 2, paragraph 5, paragraph 6, paragraph 8, paragraph 9
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is triggered Repeat the Test at least 20 times with at least 95% passes

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT MNO test point	1	The transmission technology used accepts the data from the TPS-IVS	
TPS-R test point	2	Check that the TPS-IVS establishes a “hands-free” voice connection Start a timer to measure the data transmission	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder was established
TPS-IVS SUT MNO test point	3	The used transmission technology sends the data from the TPS-IVS to the MNO test point	
TPS-IVS SUT MNO test point	4	If the MNO test point does not accept the data, check that the data is transmitted again (if necessary after a TPSP retransmission request)	IF data-transmit fails, IVS dataset was retransmitted
TPS-IVS SUT TPS-R test point	5	Check that the data transmission is successful and the data is received by the TPSP test point	IVS dataset was received
TPS-IVS SUT TPS-R test point	6	Time how long the data transmission took. Check if the IVS dataset reaches the TPSP test point within 20s after the voice connection is established	IVS dataset reached the TPSP test point within 20 s, after the voice link was established
TPS-IVS SUT TPSP test point	7	Repeat above sequence at least 20 times	In at least 95% from at least 20 test-runs an IVS dataset reached the TPSP test point within 20 s after the voice link was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.9 CTP 1.2.7 Establish voice link between PSAP and occupants - TPS-IVS

9.8.9.1 CTP 1.2.7.1 Establish direct bidirectional audio link between occupants and PSAP - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/ECP/1.2.7.1	Establish direct bidirectional audio link between occupants of vehicle and PSAP
SUT test objective	Test that the TPSP can establish an audio/ voice link between vehicle occupants and PSAP if required
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.3 paragraph 8 '...the TPS shall make...'
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-N test point PSAP test point TPS-R test point TPS-IVS SUT	1	Conduct test CTP 4.2.4	Pass CTP 4.2.4
			THEN CTP PASS ELSE CTP FAIL

.

9.8.10 CTP 1.2.8 Cleardown call - TPS-IVS

9.8.10.1 CTP 1.2.8.1 No reconnect after termination - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/CLR/1.2.8.1	No reconnect after termination
SUT test objective	Test that the TPS-IVS does not automatically reconnect after termination
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.7 paragraph 2
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is triggered, voice connection established

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-IVS SUT	1	TPSP requests to terminate TPS-eCall	The voice call was terminated
TPS-IVS SUT	2	Check that the TPS-IVS does not attempt a "hands-free" voice connection	No voice call attempted
TPS-IVS SUT	3	Apply a new confirmed manual trigger After the manual trigger is confirmed, a manual TPS-eCall is activated	
TPS-IVS SUT TPS-R test point	4	Check that the TPS-IVS establishes a "hands-free" voice connection	a 'hands-free' conversation between the occupants of the vehicle and the TPS-eCall responder test point was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.11 CTP 1.2.9 Allow call-cack into vehicle - TPS-IVS

9.8.11.1 CTP 1.2.9.1 Call-back in case of disconnection - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/CLB/1.2.9.1	Call-back in case of disconnection
SUT test objective	Test that the TPS-IVS has a telephone number Show that a call-back is possible in case of disconnection
CTP origin	CEN
Reference requirement	EN 16102:2011, 6.5 paragraph 1; 8.6 paragraph 1
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is triggered, voice connection established VehiclePhoneNumber is known by the TPSP If redial mechanism activated, maximum of redial attempts is reached (so TPS-IVS does not automatically redial upon disconnection).

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT MNO test point, TPS-R test point	1	Disconnect voice connection (caused by a network issue or TPSP test point terminates voice connection with or without confirmation)	Voice communication disconnected
TPS-R test point	2	TPSP test point starts to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's instructions	
MNO test point, TPS-R test point	3	Check that the voice call attempt is accepted by the MNO	
MNO test point, TPS-R test point	4	If the MNO test point does not report a positive Result, TPSP starts again to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's instructions	
TPS-IVS SUT MNO test point, TPS-R test point	5	Check that the MNO test point routes the voice call attempt to the TPS-IVS	
TPS-IVS SUT MNO test point, TPS-R test point	6	Check that the TPS-IVS accepts the call (automatically or manually by the vehicle occupants)	A voice connection was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.11.2 CTP 1.2.9.2 Call-back after termination - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/CLB/1.2.9.2	call-back after termination
SUT test objective	Test that the TPS-IVS has a telephone number Show that a call-back is possible after the eCall has terminated
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.6 paragraph 1, paragraph 2
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is triggered, voice connection established VehiclePhoneNumber is known by the TPSP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT MNO test point, TPS-R test point	1	TPSP test point requests to terminate TPS-eCall	The voice call was terminated
TPS-R test point	2	TPSP test point starts to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's instructions	
MNO test point, TPS-R test point	3	Check that the voice call attempt is accepted by the MNO test point	
MNO test point, TPS-R test point	4	If the MNO test point does not report a positive result, TPSP starts again to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's instructions	
TPS-IVS SUT MNO test point, TPS-R test point	5	Check that the MNO test point routes the voice call attempt to the TPS-IVS	
TPS-IVS SUT MNO test point, TPS-R	6	Check that the TPS-IVS accepts the call (automatically or manually by the vehicle occupants)	A voice connection was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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9.8.11.3 CTP 1.2.9.3 Automatic call-back acceptance - TPS-IVS

SUT reference	'TPS-IVS'
CTP/ TPS-IVS/CLB/1.2.9.3	Automatic call-back acceptance
SUT test objective	Test that the TPS-IVS has a telephone number Show that a call-back is automatically accepted after an abnormal termination
CTP origin	CEN
Reference requirement	EN 16102:2011, 8.6 paragraph 1, paragraph 4
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in mobile network coverage Position confidence is good MNO, TPSP and PSAP test points are available A manual or automatic eCall sequence is triggered, voice connection established with the TPSP In the event of a failure, voice connection established with the PSAP VehiclePhoneNumber is known by the TPSP and/or the PSAP If redial mechanism activated, maximum of redial attempts is reached

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT MNO test point, TPS-R test point PSAP test point	1	Disconnect voice connection (caused by a Network issue or TPSP test point terminates voice connection without confirmation) Start timing eCall automatic acceptance time (3 min).	Voice connection terminated abnormally
TPS-R test point PSAP test point	2	TPSP test point or PSAP test point starts to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's instructions	
MNO test point, TPS-R test point PSAP test point	3	Check that the voice call attempt is accepted by the MNO test point	
MNO test point TPS-R test point PSAP test point	4	If the MNO test point does not report a positive result, TPSP test point or PSAP test point starts again to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's/PSAP's instructions	
TPS-IVS SUT MNO test point, TPS-R test point PSAP test point	5	Check that the MNO test point routes the voice call attempt to the TPS-IVS	
TPS-IVS SUT	6	Check that the eCall automatic acceptance timer was not expired	
TPS-IVS SUT MNO test point, TPS-R test point PSAP test point	7	Check that the TPS-IVS accepts the call automatically	A voice connection was automatically established
TPS-IVS SUT	8	Ignition OFF Repeat steps 1 to 7 with ignition OFF	All steps of the above sequence are passed with ignition on, and all steps of this sequence are passed with ignition off.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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10 Conformance tests for mobile network operators

10.1 Test objectives and purposes

10.1.1 General

The tests are provided to enable an MNO to claim compliance with the eCall suite of Standards

10.1.2 Default assumptions

In respect of MNO aspects of network service capabilities, in the provision, certification and quality of service assurance of Pan European eCall, Pan European eCall is an instantiation of a 'Teleservice 12' emergency call provided in accordance with the 'Universal Services Directive. The quality of service requirements for GSM/3G specified networks are defined in ETSI TS 122 105, 'Services and service capabilities', and ETSI TS 123 107 'QoS Concept and Architecture Stage 2'. Additional network specific requirements for Pan European eCall are also specified in ETSI TS 122 101 'Service principles'.

eCall specific aspects are provided in version 8.2.0 or later of ETSI TS 122 001 and ETSI TS 124 008. Version 8.2.0 of this and versions 8 or later of other related ETSI deliverables for 3G/GSM communications which are capable to recognise the eCall flag, and CTP 2.0.3 below requires conformance to these or later versions of the ETSI deliverables.

These are already tested under a variety of conditions in order to claim conformance to ETSI Standards for 3G/GSM.

10.2 Taxonomy of testing and referenced tests

Tests are provided arranged into the state transition points.

Conformance requirements and objectives are provided in 10.3.

Tests for MNOs are numbered with the convention 2.1.x.

Apart from the point at which registration occurs, it is immaterial that a Pan European eCall is triggered by an eCall only IVS or an IVS that supports both eCall and other services.

The state transition points for MNO support of Pan European eCall are provided in Figure 7 above.

10.3 Use case conformance tests for mobile network operator systems to comply to Standards for pan European eCall

10.3.1 Conformance requirement

In order to demonstrate or claim compliance to pan European eCall, the MNO system shall be subjected to the conformance tests specified in 10.4, the results being noted using the appropriate check lists in Annex C.

10.3.2 Use case test objectives by stage

10.3.2.1 Pre eCall including conformance to ETSI Standards deliverables

The MNO shall declare that its networks support all features required for eCall in accordance with CTPs 2.0.x

10.3.2.2 Ignition OFF I-OFF

This stage was not relevant for MNOs.

10.3.2.3 Ignition ON (no eCall) including power-up I-ON

This stage was not relevant for MNOs.

10.3.2.4 Trigger TRG

This stage was not relevant for MNOs.

10.3.2.5 eCall initiation ECI

This stage was not relevant for MNOs.

10.3.2.6 eCall in progress ECP

This stage was not relevant for MNOs.

10.3.2.7 eCall Cleardown CLR

This stage was not relevant for MNOs.

10.3.2.8 Post eCall and Call-back CLB

This is covered in 10.3.2.1. See 10.3.2.1.

10.4 State transition test scripts for mobile network operators to demonstrate compliance with Pan European eCall Standards

10.4.1 General

Figure 16 shows the state transition chart for MNOs for pan-European eCall with the relevant CTP references for each transition point.

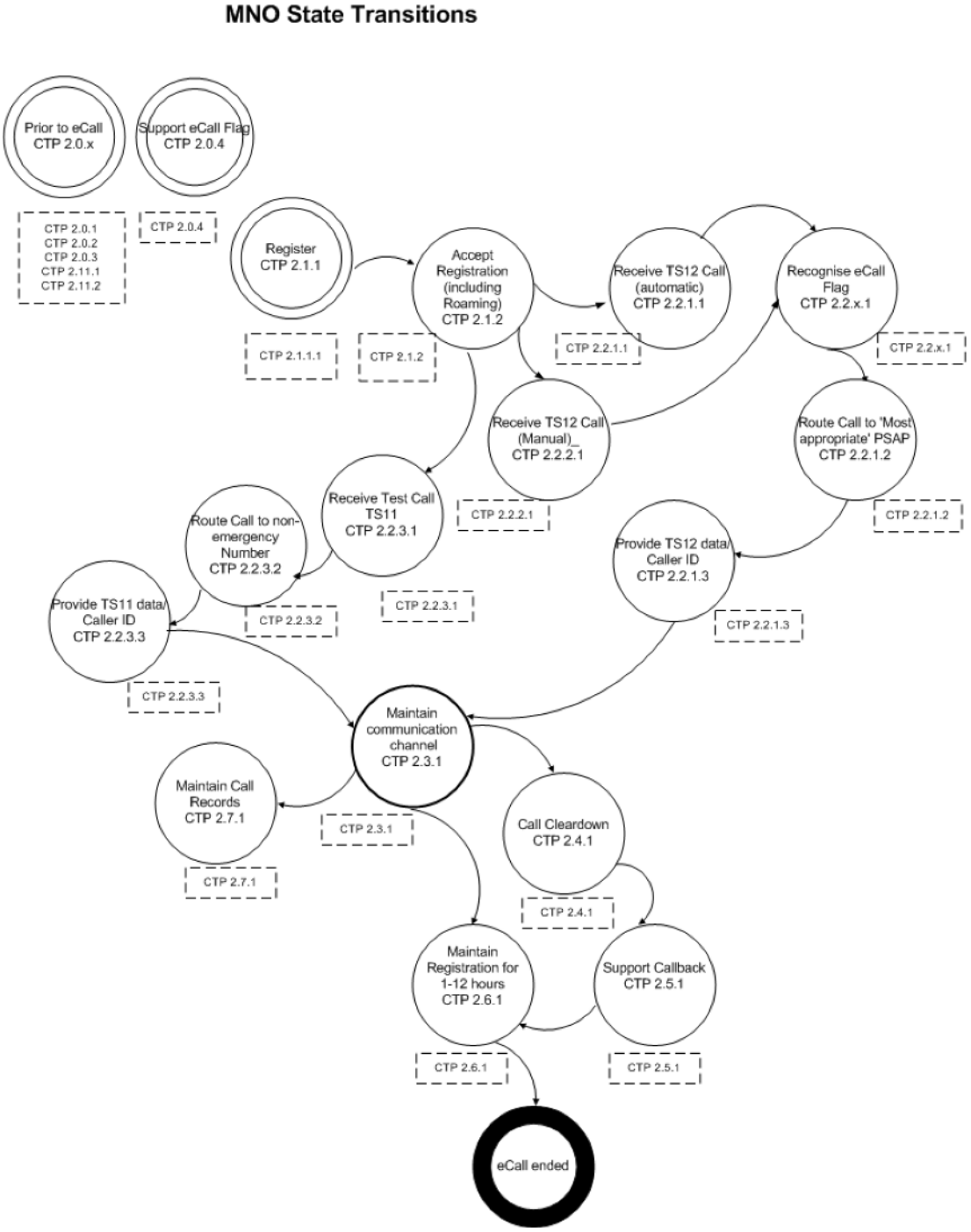

Figure 16 — State transitions for mobile network operators support for eCall with associated CTP references

10.4.2 CTP 2.0.1 Keep SIMs/USIMs alive even though not in regular operation – MNO

SUT reference	'Mobile Network Operator'
CTP/MNO/PRE/2.0.1	Keep SIMs/USIMs alive even though not in regular operation
SUT test objective	Ensure that IMSI was not deleted because it was not in regular use
CTP origin	Original
Reference requirement	EN 16062:2015, 7.1.2
Initial conditions	The 'contracting MNO' *has provided SIM/IMSI to IVS supplier The MNO has declared that a process is in place to ensure that an eCall IMSI was not deleted from the HLR until they are informed that the corresponding USIM is to be decommissioned * Definition of contracting MNO – the MNO which has responsibility for provisioning and managing the SIM.

Stimulus and expected behaviour

Test point		Tester action	Pass condition
MNO SUT	1	Inspect written declaration from MNO	Written declaration from MNO If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

10.4.3 CTP 2.0.2 MNO supports general eCall relevant requirements

SUT reference	'Mobile Network Operator'
CTP/ MNO/PRE/2.0.2	MNO supports general eCall relevant requirements
SUT test objective	Ensure that the MNO supports general requirements necessary for eCall i.e. that:- The MNO provides the same service area benefits to the voice component of an eCall as any other TS12 call The MNO provides the same roaming benefits to an eCall as any other TS12 call The MNO provides the same roaming benefits to a test eCall as any other TS11 call The MNO makes best reasonable efforts to ensure robust and reliable in-band MSD transmission via a TS12 call across the network The MNO makes best reasonable efforts to ensure robust and reliable in-band MSD transmission via a TS11 call across the network The MNO is able to recognise that the PSAP clears down a TS12 call and signal appropriately by Standard call release signalling and not the AL-ACK. The MNO is able to recognise that the PSAP clears down a test eCall and signal appropriately by Standard call release signalling The MNO is able to recognise that the IVS clears down a TS12 call and signal appropriately The MNO is able to recognise that the IVS clears down a test eCall and signal appropriately The MNO makes best reasonable efforts to maintain the audio channel to give PSAP the opportunity to speak with vehicle occupants
CTP origin	Original
Reference requirement	EN 16072:2015, 6.1.5; 7.3.2; 7.4; 7.6.1.3; 7.12.4 paragraph 2; 7.13.1 paragraph 2; 7.13.2; 7.13.3
Initial conditions	The MNO has declared all of the following:- The MNO confirms it provides the same service area benefits to the voice component of an eCall as any other TS12 call The MNO confirms it makes best reasonable efforts to provide the same roaming benefits to an eCall as any other TS12 call The MNO confirms it makes best reasonable efforts to provide the same roaming benefits to a test eCall as any other TS11 call The MNO confirms it accepts registration from an IVS with a valid USIM in its home network. The MNO confirms it accepts registration from an IVS with a valid USIM from a supported roaming partner. The MNO confirms it accepts network registration, following initiation of an eCall or test call, from an IVS configured for eCall Only or eCall plus other services The MNO confirms it makes best reasonable efforts to ensure robust and reliable in-band MSD transmission via a TS12 call (which is conformant with ETSI TS 126 267 [Release 8 or later] and ETSI TS 126 269 [Release 8 or later]), across the network, under roaming and non-roaming conditions The MNO confirms it makes best reasonable efforts to ensure robust and reliable in-band MSD transmission via a TS11 call (which is conformant with ETSI TS 126 267 [Release 8 or later] and ETSI TS 126 269 [Release 8 or later]), across the network, under roaming and non-roaming conditions The MNO confirms it is able to recognise when a PSAP clears down a TS12 call and signal normal call clearing as appropriate under roaming and non roaming conditions

	by Standard call release signalling The MNO confirms it is able to recognise when a PSAP clears down a test eCall and signal normal call clearing as appropriate under roaming and non roaming conditions by Standard call release signalling The MNO confirms it is able to recognise when an IVS clears down a TS12 call and signal normal call clearing as appropriate under roaming and non roaming conditions by Standard call release signalling The MNO confirms it is able to recognise when an IVS clears down a test eCall and signal normal call clearing as appropriate under roaming and non roaming conditions by Standard call release signalling The MNO confirms it makes best reasonable efforts to maintain the audio channel of both TS12 and TS11 calls to give PSAP the opportunity to speak with vehicle occupants Wherever PSAP is written above, the same conditions apply for a PSAP test point Wherever IVS is written above, the same conditions apply for an IVS test point

Stimulus and expected behaviour

Test point		Tester action	Pass condition
MNO SUT	1	Inspect written declaration from MNO, confirming that MNO will comply with all declarations listed in the initial conditions of this CTP.	Suitable written declaration from MNO as described in initial conditions of this CTP If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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10.4.4 CTP 2.0.3 Decommission SIM/USIM - MNO

Test removed.

This test was present in the Technical Specification version of this document, but is removed in this current document because any MNO can decommission a SIM. The MNO needs to know that the vehicle has been decommissioned and how this information is communicated is outside the scope of the current document.

NOTE This place holder remains in this version of the document to maximise cross referencing consistency between this and the previous version of the document

10.4.5 CTP 2.0.4 Support eCall Flag – MNO

SUT reference	'Mobile Network Operator'
CTP/ MNO/PRE/2.0.4	Support eCall flag
SUT test objective	To ensure that MNO system supports the eCall frag as specified in version 8.2.0 or later of ETSI TS 124 008 and recognises the eCall flag
CTP origin	Original
Reference requirement	EN 16062:2015, 2. EN 16072:2015, 6.1 (c); 7.3.2; and ETSI TS 124 008, 10.5.4.33
Initial conditions	**The MNO shall declare support of the eCall flag.** i.e. that that their mobile networks support the eCall identifiers (flag) in accordance with ETSI TS 124 008 version 8.2.0 or later

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
MNO SUT	**1**	Inspect written declaration from MNO, confirming that they will comply with the declarations listed in the initial conditions of this CTP	Suitable written declaration from MNO as described in initial conditions If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

10.4.6 CTP 2.1.1 Accept registration – Home network – MNO

Test removed.

This test was present in the Technical Specification version of this document, but is removed in this current document because SIM providers will often use MCC 901, meaning that there is no home network.

NOTE This place holder remains in this version of the document to maximise cross referencing consistency between this and the previous version of the document

10.4.7 CTP 2.1.2 Accept registration – Roaming –MNO

SUT Reference	'Mobile Network Operator'
CTP/ **MNO**/ECI/2.1.2	Test that registration is successful in a roaming network
SUT Test Objective	Verify that, following initiation of an eCall or test call from an IVS configured for the eCall only or eCall plus other services, the registration is successful in visited networks
CTP Origin	CEN
Reference requirement	EN 16062:2015, 7.3.2
Initial Conditions	An IVS containing a non-native SIM/USIM is provisioned for the eCall Only service or eCall and other services. IVS and PSAP test points are available Roaming allowed NOTE In some cases the visited network will be the Home network (e.g. because MCC 901 is used).

Stimulus and expected behaviour

Test point		Tester action	Pass Condition
IVS test point	1	Initiate a test call to a designated non-emergency number, in accordance with the manufacturer's instructions (NOTE eCall may be placed without successful registration.)	
MNO SUT	2	Verify that the IVS NAD is successfully registered on the visited network: this indicates that registration has been successful."	The eCall IVS NAD was registered on the visited network. If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

10.4.8 CTP 2.2.1.1 Receive TS12 voice call (automatically initiated) – MNO

SUT Reference	'Mobile Network Operator'
CTP/ **MNO**/ECI/.2.2.1.1	Test for receiving TS12 voice call (automatically initiated)
SUT Test Objective	Verify that, when an eCall is initiated automatically, a TS 12 call is established
CTP Origin	CEN
Reference requirement	EN 16062:2015, 7.3.6
Initial Conditions	IVS is configured for the eCall only service or eCall and other services. IVS and PSAP test points are available

Stimulus and expected behaviour

Testpoint		Tester action	Pass Condition
IVS test point	1	Initiate an eCall automatically in accordance with the manufacturer's instructions	
MNO SUT	2	Verify that TS12 is established	TS12 call was established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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10.4.9 CTP 2.2.1.2 Route call to 'most appropriate' PSAP – MNO

SUT reference	'Mobile Network Operator'
CTP/ MNO/ECI/2.2.1.2	Route eCall to most appropriate PSAP
SUT test objective	Test that the eCall is routed to the intended PSAP
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.3.6
Initial conditions	IVS is configured for the eCall only service or eCall and other services IVS and PSAP test points are available PSAP has provided MNO with adequate information to enable MNO to identify and route to the 'most appropriate PSAP

Stimulus and expected behaviour

Test point		Tester action	Result
MNO SUT	1	The MNO declares that it has correctly implemented the routing information provided to it by the National Administration	Receipt of written declaration from MNO that it has correctly implemented the routing information provided to it by the National Administration
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

10.4.10 CTP 2.2.1.3 Provide TS12 data/caller ID – MNO

SUT reference	'Mobile Network Operator'
CTP/ **MNO**/ECP/2.2.1.3	Test for TS12 provision of data, caller ID (CLI) and cell based location data
SUT test objective	Verify that, when an eCall is established the mobile network provides both the data, and the caller ID (CLI) and cell based location data, to the PSAP
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.3.7
Initial conditions	IVS is configured for the eCall only service or eCall and other services IVS and PSAP test points are available IVS is able to register on the network (in 'limited service condition' a CLI may not be available) The tester is in bidirectional contact with the PSAP test point NOTE: The MNO typically (not always) has "location Data", based on Cell-ID and may provide these data together with CLI to the PSAP on another data-path, not related to eCall, according to individual national legislation.

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS test point	1	Initiate an eCall (manually or automatically), in accordance with the manufacturer's instructions	
PSAP test point	2	Verify that both the data, and caller ID (CLI) and location data, is provided by the MNO to the PSAP test point	The PSAP test point received the message data correctly and the caller ID (CLI) and location data If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

10.4.11 CTP 2.2.2.1 Receive TS12 voice call (manual initiated) – MNO

SUT reference	'Mobile Network Operator'
CTP/ **MNO**/ECP/.2.2.2.1	Test for receiving TS12 voice call (manual)
SUT test objective	Verify that, when an eCall is initiated manually a TS 12 call is established
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.3.6
Initial conditions	IVS is configured for the eCall only service or eCall and other services. IVS and PSAP test points are available

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS test point	1	Initiate an eCall manually in accordance with the manufacturer's instructions	
MNO SUT	2	Verify that TS12 is established	A TS12 call was established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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10.4.12 CTP 2.2.3.1 Test for receiving test eCall (TS11)

Test removed.

This test was present in the Technical Specification version of this document, but is removed in this current document because it is already covered in 10.4.9.

NOTE This place holder remains in this version of the document to maximise cross referencing consistency between this and the previous version of the document

10.4.13 CTP 2.2.3.2 Route call to non-emergency number – MNO

Test removed.

This test was present in the Technical Specification version of this document, but is removed in this current document because it is already covered in 10.4.9.

NOTE This place holder remains in this version of the document to maximise cross referencing consistency between this and the previous version of the document

10.4.14 CTP 2.2.3.3 Provide TS11 data – MNO

SUT reference	'Mobile Network Operator'
CTP/ **MNO**/ECP/2.2.3.3	Test for TS11 provision of data
SUT test objective	Verify that, when an eCall is established the mobile network provides the data, and if available, the caller ID (CLI) to the PSAP
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.3.7
Initial conditions	IVS is configured for the eCall only service or eCall and other services IVS and PSAP test points are available The tester is in telephone contact with the PSAP test point

Stimulus and expected behaviour

Test point		Tester action	Pass condition
IVS test point	1	Initiate a test call to a designated non-emergency number, in accordance with the manufacturer's instructions	
PSAP test point	2	Verify that the data, and if available, the caller ID (CLI) is sent to the PSAP test point	The PSAP test point received the data correctly If ALL individual pass conditions listed in this column above have been met **THEN CTP PASS** **ELSE CTP FAIL**

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10.4.15 CTP 2.3.1 Call in progress–MNO

No test required.

10.4.16 CTP 2.4.1 Call cleardown – MNO

SUT reference	'Mobile Network Operator'
CTP/ MNO/CLR/2.4.1	Call clear down
SUT test objective	Test that the MNO is able to recognise that the PSAP clears down the call
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.5.4; 7.9
Initial conditions	IVS is configured for the eCall only service or eCall and other services IVS and PSAP test points are available NOTE: AL-ACK is not seen by the MNO

Stimulus and expected behaviour

Test point		**Tester action**	**Result**
IVS test point	1	Initiate an eCall (manually or automatically) in accordance with the manufacturer's instructions	
MNO SUT	2	Route call to PSAP test point	
PSAP test point	3	Answer call and then hang-up	
MNO SUT	4	Hang-up indication from PSAP test point is recognised and PLMN releases the call	eCall was cleared down
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

10.4.17 CTP 2.5.1 Support call-back – MNO

SUT reference	'Mobile Network Operator'
CTP/ MNO/CLB/2.5.1	PSAP call back
SUT test objective	Test that the MNO can deliver a return call from the PSAP to the IVS
CTP origin	CEN
Reference requirement	EN 16062:2015, 7.10
Initial conditions	IVS is configured for the eCall only service or eCall and other services IVS and PSAP test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Result**
MNO SUT	1	Initiate an eCall (manually or automatically) in accordance with the manufacturer's instructions	
PSAP test point	2	Answer call and then hang-up	
MNO SUT	3	Hang-up indication from PSAP test point is recognised and PLMN releases the call	The eCall was cleared down
PSAP test point	4	Initiate a call to the MSISDN number identified in the CLI NOTE The PLMN should keep the registration of the IVS for some time; this might need to be tested.	
MNO SUT	5	Receives call set-up request and routes call to IVS MSISDN	Call from PSAP test point routed to IVS MSISDN
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

10.4.18 CTP 2.6.1 Maintain registration for 1-12 hours – MNO

No test required.

10.4.19 CTP 2.7.1 Maintain call records - MNO

No test required.

10.5 Use case conformance tests for mobile network operator systems to comply to Standards for TPS-eCall

10.5.1 Conformance requirement

In order to demonstrate or claim compliance to TPS-eCall, the MNO system shall be subjected to the conformance tests specified in 10.6, the results being noted using the appropriate check lists in Annex C.

10.5.2 Use case test objectives by stage

10.5.2.1 Pre-eCall.

10.5.2.2 The MNO declares that all their networks support all network features required in CTPs 2.11.1 and 2.11.2.

10.5.2.3 Ignition OFF (I-OFF).

There are no MNO tests specific to this stage.

10.5.2.4 Ignition ON (no eCall) including power-up (I-ON).

There are no MNO tests specific to this stage.

10.5.2.5 Trigger (TRG).

There are no MNO tests specific to this stage.

10.5.2.6 eCall initiation (ECI).

There are no MNO tests specific to this stage.

10.5.2.7 eCall in progress (ECP).

There are no MNO tests specific to this stage.

10.5.2.8 eCall Cleardown (CLR).

There are no MNO tests specific to this stage.

10.5.2.9 Post eCall and Call-back (CLB).

The MNO declares that all their networks support all network features required in CTPs 2.11.1 and 2.11.2.

10.6 State transition test scripts for mobile network operators to demonstrate compliance with TPS-eCall Standards

10.6.1 CTP 2.11.1 MNO supports general TPS-eCall relevant requirements

The operational situation between an MNO and TPSP is a contractual issue outside the scope of this Standard. Fall-back to PE eCall is covered by PE eCall tests. There are no specific tests for MNO support with TPS."

10.6.2 CTP 2.11.2 Support call-back – MNO

Capability included within CTP 2.11.1.

11 Conformance tests for PSAP systems

11.1 Test objectives and purposes

The objectives of conformance tests for PSAP systems is to enable the conformance of PSAP systems to be tested without dependence on the conformance of IVS and MNO components of the system.

11.2 Taxonomy of testing and referenced tests

11.2.1 Taxonomy of testing

Tests are provided arranged into the state transition points.

Conformance requirements and objectives are provided in 10.3.

The state transition points for PSAP support of Pan European eCall are provided in Figure 8 above.

The state transition points for PSAP support of TPSP European eCall are provided in Figure 9 above.

11.2.2 Referenced tests

11.3 Use case conformance tests for PSAP systems to comply to Standards for pan European eCall

11.3.1 Conformance requirement

In order to demonstrate or claim compliance to pan European eCall, the PSAP system shall be subjected to the conformance tests specified in 11.4, the results being noted using the appropriate check lists in Annex D.

Tests for PSAPs for pan-European eCall (there is no distinction between eCall only and eCall plus at the PSAP) are numbered with the convention 3.1.x.

Tests for PSAPs for TPS-eCall are numbered with the convention 3.2.x.

11.3.2 Use case test objectives by stage

11.3.2.1 Pre eCall including conformance to ETSI Standards deliverables

This stage was not relevant for PSAPs.

11.3.2.2 Ignition OFF (I-OFF)

This stage was not relevant for PSAPs.

11.3.2.3 Ignition ON (no eCall) including power-up (I-ON)

This stage was not relevant for PSAPs.

11.3.2.4 Trigger (TRG)

This stage was not relevant for PSAPs.

11.3.2.5 eCall initiation (ECI)

This stage was not relevant for PSAPs.

11.3.2.6 eCall in progress (ECP)

ECP group objective:

— to test the reception of the eCall;

— to test the reception of the MSD;

— to test the voice link establishment to PSAP operator and vehicle occupants;

— to test the behaviour of the PSAP in relation to events which occurred when eCall is in progress.

11.3.2.7 eCall Cleardown (CLR)

CLR group objective:

— to test the eCall cleardown effected by the PSAP.

11.3.2.8 Post eCall and Call-back (CLB)

CLB group objective:

— to test the request and reception of a new MSD after call cleardown;

— to test the call back to the vehicle occupants after call cleardown.

11.4 State transition conformance tests for PSAPs – PE eCall

11.4.1 General

Figure 17 shows the state transition chart for PSAPs with the relevant CTP references for each transition point.

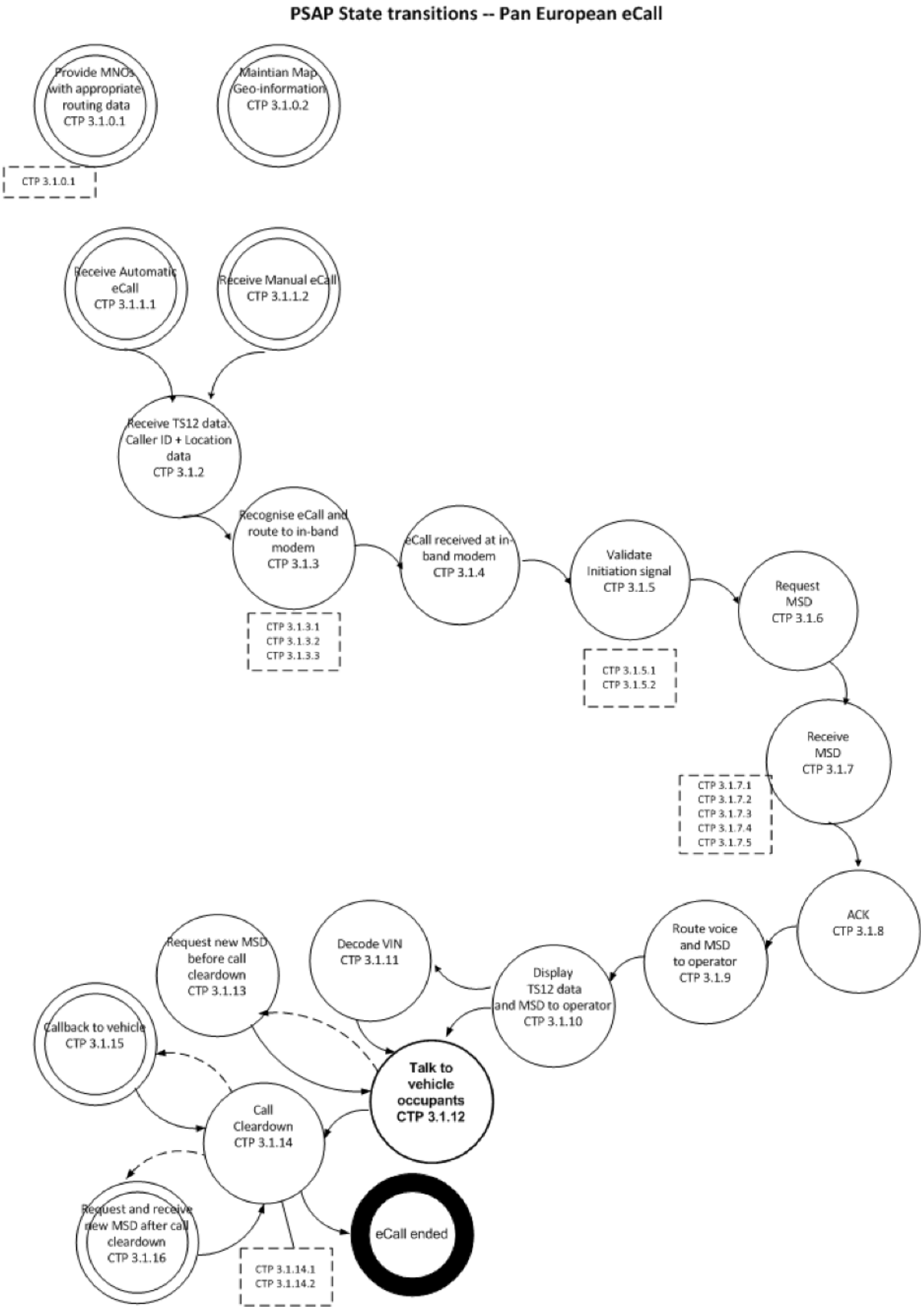

Figure 17 — State transitions for PSAPs supporting PE eCall with associated CTP references

11.4.2 CTP 3.1.0.1 Provide MNOs with appropriate routing data – Member State/ PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/PSAP/PRE/3.1.0.1	Provide MNO's with appropriate routing data and boundaries
SUT test objective	Verify the number(s) to route eCalls has been provided. eCalls are routed to a dedicated number(s) which shall be created. The eCall flag makes possible that the eCalls are routed to a dedicated number(s) which shall be created. By these steps, the PSAP can distinguish the eCalls from the E112 calls.
CTP origin	Original
Reference requirement	EN 16062:2015, 7.12.4.1: 6 paragraph 2, 7.1.3, 7.3.6 EN 16072:2015, 6.1 (d); 7.1;
Initial conditions	Knowledge of numbers and boundaries

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
PSAP SUT	1	Information about numbers and boundaries of the PSAP is available in an understandable format	
PSAP SUT	2	Verify that routing details of the PSAP are provided by the PSAP to the MNO	E.164 number(s) of the PSAP and boundaries were provided
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.3 CTP 3.1.0.2 Maintain map geo-information – PSAP PE eCall

SUT Reference	PSAP - PE eCall
CTP/ PSAP/PRE/ 3.1.0.2	Maintain map geo Information - PE eCall
SUT Test Objective	Verify the availability of a geographic information system in the PSAP. The most appropriate PSAP shall have access to an appropriate 'Geographic Information Service' (GIS) so that the operator can identify the location and heading supporting the full resolution as received in the MSD coordinates.
CTP Origin	Original
Reference requirement	EN 16072:2015, 6.2.4
Initial Conditions	

Stimulus and expected behaviour

Test Point		**Tester Action**	**Pass Condition**
PSAP	1	Obtain evidence of written statement that a Geographic Information System (GIS) is available in the PSAP.	Acceptable written statement that a Geographic Information System (GIS) is available in the PSAP.
PSAP	2	Obtain evidence of written statement that data in the information a Geographic Information System (GIS) are up to date.	Written statement that data in the information a Geographic Information System (GIS) are up to date.
PSAP	3	Obtain evidence of written statement that the Geographic Information System (GIS) is used to locate automatically the location of the eCall (included in the MSD).	Written statement that the Geographic Information System (GIS) is used to locate automatically the location of the eCall (included in the MSD).
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.4 CTP 3.1.1.1 Receive automatically initiated eCall – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECI/.3.1.1.1	Receive automatic eCall
SUT test objective	The call is routed to the most appropriate PSAP and it is received in the PSAP telephone system On receipt of the TS12 emergency call request, the 'Mobile Switching Centre' (MSC) in the network shall route the call to the most appropriate PSAP. The MSC shall make use of the 'eCall Flag' in the call set-up message to route the eCall to a designated eCall capable PSAP
CTP origin	Original
Reference requirement	EN 16062:2015, 7.3.6, 7.4.2 EN 16072:2015, 6.1 (d) and (e)
Initial conditions	Appropriate routing data and boundaries information available for MNOs Automatic eCall sent and routed to the PSAP PSAP is able to handle automatic eCalls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point or MNO test point	1	Automatic eCall initiated from IVS test point	
MNO test point	2	eCall routed to the correct PSAP	
PSAP SUT	3	Call arrives to the correct PSAP	
PSAP SUT	4	Call comes into the PSAP telephone system for automatically triggered eCalls.	call has reached the PSAP OK If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.5 CTP 3.1.1.2 Receive manually initiated eCall – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.1.2	Receive manual TS12 Call
SUT test objective	The call is routed to the most appropriate PSAP and it is received in the PSAP telephone system. On receipt of the TS12 emergency call request, the 'Mobile Switching Centre' (MSC) in the network shall route the call to the most appropriate PSAP. The MSC shall make use of the 'eCall Flag' in the call set-up message to route the eCall to a designated eCall capable PSAP
CTP origin	Original
Reference requirement	EN 16062:2015, 7.3.6, 7.4.2 EN 16072:2015, 6.1 (d) and (e)
Initial conditions	Appropriate routing data and boundaries information available for MNOs Manual eCall sent and routed to the most appropriate PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point or MNO test point	1	Manual eCall initiated from IVS test point	
MNO test point	2	eCall routed to the correct PSAP	
PSAP SUT	3	Verify that eCall has reached the most appropriate PSAP for manually triggered eCalls	eCall arrived to the most appropriate PSAP telephony system If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.6 CTP 3.1.2 Receive TS12 data- Caller ID & location – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.2	Interpret TS12 data: caller ID + location data
SUT test objective	Verify eCall arrives to the PSAP as a TS12 call. Caller ID and location data are available and interpretable
CTP origin	Original
Reference requirement	EN 16062:2015, 7.3.7
Initial conditions	Caller location information received for TS12 calls eCall received in the PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall arrives to the PSAP	
PSAP SUT	4	Caller ID and caller location information are available in the same way as for TS12 calls	
PSAP SUT	5	Verify PSAP's system extracts caller ID and location information	PSAP's system extracted caller ID and location information If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.7 CTP 3.1.3.1 Recognise eCall and route to in-band modem – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.3.1	Recognise eCall and route to in-band modem
SUT test objective	Verify the eCall is recognised as such and correctly routed to the in-band modem After the eCall has been picked-up by the PSAP telephone system it shall be routed to the PSAP in-band modem which shall listen for the 'INITIATION' message (signal) sent by the IVS
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2
Initial conditions	eCall routed to the most appropriate PSAP eCall arrived to the PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP	3	eCall recognised as such	
PSAP	4	Verify eCall is routed to the in-band modem	eCall received by in-band modem If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.8 CTP 3.1.3.2 PSAP equipment failure – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.3.2	PSAP equipment failure
SUT test objective	Verify the eCall is routed to the operator and audio link is established in case of PSAP equipment failure If the eCall is routed to a non eCall equipped PSAP it will be answered like a regular TS12 (112) call by the PSAP telephone system which will route it to the first available operator. The PSAP operator will hear a common eCall one-two second signalling signal that may be recognised as such and used to differentiate eCalls from other emergency calls. The PSAP operator can then choose to transfer the call to an eCall-equipped operator to request the MSD, or continue with the voice call If a valid 'INITIATION' message was not received by the PSAP eCall modem within 2 s from when the call has been answered then the call shall be routed to a PSAP operator (T4- PSAP wait for INITIATION signal period, 2 s) (see Annex A *[of EN 16062:2014]*)
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2; 7.12.4.3; 7.12.5
Initial conditions	eCall routed to the most appropriate PSAP eCall arrived to the PSAP, in-band modem not available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to a PSAP	
PSAP SUT	3	PSAP in-band modem not available	
PSAP SUT	4	eCall treated as normal TS12 call	
PSAP SUT	5	eCall routed to operator	
PSAP SUT	6	Verify audio-link with vehicle is established	Audio-link established with vehicle occupants If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.9 CTP 3.1.3.3 PSAP modem failure before link layer ACK is sent – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.3.3	PSAP modem failure before link layer ACK is sent
SUT test objective	Verify the eCall is routed to the operator and audio link is established If a valid 'INITIATION' message was not received by the PSAP eCall modem within 2 s from when the call has been answered then the call shall be routed to a PSAP operator (T4- PSAP wait for INITIATION signal period, 2 s)
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2
Initial conditions	eCall routed to the most appropriate PSAP eCall arrived to the PSAP, in-band modem not available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to a PSAP	
PSAP SUT	3	PSAP in-band modem not available	
PSAP SUT	4	eCall treated as normal TS12 call	
PSAP SUT	5	eCall routed to operator	
PSAP SUT	6	Verify audio-link with vehicle is established	Audio-link established with vehicle occupants If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.10 CTP 3.1.4 eCall received at in-band modem – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.4	Receive at in-band modem
SUT test objective	Verify that the eCall is correctly receive by the PSAP in-band modem After the eCall has been picked-up by the PSAP telephone system it shall be routed to the PSAP in-band modem which shall listen for the 'INITIATION' message (signal) sent by the IVS
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2
Initial conditions	eCall routed to the most appropriate PSAP eCall arrived to the PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall recognised as such	
PSAP SUT	4	eCall is routed to the in-band modem	
PSAP SUT	5	Verify that the in-band modem is waiting for initiation signal	In-band modem waiting for initiation signal If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.11 CTP 3.1.5.1 Validate initiation signal – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.5.1	Validate initiation signal
SUT test objective	PSAP in-band modem validates initiation signal After the eCall has been picked-up by the PSAP telephone system it shall be routed to the PSAP in-band modem which shall listen for the 'INITIATION' message (signal) sent by the IVS The 'INITIATION' message (signal) from the IVS shall persist until the IVS has received a 'SEND MSD' message from the PSAP in-band modem.
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2
Initial conditions	eCall routed to the most appropriate PSAP eCall arrived to the PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall recognised as such	
PSAP SUT	4	eCall is routed to the in-band modem	
PSAP SUT	5	In-band modem is waiting for initiation signal for not more than 2 s (T4 (PSAP wait for INITIATION signal period, 2 s))	
IVS test point	6	IVS test point is sending initiation signal	
PSAP SUT	7	Verify that In-band modem validates initiation signal	in-band modem validated initiation signal If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.12 CTP 3.1.5.2 Route to operator after T4 expiration – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.5.2	Route to operator after T4 expiration
SUT test objective	If a valid 'INITIATION' message was not received by the PSAP eCall modem within 2 s (T4 (PSAP wait for INITIATION signal period, 2 s) timer) from when the call has been answered then the call shall be routed to a PSAP operator. In this CTP IVS does not send an initiation signal Test that in the event of the above and similar MSD reception failure cases the eCall shall continue as a speech only TS12 (112) emergency call
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2; 7.9; 7.12.3; 7.12.4.3; 7.12.11;Annex A Table A.1 T4
Initial conditions	PSAP is operational and can receive eCalls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall recognised as such	
PSAP SUT	4	eCall is routed to the in-band modem	
PSAP SUT	5	In-band modem is waiting for initiation signal	
IVS test point	6	IVS test point not sending initiation signal	
PSAP SUT	7	In-band modem is waiting for initiation signal for more than 2 s (T4)	
PSAP SUT	8	Verify call is routed to PSAP operator	Call routed to operator If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.13 CTP 3.1.6 Request MSD – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.6	Verify MSD Transfer – Request MSD
SUT test objective	When the PSAP modem has verified the received "INITIATION" message it shall immediately send a "SEND MSD" response to the calling IVS, indicating that the MSD is to be transmitted by the IVS to the PSAP
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2; 7.6
Initial conditions	eCall routed to the most appropriate PSAP eCall arrived to the PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall recognised as such	
PSAP SUT	4	eCall is routed to the in-band modem	
PSAP SUT	5	In-band modem is waiting for initiation signal for not more than 2 s (T4 (PSAP wait for INITIATION signal period, 2 s))	
IVS test point	6	Correct initiation signal sent by IVS test point	
PSAP SUT	7	Initiation signal received by in-band modem	
PSAP SUT	8	Verify that In-band modem sends 'SEND MSD' message before 2 s	in-band modem sent 'SEND MSD' message before 2 s If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.14 CTP 3.1.7.1 Receive MSD – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.7.1	Verify MSD transfer – Receive MSD
SUT test objective	Procedure for MSD transfer is verified After successful MSD transfer, the PSAP shall check the MSD content automatically. If the format check succeeded, the PSAP shall subsequently automatically send the positive AL-ACK to the IVS so it can be received within 5 s from reception of the LL-ACK (T6 – IVS wait for AL-ACK period, 5 s)
CTP origin	Original
Reference requirement	EN 16062:2015, 7.5.1; 7.5.3; 7.12.5.2; Annex A, Table A.1 T6
Initial conditions	PSAP is operational and can receive eCalls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	Initiate an eCall	
PSAP SUT	2	Pick up an eCall	
IVS test point	3	Start T5 (IVS wait for SEND MSD period, 2 s) timer	
IVS test point	4	Initiation message (signal) is sent	
PSAP SUT	5	Send 'SEND MSD' message	
IVS test point	6	'SEND MSD' is received	
IVS test point	7	Start T7 (IVS MSD maximum transmission time, 20 s) timer	
IVS test point	8	MSD Tx is started (MSD format according to EN 15722)	
PSAP SUT	9	Perform link layer CRC check with the behaviour, inputs and outputs as defined in ETSI TS 126 267 on received MSD data	
PSAP SUT	10	Send LL-ACK message	
IVS test point	11	LL-ACK is received	
IVS test point	12	Start T6 (IVS wait for AL-ACK period, 5 s) timer	
IVS test point	13	Stop sending MSD	
PSAP SUT	14	Perform a format check of MSD data according to EN 15722	
PSAP SUT	15	Send AL-ACK	
IVS test point	16	Verify whether AL-ACK is received	T6 not expired AND verify OK If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.15 CTP 3.1.7.2 Verify status bit in AL-ACK upon positive ACK– PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.7.2	Verify status bit in AL-ACK upon positive ACK
SUT test objective	An automatically generated application layer ACK, the PSAP prepares the AL-ACK as defined in EN 15722 with status equals positive acknowledgement. The PSAP application sends an REQ primitive to the PSAP modem and the AL-ACK shall then be transmitted to the IVS. The method by which the AL-ACK is sent is defined below.
CTP origin	Original
Reference requirement	EN 16062:2015, 7.5.1; 7.5.2; 7.5.4; 7.9
Initial conditions	PSAP is operational and can receive eCalls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	Initiate an eCall	
PSAP SUT	2	Pick up an eCall	
IVS test point	3	Initiation message (signal) is sent	
PSAP SUT	4	Send 'SEND MSD' message	
IVS test point	5	Send MSD according to EN 15722	
PSAP SUT	6	Perform link layer CRC check with the behaviour, inputs and outputs as defined in ETSI TS 126 267 on received MSD data	
PSAP SUT	7	Send LL-ACK message	
PSAP SUT	8	Perform a format check of MSD data according to EN 15722	format check OK AND
PSAP SUT	10	Send AL-ACK	
IVS test point	11	Verify whether status bit of AL-ACK equal 0 (Positive ACK)	status bit of AL-ACK equal 0 If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.16 CTP 3.1.7.3 Verify MSD transfer upon T8 expiration – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.7.3	Verify MSD transfer upon T8 expiration
SUT test objective	If the PSAP eCall modem does not send a link layer ACK (LL-ACK) within a maximum of 20 s (T8 - PSAP MSD maximum reception time, 20 s) (see Annex A [of EN 16062:2015]) after having sent the "SEND MSD" message to the IVS eCall modem, it shall route the voice call to a PSAP operator
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.4; 7.4.5; 7.4.7; 7.9; 7.12.11; Annex A, Table A.1 T8
Initial conditions	PSAP is operational and can receive eCalls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	Initiate an eCall	
PSAP SUT	2	Pick up an eCall	
IVS test point	3	Initiation message (signal) is sent	
PSAP SUT	4	Send 'SEND MSD' message. Start T8 (PSAP MSD maximum reception time, 20 s) timer	
PSAP SUT	5	T8 expires	
PSAP SUT	6	Call is routed to PSAP operator	call routed to operator If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.17 CTP 3.1.7.4 Verify transfer of corrupted MSD – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.7.4	Verify transfer of corrupted MSD
SUT test objective	Should the PSAP not receive an INITIATION signal within 5 s from answering the call (T4 - PSAP wait for INITIATION signal period, 5 s) (see Annex A [of EN 16062:2015]), or if the MSD was not received error free as determined by the link layer CRC within 20 s (T8 - PSAP MSD maximum reception time, 20 s) (see Annex A [of EN 16062:2015]) from sending a SEND MSD request, then the eCall shall continue as a speech only TS12 (112) emergency cal. EN 16062:2015, 7.12.12, 7.7.3
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2; 7.9; 7.12.4.3; 7.12.11; Annex A Table A.1 T4
Initial conditions	PSAP is operational and can receive eCalls.

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	Initiate an eCall	
PSAP SUT	2	Pick up an eCall	
IVS test point	3	Initiation message (signal) is sent	
PSAP SUT	4	Send 'SEND MSD' message. Start T8 (PSAP MSD maximum reception time, 20 s) timer	
IVS test point	5	Sent corrupted MSDs in such way that PSAP should detect CRC error. Resend corrupted MSDs till T7 is expired	
PSAP SUT	6	Perform link layer CRC check with the behaviour, inputs and outputs as defined in ETSI TS 126 267 on received MSD sets. Check if T8 expired	
PSAP SUT	7	Verify T8 is expired and verify than then call is routed to the operator and audio link is established with vehicle occupants	eCall routed to PSAP operator after expiration of T8 If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.18 CTP 3.1.7.5 Verify PSAP behaviour when MSD format check fails– PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.7.5	Verify PSAP behaviour when MSD format check fails
SUT test objective	If the MSD format check fails, the PSAP shall automatically connect to the PSAP operator within 5 s from sending of the LL-ACK (IVS wait for AL-ACK period, 5 s). If the format-check succeeded, the PSAP shall subsequently automatically send the positive AL-ACK to the IVS so it can be received within 5 s from reception of the LL-ACK
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.2; 7.4.4; 7.5.1; 7.5.3; 7.12.4.3; 7.12.5.2; Annex A Table A.1 T6
Initial conditions	PSAP is operational and can receive eCalls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	Initiate an eCall	
PSAP SUT	2	Pick up an eCall	
IVS test point	3	Initiation message (signal) is sent	
PSAP SUT	4	Send 'SEND MSD' message	
IVS test point	5	Send MSD which consists of format error with respect to EN 15722	
PSAP SUT	6	Perform link layer CRC check with the behaviour, inputs and outputs as defined in ETSI TS 126 267 on received MSD data	
PSAP SUT	7	Send LL-ACK message Start timer T (expiry time – 5 s)	
PSAP SUT	8	Perform a format check of MSD data according to EN 15722. MSD not accepted	
PSAP SUT	9	Wait until timer T expires	
PSAP SUT	10	Verify call is routed to PSAP operator and audio link is established	Call routed to operator and audio link was established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.19 CTP 3.1.8 ACK – PSAP PE eCall

Covered by CTP 3.1.7

11.4.20 CTP 3.1.9 Route voice and MSD to operator – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.9	Route voice and MSD to operator
SUT test objective	Verify that the eCall (voice and MSD) is correctly routed to an available operator
CTP origin	Original
Reference requirement	EN 16062:2015, 7.7.1; 7.7.2; 7.7.3
Initial conditions	MSD correctly received

Stimulus and expected behaviour

Testpoint		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall recognised as such, routed to in-band modem, MSD correctly received	
PSAP SUT	4	The eCall is routed to calls queue	
PSAP SUT	5	When an operator is free the eCall is routed to his/her position	
PSAP SUT	6	Verify eCall arrives to the position of the PSAP operator	eCall arrived to PSAP operator position If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.21 CTP 3.1.10 Display TS12 data and MSD to operator – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.10	Display TS12 data and MSD to operator
SUT test objective	MSD data, caller ID and caller location are available in PSAP operator interface In order to be able to claim it can support eCall, a PSAP is required to be equipped with a software application that can receive, validate and display the MSD contents to its operator(s)
CTP origin	Original
Reference requirement	EN 16062:2015, 7.7.1; 7.7.2
Initial conditions	MSD and voice routed to a PSAP operator

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall recognised as such, routed to in-band modem, MSD correctly received	
PSAP SUT	4	The eCall is routed to calls queue	
PSAP SUT	5	When an operator is free the eCall is routed to his/her position	
PSAP SUT	6	eCall arrives to the position of the PSAP operator	
PSAP SUT	7	TS12 data and MSD displayed in PSAP operator interface	
PSAP SUT	8	Verify that the information is readable and understandable	Correct information in PSAP operator interface If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.22 CTP 3.1.11 Decode VIN – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.11	Decode VIN
SUT test objective	VIN is part of the MSD To check that this information is correctly decoded in the PSAP A PSAP can decide in which graphical way the MSD will be displayed to its operators but the eCall case page shall show the data included in the MSD in a clear and understandable way.
CTP origin	Original
Reference requirement	EN 16062:2015, 7.7.2
Initial conditions	MSD and voice routed to a PSAP operator In respect of interpreting the VIN content of the MSD, the PSAP needs to be equipped with a VIN decoder

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall recognised as such, routed to in-band modem, MSD correctly received, eCall routed to an operator	
PSAP SUT	4	Using VIN information in MSD, PSAP system access information about the car description	
PSAP SUT	5	Verify car description information is correctly displayed in the PSAP operator's interface	Car description displayed in operator's interface If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.23 CTP 3.1.12 Talk to vehicle occupants – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/ECP/3.1.12	Talk with vehicle occupants
SUT test objective	Verify voice call establishment call between vehicle occupants and PSAP operator If the caller is able to speak, the call will be handled as a normal TS12 call
CTP origin	Original
Reference requirement	EN 16062:2015, 7.8
Initial conditions	eCall routed to PSAP operator

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
IVS test point	2	Sound (human voice or background noise) produced	
MNO test point	3	eCall routed to the most appropriate PSAP	
PSAP SUT	4	eCall recognised as such, routed to in-band modem, MSD correctly received	
PSAP SUT	5	The eCall is routed to calls queue	
PSAP SUT	6	When an operator is free the eCall is routed to his/her position	
PSAP SUT	7	eCall arrives to the position of the PSAP operator	
PSAP SUT	8	Verify operator hear sounds. Audio link is established	Audio link with vehicle was established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.24 CTP 3.1.13 Request new MSD before call cleardown – PSAP PE eCall

SUT reference	PSAP –PE eCall
CTP/ PSAP/ECP/3.1.13	MSD transfer while eCall conversation is in progress
SUT test objective	The PSAP operator may decide during the conversation with the vehicle occupants that he/she requires that the latest version of the MSD is sent/re-sent by the IVS to the PSAP
CTP origin	Original
Reference requirement	EN 16062:2015, 7.4.4
Initial conditions	PSAP is operational and can receive eCalls eCall conversation is in progress

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	Request MSD data using PSAP application	
PSAP SUT	2	'SEND MSD' message is sent	
IVS test point	3	'SEND MSD' message is received	
IVS test point	4	Start T7 (IVS MSD maximum transmission time, 20 s) timer	
IVS test point	5	Disconnect the audio channels in the vehicle from the call	
IVS test point	6	MSD Tx is started (MSD format according to EN 15722)	
PSAP SUT	7	Perform link layer CRC check with the behaviour, inputs and outputs as defined in ETSI TS 126 267 on received MSD data	
PSAP SUT	8	Send LL-ACK message	
IVS test point	9	LL-ACK is received	
IVS test point	10	Start T6 (IVS wait for AL-ACK period, 5 s) timer	
IVS test point	11	Stop sending MSD	
PSAP SUT	12	Perform a format check of MSD data according to EN 15722	
PSAP SUT	13	Send AL-ACK	
PSAP SUT	14	Verify MSD is correctly displayed on the operator's interface and audio link with the vehicle is re-established	MSD was correctly displayed on the operator's interface and audio link with vehicle was re-established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.25 CTP 3.1.14.1 Call cleardown – PSAP PE eCall

SUT reference	PSAP - PE eCall
CTP/ PSAP/CLR/3.1.14.1	Call cleardown
SUT test objective	Verify PSAP operator is able to clear down the call The PSAP operator may instruct the clear-down of the call at any time after the MSD is received (PSAP modem has sent LL-ACK) or after T8 – PSAP MSD maximum reception time, 20 s - or T4 (PSAP wait for INITIATION signal period, 2 s) – PSAP wait for INITIATION signal period is completed If at any stage the PSAP application layer ACK with status = 'clear down' is received at the IVS then the behaviour shall be as specified in 7.9. Call clear-down On receipt of the MSD and/or completion of the telephone conversation with the vehicle occupants, the PSAP operator shall clear-down the eCall
CTP origin	Original
Reference requirement	EN 16062:2015, 7.5.4; 7.9
Initial conditions	eCall routed to the PSAP operator

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	eCall initiated from IVS test point	
MNO test point	2	eCall routed to the most appropriate PSAP	
PSAP SUT	3	eCall is routed to an operator	
PSAP SUT	4	After handling the eCall, PSAP operator clears down the call	
PSAP SUT	5	Verify operator line is free	Operator line became free If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.26 CTP 3.1.14.2 Verify status bit in AL-ACK upon cleardown - PSAP –PE eCall

SUT reference	PSAP –PE eCall
CTP/ PSAP/CLR/3.1.14.2	Verify status bit in AL-ACK upon cleardown
SUT test objective	The PSAP operator may instruct the clear-down of the call at any time after the MSD is received (PSAP modem has sent LL-ACK) or after T8 – PSAP MSD maximum reception time, 20 s - or T4 – PSAP wait for INITIATION signal period is completed, 2 s
CTP origin	Original
Reference requirement	EN 16062:2015, 7.5.4
Initial conditions	PSAP is operational and can receive eCalls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
IVS test point	1	Initiate an eCall	
PSAP SUT	2	Pick up an eCall	
IVS test point	3	Initiation message (signal) is sent	
PSAP SUT	4	Send 'SEND MSD' message.	
IVS test point	5	Send MSD according to EN 15722	
PSAP SUT	6	Perform link layer CRC check with the behaviour, inputs and outputs as defined in ETSI TS 126 267 on received MSD data	
PSAP SUT	7	Send LL-ACK message	
PSAP SUT	8	Cleardown the call	
PSAP SUT	9	Send AL-ACK	
IVS test point	10	Verify whether status bit of AL-ACK equal 1 (Cleardown)	status bit of AL-ACK equal 1 (Cleardown) If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.27 CTP 3.1.15 Call-back to vehicle – PSAP PE eCall

SUT reference	PSAP PE eCall
CTP/ PSAP/CLR/3.1.15	Verify whether call-back is performed PSAP
SUT test objective	The PSAP operator shall be able to initiate a call back using the PSAP application system (e.g. call back application user interface) or directly dialling the number using a conventional phone
CTP origin	Original
Reference requirement	EN 16062:2015, 7.10
Initial conditions	PSAP is operational and can receive eCalls eCall was successfully terminated

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
PSAP SUT	1	Initiate call back procedure	
IVS test point	2	Establish audio link	
PSAP SUT	3	Verify audio link established	Voice communication between PSAP operator and vehicle was established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.4.28 CTP 3.1.16 Request new MSD after call cleardown – PSAP PE eCall

SUT reference	PSAP – PE eCall
CTP/ PSAP/CLR/3.1.16	MSD transfer after call clear-down
SUT test objective	In the event that the PSAP operator decides that he/she requires that the latest version of the MSD is sent/re-sent by the IVS to the PSAP after call clear-down, he/she shall first attempt to establish a call to the relevant vehicle, via an appropriate interface made available to them by the PSAP application
CTP origin	Original
Reference requirement	EN 16062:2015, 7.6.3
Initial conditions	PSAP is operational and can receive eCalls eCall has ended

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
PSAP SUT	1	Initiate call back procedure	
IVS test point	2	Call is 'ringing'	
IVS test point	2	Answer the call	
PSAP SUT	3	'SEND MSD' message is sent	
IVS test point	4	'SEND MSD' message is received	
IVS test point	5	Start T7 (IVS MSD maximum transmission time, 20 s) timer	
IVS test point	6	Disconnect the audio channels in the vehicle from the call	
IVS test point	7	MSD Tx is started (MSD format according to EN 15722)	
PSAP SUT	8	Perform link layer CRC check with the behaviour, inputs and outputs as defined in ETSI TS 126 267 on received MSD data	
PSAP SUT	9	Send LL-ACK message	
IVS test point	10	LL-ACK is received	
IVS test point	11	Start T6 (IVS wait for AL-ACK period, 5 s) timer	
IVS test point	12	Stop sending MSD	
PSAP SUT	13	Perform a format check of MSD data according to EN 15722	
PSAP SUT	14	Send AL-ACK	
IVS test point	15	Verify whether AL-ACK is received	T6 not expired and verify OK If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5 State transition conformance tests for PSAPs – TPS-eCall

11.5.1 General

The state transitions for TPS-eCall with associated CTP references are shown in Figure 18.

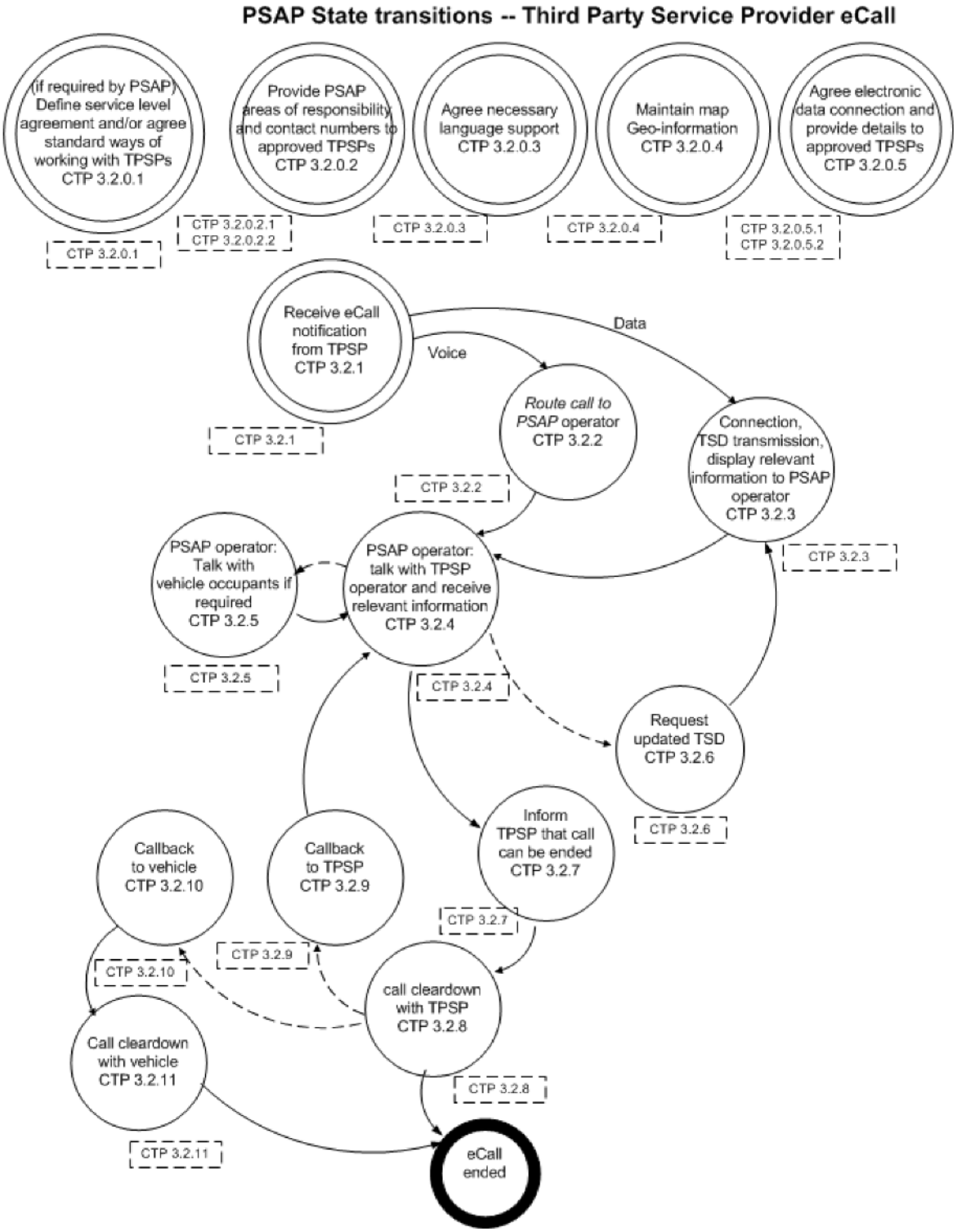

Figure 18 — State transitions for PSAPs supporting TPS-eCall with associated CTP references

11.5.2 CTP 3.2.0.1 TPSP – PSAP agreement – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/PSAP-TPS/PRE/3.2.0.1	(if required by PSAP) PSAP defines service level agreement and/or agree Standard ways of working with TPSPs
SUT Test Objective	In case of a situation likely to require assistance from the emergency services, the TPSP shall alert the most appropriate PSAP, using the appropriate protocol, to pass it the necessary information (at least the MSD mandatory information elements) If requested by a national PSAP organisation in advance, criteria shall be agreed and taken into account by the TPSP in their decision for whether to notify the PSAP about the emergency Verify correct provision of a service level agreement between PSAP and TPSPs if required by the PSAP
CTP Origin	Original
Reference requirement	EN 16102:2011, 9.9
Initial Conditions	TPSP accepted by a relevant authority

Stimulus and expected behaviour

Test point		**Tester action**	**Result**
PSAP SUT	1	Obtain a PSAP declaration that a service level agreement is achieved with TPSPs	Written declaration that the PSAP and TPSP have achieved a service level agreement If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.3 CTP 3.2.0.2 Provide areas of responsibility and contact numbers to approved TPSPs – PSAP TPS-eCall

11.5.3.1 CTP 3.2.0.2.1 Provide PSAP areas of responsibility to approved TPSPs

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/PRE/3.2.0.2.1	Provide PSAP areas of responsibility to approved TPSPs
SUT Test Objective	When a TPSP is accepted by a relevant authority it shall have access to up-to-date PSAP details. These details shall include the geographic area for which they are responsible. […] In case of any subsequent changes the TPSP shall be informed Verify the correct provision to the TPSP of the geographic area for which the PSAP is responsible Verify that, in case of any subsequent changes, the PSAP informs the TPSP
CTP Origin	CEN
Reference requirement	EN 16102:2011, 10.2
Initial Conditions	TPSP accepted by a relevant authority

Stimulus and expected behaviour

Test point		**Tester action**	**Result**
PSAP SUT	1	Obtain a PSAP declaration that geographic area for which the PSAP is responsible is provided to the TPSPs	Written declaration that all geographic necessary PSAP details are received
PSAP SUT	2	Obtain a PSAP declaration that TPSPs are informed of any subsequent changes	Written declaration that the PSAP will inform the TPSP about any subsequent changes. If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.3.2 CTP 3.2.0.2.2 Provide PSAP contact numbers to approved TPSPs –PSAP TPS-eCall

SUT reference	PSAP - TPS-eCall
CTP/ PSAP-TPS/PRE/3.2.0.2.2	Provide PSAP contact numbers to approved TPSPs
SUT test objective	When a TPSP is accepted by a relevant authority it shall have access to up-to-date PSAP details. These details shall include a PSAP emergency telephone number. In case of any subsequent changes the TPSP shall be informed The receiving telephone equipment shall be capable of extracting a Caller-Identifier from the received voice call, and providing this for use in subsequent processes (e.g. for use in case a call-back is later necessary) Verify that, in case of any subsequent changes, the PSAP informs the TPSP
CTP origin	CEN
Reference requirement	EN 16102:2011, 10.2
Initial conditions	TPSP accepted by a relevant authority

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
PSAP SUT	1	Obtain a PSAP declaration that a correct emergency telephone number linked to a telephone equipment that is capable of extracting a caller-identifier from the received voice call, and providing this for use in subsequent processes (e.g. for use in case a call-back is later necessary) is provided to the TPSPs	Written declaration that all necessary PSAP details are received
PSAP SUT	2	Obtain a PSAP declaration that TPSPs are informed of any subsequent changes	Written declaration that the PSAP will inform the TPSP about any subsequent changes If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.4 CTP 3.2.0.3 Agreement on necessary language support – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/PRE/3.2.0.3	Agree necessary language support
SUT Test Objective	The TPSP operator shall be able to speak the language of the (local) most appropriate PSAP Verify that the TPSP operator speaks the language of the most appropriate PSAP
CTP Origin	CEN
Reference requirement	EN 16102:2011, 9.10
Initial Conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	Obtain a PSAP declaration that an agreement on the language(s) to used is achieved with TPSPs	Written declaration from the PSAP informs the TPSP about the language(s) to use If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.5 CTP 3.2.0.4 Agree electronic data connection and provide details to approved TPSPs – PSAP TPS eCall

11.5.5.1 CTP 3.2.0.4.1 Agree method to pass emergency details to the relevant PSAP – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/PRE/ 3.2.0.4.1	Agree method to pass emergency details to the relevant PSAP
SUT Test Objective	In case of an emergency situation likely to require assistance from the emergency services, the TPSP shall then send all necessary information including at least the mandatory data from the MSD (if necessary collating data from the 'IVS dataset' and data from other sources) to the most appropriate PSAP using the supported interface for data transmission to this PSAP,
CTP Origin	CEN
Reference requirement	EN 16102:2011, 5.3
Initial Conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	Obtain a written declaration that the description of the supported interface is provided to the TPSPs	Written declaration from the PSAP informed the TPSP about supported interface If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.5.2 CTP 3.2.0.4.2 PSAP provides an indicator whether they accept or not electronic data – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/PRE/ 3.2.0.4.2	PSAP provides an indicator whether they accept or not electronic data
SUT Test Objective	When a TPSP is accepted by a relevant authority it shall have access to up-to-date PSAP details. These details shall include an indicator whether they accept electronic data Verify the provision of the PSAP of an indicator whether they accept or not electronic data to the TPSPs Verify the provision of the PSAP of supported format to the TPSPs
CTP Origin	CEN
Reference requirement	EN 16102:2011, 10.2
Initial Conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	Obtain a written declaration that an indicator whether they accept or not electronic data and the format supported is provided to TPSPs	Written declaration from the PSAP indicates to the TPSP whether they accept or not electronic data and the supported format. If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.6 CTP 3.2.0.5 Provide PSAP data addresses and security access to approved TPSPs – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/PRE/ 3.2.0.5	Provide PSAP data addresses and security access to approved TPSPs
SUT Test Objective	When a TPSP is accepted by a relevant authority it shall have access to up-to-date PSAP details and if necessary the PSAP emergency TSD-push address and any necessary security access details The security of the PSAP emergency TSD-push address shall be achieved using standardized, commonly used methods At minimum, a standardized transfer method shall be used. The PSAP emergency TSD-push address as provided in 10.2 of EN 16102:2011 shall support the above standardized transfer method, in order to enable a TPSP, when required, to 'push' the 'TSD' to the appropriate location at the PSAP.
CTP Origin	Original
Reference requirement	EN 16102:2011, 10.2; 10.4
Initial Conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	Obtain a written declaration that the PSAP provides the TSD-push address and any other security access details to the TPSPs and that this TSD-push address supports the standardized transfer method	Written declaration from the PSAP that a Standards compliant TSD-push address is provided to the TPSPs If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.7 CTP 3.2.1 Receive eCall notification from TPSP (not TS12) –PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/ECP/3.2.1	Receive eCall notification from TPSP
SUT Test Objective	In case of an emergency situation likely to require assistance from the emergency services, a TPSP: shall act as a TPS-eCall notifier to request such assistance from the most appropriate PSAP
CTP Origin	CEN
Reference requirement	EN 16102:2011, 5.1
Initial Conditions	eCall notification has been sent from the IVS-N to TPSP TPS-eCall received containing necessary matching criteria for selecting a given PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
MNO test point	1	eCall routed to the correct PSAP	
PSAP SUT	1	Verify that eCall has reached the correct PSAP	Call arrived to the PSAP system If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.8 CTP 3.2.2 Route call to operator – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/ECP/3.2.2	Route Call to operator
SUT Test Objective	The PSAP shall subsequently route the emergency call data to the same operator handling the voice call The PSAP operator was notified that there is a TPS-eCall by a voice call from the TPSP. Through the voice call, the TPSP operator provides to the PSAP the reference of the accident [TPS-eCall-SID] that needs to be taken in charge by the PSAP Test that the PSAP can accept a TPSP notification Test that the call is routed to a PSAP operator
CTP Origin	CEN
Reference requirement	EN 16102:2011, 11.4; B.3.2
Initial Conditions	TPS-eCall received containing necessary matching criteria for selecting a given PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
TPSP test point	1	Send an eCall notification by a voice call to the PSAP	
MNO test point	2	Voice call routed to the correct PSAP	
PSAP SUT	3	Voice call reaches the correct PSAP	
PSAP SUT	4	Verify the voice call is routed to the PSAP operator and that the TPSP operator provides the reference [TPS-eCall-SID]	Call routed to the PSAP operator and reference [TPS-eCall-SID] provided If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.9 CTP 3.2.3 Connection, TSD transmission, display relevant information to PSAP operator –PSAP TPS-eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/ECP/3.2.3	Establish data connection with TPSP - Receive and check TSD (includes MSD) from TPSP Acknowledge TSD Display relevant information to PSAP operator
SUT Test Objective	In case of an emergency situation likely to require assistance from the emergency services, a TPSP: – shall act as a TPS-eCall notifier to request such assistance from the most appropriate PSAP; to provide the most appropriate PSAP with all relevant information (In case of an emergency situation likely to require assistance from the emergency services, the TPSP shall then send all necessary information including at least the mandatory data from the MSD to the most appropriate PSAP using the supported interface for data transmission to this PSAP: The TPS-eCall set of data shall include a TPSPCall-backNumber and a VehiclePhoneNumber (if available) in case the PSAP needs to call back for more details later The TPS-eCall set of data shall also include a TPS-eCall unique reference identification (TPS-eCall-UID), and a TPS-eCall short reference identification (TPS-eCall-SID) The TPSP shall post the TSD to the PSAP emergency TSD-push address The PSAP's call-centre systems shall access the received TSD, by reference to a unique *TPS-eCall* identifier. The identification is unique across all vehicles, service providers, and incidents. Using this reference identification, it shall be possible for a PSAP to refer to a *TPS-eCall set of data* associated with a specific *TPS-eCall* The TPSP also provides corresponding standardized web services for the PSAP via a 'PSAP access address' to allow the PSAP to request a retransmission of data, or to inform the TPSP that the PSAP has finished processing the TPS-eCall.
CTP Origin	Original
Reference requirement	EN 16102:2011, 9.9; 9.11; 10.4
Initial Conditions	TPS-eCall received containing necessary matching criteria for selecting a given PSAP

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
TPSP test point	1	Send an eCall notification to the PSAP	
MNO test point	2	eCall routed to the correct PSAP	
PSAP SUT	3	eCall reaches the correct PSAP	
PSAP SUT	4	The data connection is established	
PSAP SUT	5	Data are received and check	
PSAP SUT	6	MSD is included in the received data	
PSAP SUT	7	TPSP call back number and eCall SID (unique identifier) is included in the received data	
PSAP SUT	8	The eCall (voice and data) is routed to the same PSAP operator	
PSAP SUT	9	TSD (including MSD), Call back number and relevant information are displayed to the PSAP operator	TSD (including MSD), call-back number and relevant information displayed to the PSAP operator If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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11.5.10 CTP 3.2.4 PSAP Operator: Talk with TPSP operator and receive relevant information – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/ECP/3.2.4	PSAP Operator: Talk with TPSP operator and receive relevant information
SUT Test Objective	As soon as the TPSP has qualified the need for the alert of the most appropriate PSAP, the TPS-eCall notifier shall establish a voice call with the PSAP Push transfer of a TPS-eCall set of data (TSD) The PSAP shall subsequently route the emergency call data to the same operator(s) handling the voice callTest that the PSAP operator talks with the TPSP operator Test that the PSAP operator receives all relevant information
CTP Origin	CEN
Reference requirement	EN 16102:2011, 10.3; 10.4
Initial Conditions	TPS-eCall established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	The eCall (voice and data) is routed to the same PSAP operator	
PSAP SUT	2	Data are displayed to the PSAP operator	
PSAP SUT	3	A voice conversation between the PSAP operator and the TPSP operator is possible	Voice link between PSAP operator and TPSP operator was possible
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.11 CTP 3.2.5 Talk to vehicle occupants – PSAP TPS-eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/ECP/3.2.5	PSAP Operator: Talk with vehicle occupants if required – PSAP TPS eCall with TPSP operator in the call
SUT Test Objective	in case of an emergency situation likely to require assistance from the emergency services, a TPSP: shall make best efforts to establish a voice connection initially between the vehicle and the relevant TPSP and subsequently shall make best efforts to make a direct voice connection between the occupants of the vehicle and the PSAP if this is required by the PSAP Test that a voice connection between the PSAP operator and the IVS in the car is established
CTP Origin	CEN
Reference requirement	EN 16102:2011, 5.1
Initial Conditions	TPS-eCall established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	The eCall (voice and data) is routed to the same PSAP operator	
PSAP SUT	2	Data are displayed to the PSAP operator	
PSAP SUT SUT	3	A voice conversation between the PSAP operator and the TPSP operator is possible	
PSAP	4	The PSAP operator requires to speak with the vehicle occupants to the TPSP operator	
TPSP test point	5	TPSP operator test point establishes an audio link to the vehicle occupants	
PSAP SUT	6	Verify PSAP operator speaks with the vehicle occupants	Audio link between the vehicle occupants and the PSAP operator was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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11.5.12 CTP 3.2.6 Request new TSD before call cleardown –PSAP TPS-eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/ECP/3.2.6	Request updated TSD
SUT Test Objective	Test that the PSAP is able to request an updated TSD
CTP Origin	CEN
Reference requirement	EN 16102:2011, 6.1; 10.4
Initial Conditions	TPS-eCall established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	The eCall (voice and data) is routed to the same PSAP operator	
PSAP SUT	2	TSD (including MSD), Call back number and relevant information are displayed to the PSAP operator and voice connection between the PSAP operator and TPS operator is available	
PSAP SUT	3	The PSAP operator requires an updated TSD	
TPSP test point	4	Updated TSD request is received	
PSAP SUT	5	Updated TSD is displayed to the PSAP operator	Updated TSD displayed to PSAP operator If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.13 CTP 3.2.7 Inform TPSP that call can be ended – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/CLR/3.2.7	Inform TPSP that call can be ended
SUT Test Objective	The TPSP shall maintain the audio connection with the vehicle where possible at least until the PSAP has confirmed that they have received all necessary details concerning the emergency and that the audio link with the vehicle can be ended Test that the PSAP informs the TPSP that a call can be ended
CTP Origin	CEN
Reference requirement	EN 16102:2011, 9.9
Initial Conditions	TPS-eCall established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	Data are displayed to the PSAP operator	
PSAP SUT	2	A voice conversation between the PSAP operator and the TPSP operator is possible	.
PSAP SUT	3	PSAP operator informs the TPSP operator that the call can be ended	Verify PSAP operator informed TPSP operator call can be ended. If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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11.5.14 CTP 3.2.8 Call cleardown with TPSP –PSAP TPS-eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/CLR/3.2.9	Call Cleardown with TPSP
SUT Test Objective	The TPSP shall maintain the audio connection with the vehicle where possible at least until the PSAP has confirmed that they have received all necessary details concerning the emergency and that the audio link with the vehicle can be ended Verify that the call with TPSP is cleared down
CTP Origin	CEN
Reference requirement	EN 16102:2011, 9.9
Initial Conditions	PSAP operator informs the TPSP operator that the call can be ended

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	PSAP operator clears down the call with TPSP operator	
PSAP SUT	2	Verify that call is cleared down	The connection (voice and data) between the PSAP and the TPSP was closed If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

11.5.15 CTP 3.2.9 Call-back to TPSP – PSAP TPS-eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/CLB/3.2.10	Call-back to TPSP
SUT Test Objective	The TPSP shall provide a call back number which can be used by the PSAP in case a subsequent call-back is required to request more details about the emergency or even to speak to vehicle occupants. The operator receiving a call back from a PSAP shall have access to case details, and shall be able to attempt to establish a voice call to the vehicle if necessary and if the VehiclePhoneNumber is known Test that the PSAP can call back the TPSP
CTP Origin	CEN
Reference requirement	EN 16102:2011, 9.11
Initial Conditions	eCall cleared down

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	TPSP call back phone number is available for the PSAP operator	
PSAP SUT	2	The PSAP operator makes a call to the TPSP phone number	
MNO test point TPSP test point	3	Voice connection is established between PSAP and the TPSP operator test point	
TPSP test point PSAP SUT	4	The PSAP operator can talk with the TPSP operator test point	Call between PSAP and TPSP operator was established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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11.5.16 CTP 3.2.10 Call-back to vehicle – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/CLB/3.2.11	Call-back to vehicle
SUT Test Objective	The TPS-IVS shall allow a call-back into the vehicle Test that the PSAP can call back the vehicle
CTP Origin	Original
Reference requirement	EN 16102:2011, 8.6
Initial Conditions	eCall cleared down

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	Vehicle phone number is available for the PSAP operator	
PSAP SUT	2	The PSAP operator makes a call to the vehicle phone number	
MNO test point TPSP test point TPS-IVS test point	3	Voice connection is established between PSAP and the vehicle	
PSAP SUT	4	The PSAP operator can talk with the vehicle occupants	Call between PSAP and vehicle occupants was established If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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11.5.17 CTP 3.2.11 Call cleardown with vehicle – PSAP TPS eCall

SUT Reference	PSAP - TPS eCall
CTP/ PSAP-TPS/CLB/3.2.12	Call cleardown with vehicle
SUT Test Objective	The TPSP shall maintain the audio connection with the vehicle where possible at least until the PSAP has confirmed that they have received all necessary details concerning the emergency and that the audio link with the vehicle can be ended Verify that the call with the vehicle is cleared down
CTP Origin	CEN
Reference requirement	EN 16102:2011, 9.9
Initial Conditions	PSAP operator informs the vehicle occupants that the call can be ended

Stimulus and expected behaviour

Test point		**Tester action**	**Pass Condition**
PSAP SUT	1	PSAP operator clears down the call with the vehicle	
PSAP SUT	2	Verify that call is cleared down	The connection between the PSAP and the vehicle was closed If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12 State transition conformance tests for TPS-eCall

12.1 Related specifications and conformance requirements

Conformance tests in respect of the TPS-IVS aspects of TPS-eCall are specified in 9.5 above.

Conformance tests for MNO aspects are not relevant for TPS-eCall.

Conformance tests in respect of the PSAP aspects of TPS-eCall are specified in 11.5 above.

When defining which tests are required for compliance, the following should also be taken into account:

EN 16102:2011, 10.5:

Where a TPS-eCall system supports all requirements contained in the main body of this Standard, but in certain countries the necessary PSAP infrastructure was not yet implemented to support automatic electronic data transfer from a TPSP, then such a system may still be deemed TPS-eCall compliant.

In order to demonstrate or claim compliance to pan European eCall, the TPS system shall be subjected to the conformance tests specified in 12.2, the results being noted using the appropriate check lists in Annex E.

12.2 TPSP general tests (applicable to both TPS-eCall responder and TPS-eCall notifier)

12.2.1 General

11.6.2 to 11.6.12 provide CTPs that are applicable to both TPS-eCall responder(TPS-R) and TPS-eCall notifier (TPS-N).

11.7 provides CTPs that are applicable to the TPS-eCall responder(TPS-R).

11.8 provides CTPs that are applicable to the TPS-eCall notifier (TPS-N).

Figure 19 shows a representation of general tests that apply to both TPS-eCall responders and notifiers that can be determined in advance of any physical conformance test.

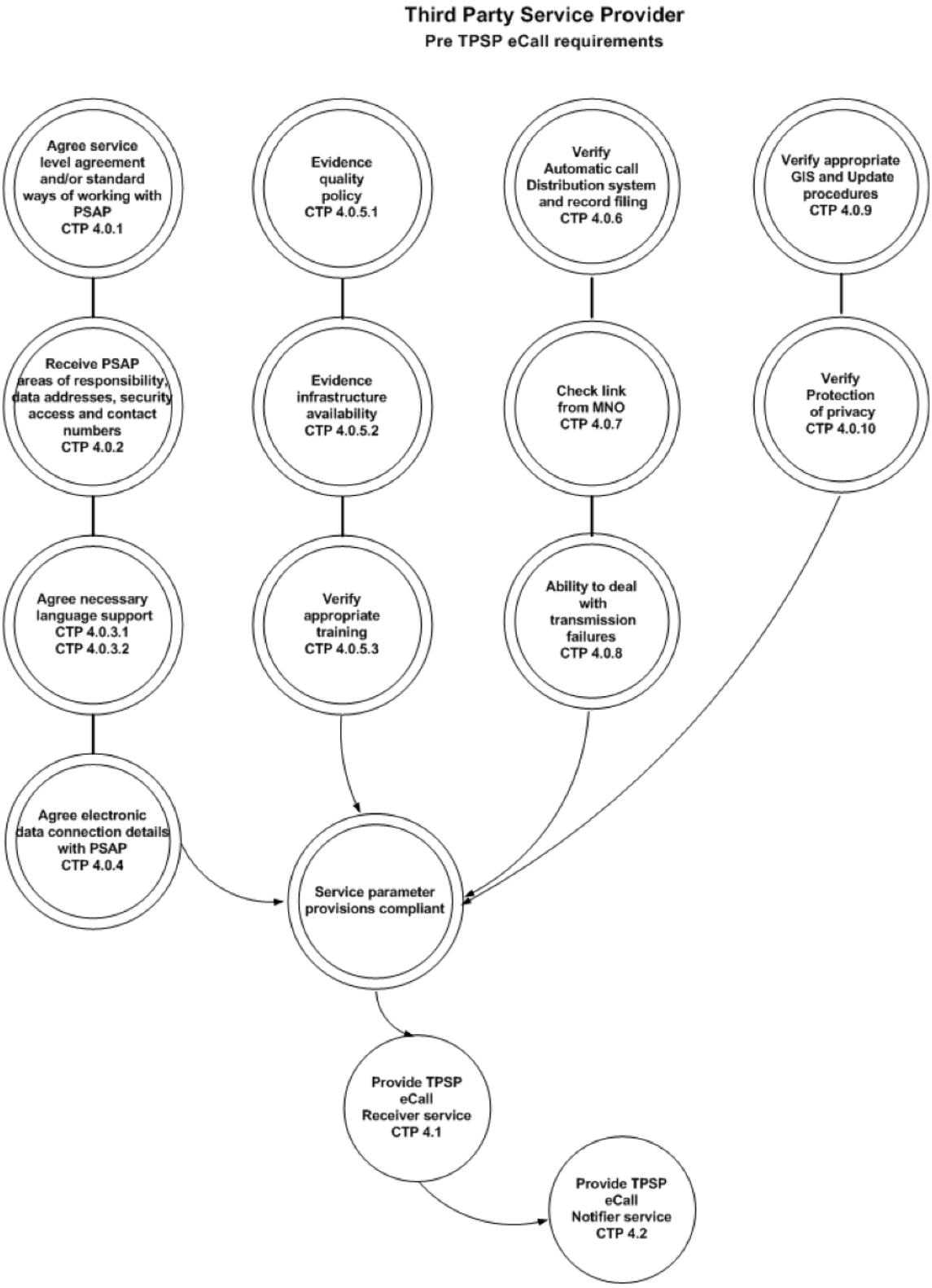

Figure 19 — TPSP pre-eCall requirements and CTP references

12.2.2 CTP 4.0.1 Agree service level agreement and/or Standard ways of working with PSAPs – TPSP

SUT reference	TPS-R/TPS-N
CTP/TPS-N/PRE/4.0.1	Compliance with PSAP service level agreement
SUT test objective	Verify that the TPSP complies with PSAP SLA if this exists And that the definition of 'real emergency' decision criteria exists if requested by PSAP
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.9 paragraph 2, paragraph 6
Initial conditions	Copy of relevant TPSP/PSAP service agreements supplied to tester Written statements provided to tester for any countries where such an agreement was not required. List of countries for which the TPS-eCall service is set up is supplied to tester

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPSP SUT	1	Read service level agreement or Standard ways of working for a given country (or region if relevant PSAP authorisation is regional) OR Obtain evidence of written statement that no such agreement is required for the country / region concerned	Confirm service level agreement valid and approved by both parties **OR** Confirm service level agreement was not required
TPSP SUT	2	Inspect service agreement for definition of 'real emergency' decision criteria in that country (or region if relevant PSAP criteria is regional) OR Obtain evidence of written statement that no special 'real emergency' decision criteria are required by the PSAP organisation in that country (or region if relevant PSAP authorisation is regional)	Confirm presence of 'real emergency' decision criteria in agreement between the parties OR Confirm that such a definition was not required by the PSAP organisation
TPSP SUT	3	Repeat the above process for each country (or region if relevant PSAP authorisation is regional) supported by the TPSP for TPS-eCall notification	Above pass criteria are met for each and every country covered by the TPSP
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12.2.3 CTP 4.0.2 Receive PSAP areas of responsibility and contact numbers – TPSP

SUT reference	TPS-R/TPS-N
CTP/ TPS-N/PRE/4.0.2	Receive PSAP areas of responsibility, data addresses security access and contact numbers
SUT test objective	Verify that the TPSP has received data regarding areas of responsibility, data addresses security access and contact numbers
CTP origin	CEN
Reference requirement	EN 16102:2011, 10.2 paragraph 1
Initial conditions	TPSP has received data from PSAP organisation(s) List of countries for which the TPS-eCall service is set up is supplied to tester TPSP provides tester with data received from PSAP organisation OR TPSP provides written confirmation that they have received these details (including date received).

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPSP SUT	1	Examine data received by TPSP from PSAP regarding areas of responsibility, data addresses security access and contact numbers of PSAP OR Obtain written confirmation from the TPSP that they have received these details	Confirm data received as per service agreement between the parties
TPSP SUT	2	**Examine** data received by TPSP from PSAP regarding areas of responsibility, data addresses security access and contact numbers of PSAP OR Obtain written confirmation from the TPSP that they have received these details	Confirm data received as per service agreement between the parties
TPSP SUT	3	Repeat the above process for each country (or region if relevant PSAP authorisation is regional) supported by the TPSP for TPS-eCall notification	Above pass criteria were met for each and every country covered by the TPSP
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12.2.4 CTP 4.0.3 Agree necessary language support – TPSP

12.2.4.1 CTP 4.0.3.1 Agree necessary language support for PSAP – TPSP

SUT reference	'TPS-N'
CTP/ TPS-N/PRE/4.0.3.1	Agree necessary language support for PSAP
SUT test objective	Verify that TPSP can provide messaging and conduct conversation in the native language of the PSAP or in a language agreed between the TPSP and PSAP in the service level agreement
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.9 paragraph 6; 9.10
Initial conditions	List of countries for which the TPS-eCall service is set up is supplied to tester

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-N SUT	1	Read service level agreement or Standard ways of working for a given country (or region if relevant PSAP authorisation is regional), Identify minimum language support required by the PSAP organisation for a notification for the country / region concerned OR Obtain evidence of written statement concerning minimum language support required by the PSAP organisation for a notification for the country (or region if relevant PSAP authorisation is regional), concerned (e,g, official languages of the country/region)	Minimum required notification language support identified.
TPS-N SUT	2	Obtain evidence of written statement that the TPSP supports the minimum languages required for a PSAP notification in the given country (or region if relevant PSAP authorisation is regional) The TPSP statement shall include details as to whether the language support is supplied directly or by means of a conference call service (e.g. via an additional partner)	Written evidence was obtained that the necessary notification language is supported
TPS-N SUT	3	Repeat the above process for each country (or region if relevant PSAP authorisation is regional) supported by the TPSP for TPS-eCall notification	Above pass criteria are met for each and every country covered by the TPSP If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12.2.4.2 CTP 4.0.3.2 Communicate language support to customers – TPSP

SUT reference	'TPS-eCall responder'
CTP/ TPS-N/PRE/4.0.3.2	Communicate language support to customers
SUT test objective	Test that supported languages are clearly communicated
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.10
Initial conditions	List of countries for which the TPS-eCall service is set up (offered to customers) is supplied to tester Description of customer communication (planned or already completed) regarding language support is supplied to tester

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-R SUT	1	Obtain evidence of written statement regarding which language(s) are supported for receiving calls from vehicles from a given country, along with how this country is determined (e.g. country where vehicle was originally sold), and how the operator language is determined The TPSP statement shall include details as to whether the language support is supplied directly or by means of a conference call service (e.g. via an additional partner) Obtain evidence of customer communication which describes the languages supported for the given country / sales region Confirm that the languages supported by the TPSP at least cover that communicated to customers (limited or full language support in practice over and above that communicated to customers is also allowed)	Written evidence obtained that the necessary notification language is supported
TPS-R SUT	2	Repeat the above process for each country (or sales region) supported by the TPSP for TPS-eCall response	Above pass criteria are met for each and every sales-country covered by the TPSP
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12.2.5 CTP 4.0.4 Agree electronic data connection details with PSAPs – TPSP

SUT reference	TPS-R/TPS-N
CTP/ TPS-N/PRE/4.0.4	Agree electronic data connection details with PSAP
SUT test objective	Agree and test the data link between TPSP and PSAP
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.9 paragraph 4; 10.2 paragraph 1 '… an indicator … access details'; 10.5 paragraph 3
Initial conditions	TPSP has received electronic data interface details with sufficient notice to allow implementation Electronic data exchange method agreed with PSAP, and is supported in a "live/production" environment (i.e. not just for testing) Otherwise this test case was not applicable, and the test is deemed to be CTP passed

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-N SUT PSAP test point	1	Agree a test electronic eCall notification from the TPS-N to the PSAP TPSP test point using the communications means agreed with the PSAP	Test is agreed with the appropriate PSAP organisation
TPS-N SUT PSAP test point	2	TPSP sends test data to PSAP test point using the communications means agreed with the PSAP	Test data received in a readable and uncorrupted state
TPS-N SUT PSAP test point	3	Repeat the above test steps for each electronic data transfer method to PSAPs agreed and supported by the TPSP and PSAPs	Above test steps repeated successfully for each electronic transfer method supported by both parties.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12.2.6 CTP 4.0.5 Evidence quality procedures – TPSP

12.2.6.1 CTP 4.0.5.1 Quality policy – TPSP

SUT reference	'TPSP'
CTP/ TPS-N/PRE/4.0.5.1	Quality policy
SUT test objective	Verify that the TPSP has a defined quality policy
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.1 paragraph 2 9.15
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPSP SUT	1	Obtain copy of quality policy and quality follow up file. Inspect for reasonable Standard	Receipt of quality policy and quality follow up file and agreement that it demonstrates normally acceptable levels of quality control
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12.2.6.2 CTP 4.0.5.2 Infrastructure availability – TPSP

SUT reference	'TPSP'
CTP/ TPS-N/PRE/4.0.5.2	Ensure highly available infrastructure and verify availability statistically
SUT test objective	Show that the TPSP uses a highly available telecom line for vehicle calls Show that at least 2 separate physical telecom routings are used Show that at least 2 different switching centres are used Show that secure electrical power supply is used Verify the technical chain availability
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.13 9.14
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPSP SUT	1	Obtain written confirmation of routings, connections to multiple switching centres.	Receipt of written confirmation confirming all of the following: - A highly stable telecommunications connection is used - The TPSP is connected to any fixed communications operator by at least two separate physical routings, connected via at least two different switching centres
TPSP SUT	2	Obtain written confirmation of secure electric power supply	Confirmed presence of secure electric power supply
TPSP SUT	3	Inspect data record of infrastructure availability NOTE: Where parts of the infrastructure failed, but full service according to the requirements of EN 16102 was maintained – e.g. by use of backup components, then this counts as "available"	Confirmed availability higher than 99 % (in time) each month.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.2.6.3 CTP 4.0.5.3 Verify appropriate training – TPSP

SUT reference	'TPSP'
CTP/ TPS-N/PRE/4.0.5.3	Training
SUT test objective	Verify that the TPSP operators receive appropriate training
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.2
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPSP	1	Receive copy of training manuals or other evidence of appropriate training	Confirmation of receipt of training manuals or other evidence of appropriate training
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.2.7 CTP 4.0.6 Verify automatic call distribution (ACD) system – TPSP

SUT reference	'TPS-R'
CTP/ TPS-N/PRE/4.0.6	Use of automatic call distribution
.	
SUT test objective	Verify that the TPSP has an' Automatic Call Distribution' (ACD) system Verify that the TPSP files records appropriately
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.3 paragraph 1 'The TPSP call … management of the calls.'; 9.12 paragraph 1, paragraph 2, paragraph 3
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPSP SUT	1	Inspect to ensure ACD system exists	TPSP can demonstrate ACD system in operation
TPSP SUT	2	Inspect TPSP eCall file records system	Confirmed that file records system exists and is up to date
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.2.8 CTP 4.0.7 Check link from MNO – TPSP

SUT reference	'TPS-R'
CTP/ *TPS-N*/PRE/4.0.7	Check link from MNO
SUT test objective	Demonstrate that the TPSP detects failures in the link to the MNO within 5 minutes
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.5
Initial conditions	

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-R SUT	1	Obtain written confirmation that a failure in the link to the MNO can be detected within 5 minutes	Confirm presence of MNO link failure detection
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.2.9 CTP 4.0.8 Deal with transmission failures – TPSP

SUT reference	'TPS-eCall responder'
CTP/ TPS-N/PRE/4.0.8	Deal with transmission failures
SUT test objective	Test that procedures exist to solve transmission failure situations
CTP origin	CEN
Reference requirement	EN 16102:2011, 6.8
Initial conditions	

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPSP SUT	1	TPSP shall declare its procedures regarding the above failure situations in writing	Declaration of procedures received
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.2.10 CTP 4.0.9 Update GIS – TPSP

SUT reference	'TPSP'
CTP/ TPS-N/PRE/4.0.9	GIS is updated appropriately
SUT test objective	Verify that the TPSP has an appropriate 'Geographic Information System' (GIS)
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.4 paragraph 2
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPSP SUT	1	Inspect for evidence of GIS and update procedures (e.g. specific regular update procedure, or use of "off the shelf" GIS system like Bing/Google which is updated regularly by the sub-supplier)	Confirmation of presence of regularly updated GIS
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.2.11 CTP 4.0.10 Protection of privacy – TPSP

SUT reference	'TPS-IVS'
CTP/ TPS-N/PRE/4.0.10	Protection of privacy
SUT test objective	Verify that the TPS-IVS complies with data protection directives Verify that vehicle speed cannot be determined from recent vehicle locations
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.4 paragraph 1 7.2.3 paragraph 2, paragraph 3
Initial conditions	

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS SUT	1	Obtain written declaration from TPSP that data protection directives are observed	Written declaration obtained If ALL individual pass conditions listed in this column above have been met THEN CTP passed ELSE CTP failed

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12.3 TPS-eCall responder tests – TPS-R

12.3.1 General

The following tests, as shown in Figure 20 are in addition to the TPSP general tests above:

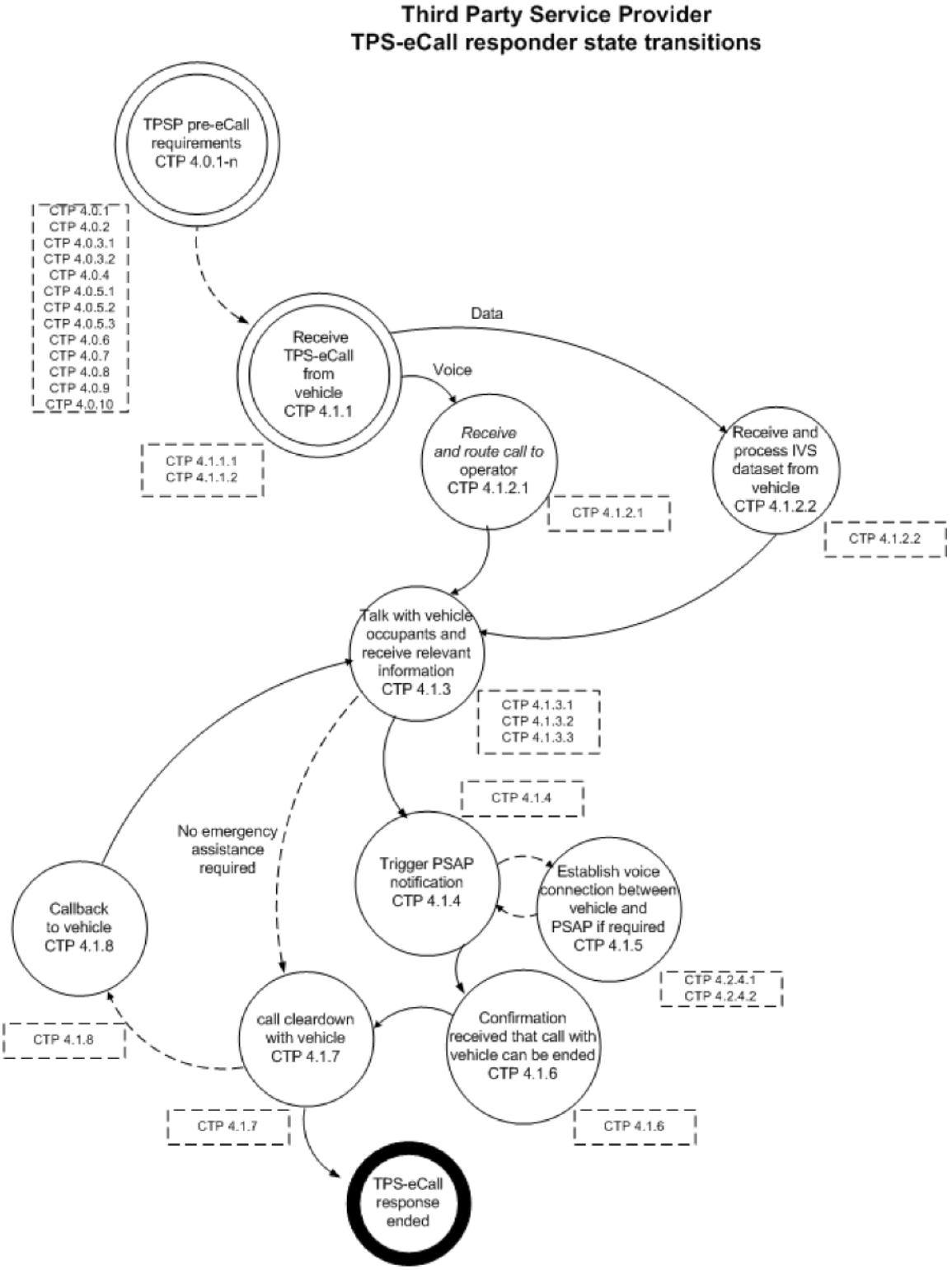

Figure 20 — TPS-eCall Responder state transitions with associated CTPs

12.3.2 CTP 4.1.1 Receive TPS-eCall from vehicle – TPS-R

12.3.2.1 CTP 4.1.1.1 Respond to a TPS-eCall transaction – TPS-R

SUT reference	'TPS-eCall responder'
CTP/ TPS-R/TRG/4.1.1.1	Respond to a TPS-eCall transaction
SUT test objective	Test that a TPSP can respond to a TPS-eCall transaction from the vehicle, including that cross-border TPS-eCalls can be handled
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 6 9.9 paragraph 7
Initial conditions	List of non-cross-border countries (vehicle located in home country) for which the TPS-eCall responder service is set up is supplied to tester List of cross border countries (vehicle currently located outside its home country) for which the TPS-eCall responder service is set up is supplied to tester TPS-IVS supplier or TPSP has provided a mechanism to representatively simulate current vehicle location coordinates into different countries OR test is repeated with a TPS-IVS (representing vehicle) location in relevant different countries Note that this test may be executed in separate steps for each country concerned so long as all relevant country combinations are covered.

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS test point, TPS-R SUT	1	Trigger a TPS-eCall or simulated TPS-eCall (voice and data) representing a call from a non-cross-border country supported by the TPS-R	TPS-eCall (or simulated TPS-eCall) was made.
TPS-R SUT	2	Perform CTP 4.1.2.1 to ensure that the TPS-R can respond to the call	CTP 4.1.2.1 has been passed
TPS-IVS test point, TPS-R SUT	3	Perform CTP 4.1.4 to ensure that a notification would be possible	CTP 4.1.4 has been passed
TPS-IVS test point, TPS-R SUT	4	TSP-R successfully terminates the TPS-eCall	
TPS-IVS test point, TPS-R SUT	5	Trigger a new TPS-eCall or simulated TPS-eCall (voice and data) representing a call from a customer from same supported country as above, but located in a cross-border country supported by the TSP-R for that customer	TPS-eCall (or simulated TPS-eCall) was made.
TPS-R SUT	6	Perform CTP 4.1.2.1 to ensure that the TPS-R can respond to the call	CTP 4.1.2.1 has been passed
TPS-IVS test point, TPS-R SUT TPS-N test point	7	Perform CTP 4.1.4 to ensure that a notification would be possible	CTP 4.1.4 has been passed
TPS-IVS test point TPS-R SUT	8	TSP-R successfully terminates the TPS-eCall	
TPS-R SUT	9	Repeat steps 5 to 8 for each cross-border country	Above pass criteria have

		supported by the TPS-R SUT for customers from the country defined in step 1	been met for each and every cross-border country covered by the TPS-R for customers from the country in step 1
TPS-R SUT	10	Repeat steps 1 to 9 for each home country supported by the TPS-R SUT	Above pass criteria have been met for each and every home country covered by the TPS-R
			If ALL individual pass conditions listed in this table column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.2.2 CTP 4.1.1.2 Answer call in a timely manner – TPS-R

SUT reference	'TPS-eCall responder'
CTP/ TPS-R/TRG/4.1.1.2	Answer call in a timely manner
SUT test objective	Show that the call-centre answers calls quickly enough (statistically)
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.6
Initial conditions	TPS-eCall responder has been measuring received call handling using their

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-R SUT	1	TPS eCall responder measures the time taken to answer each incoming TPS-eCall receive, using their ACD	
TPS-R SUT	2	TPS-eCall responder provides statistical assessments detailing the number and percentage of incoming TPS-eCalls answered in less than 15 s, measured over a period of one month The TPS-eCall responder may alternatively provide a measure of the % of calls answered in a shorter time (.g. 10 s), but only if this result is still 90% or more.	
TPS-R SUT	3	Check that at least 90% of the received calls were answered within 15s	At least 90% of incoming TPS-eCalls were answered within 15s
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.3 CTP 4.1.2 Process incoming call – TPS-R

12.3.3.1 CTP 4.1.2.1 Receive and route call – TPS-R

SUT reference	'TPS-eCall responder'
CTP/ TPS-R/ECI/4.1.2.1	Receive and route call
SUT test objective	Test that the TPSP can establish a voice connection between vehicle and TPSP Test that data and voice go to the same operator Test that the call with the vehicle can be maintained
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 7, paragraph 9 'shall make ... relevant TPSP'; 6.4 paragraph 2; 9.9 paragraph 5; 10.3 paragraph 2
Initial conditions	TPS-IVS is in good mobile network coverage TPS-IVS position confidence is good TPS-IVS and MNO test points are available

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS test point	1	Trigger a TPS-eCall or simulated TPS-eCall (voice and data) representing a call from a vehicle and location supported by the TPS-R	
TPS-IVS test point	2	Check that a voice call is established with the TPS-R operator	Voice call was established between TPS-IVS test point and TPS-R operator
TPS-R SUT	3	Check that a data was sent from TPS-IVS test point, and that the TPS-R operator is presented with the relevant data	The TPS-R operator receiving the call confirmed that they have also received all mandatory MSD information (either received in the IVS Dataset or otherwise obtained)
TPS-IVS test point	4	Check that the voice call is maintained until TPS-R operator (and in case of a PSAP notification, in agreement with the PSAP) decides to end the call	Voice call was maintained
TPS-R SUT	5	TPS-R operator decides to terminate the call, in agreement with the vehicle occupant	Voice call cleared down.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.3.2 CTP 4.1.2.2 Receive and check IVS dataset from vehicle – TPS-R

SUT reference	'TPS-eCall responder'
CTP/ TPS-R/ECP/4.1.2.2	Receive and check IVS dataset from vehicle
SUT test objective	Test that data is correctly received and processed, i.e: Test that an IVS dataset is received at the TPS-eCall responder Test that it is possible to verify whether data has been properly received Test that a mechanism exists to retransmit the data if necessary Test that data and voice go to the same operator Test that all necessary information is available Test that the operator can identify the position and driving direction of the vehicle Test that the call can be maintained until the PSAP confirms it can be ended
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 4 'Upon triggering...'; 5.3 paragraph 7; 6.4 paragraph 2; 7.1 paragraph 1; 7.2.3 paragraph 1; 9.4 paragraph 2; 9.9 paragraph 5
Initial conditions	These TPS-R test conditions are all covered by TPS-IVS tests If these have been performed and passed then no further testing is necessary

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS test point, TPS-R SUT	1	Ensure that test CTP 1.2.2.1 has been performed (Automatic eCall)	CTP1.2.2.1 was passed
TPS-IVS test point TPS-R SUT	2	Ensure that test CTP 1.2.3.1 has been performed (Manual eCall)	CTP1.2.3.1 was passed
TPS-IVS test point TPS-R SUT	3	Ensure that test CTP 1.2.6.1 has been performed (Dataset content)	CTP1.2.6.1 was passed
TPS-IVS test point TPS-R SUT	4	Ensure that test CTP 1.2.6.2 has been performed (Data re-transmission)	CTP1.2.6.2 was passed
TPS-IVS test point TPS-R SUT	5	Ensure that test CTP 1.2.6.3 has been performed (Data transmission reliability)	CTP1.2.6.3 was passed
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.4 CTP 4.1.3 Talk with vehicle occupants and receive relevant information – TPS-R

12.3.4.1 CTP 4.1.3.1 Determine emergency – TPS-R

SUT reference	'TPS-eCall responder'
CTP/ TPS-R/ECP/4.1.3.1	Determine emergency
SUT test objective	Test that the TPSP can classify whether the call is an emergency within 90s Test that appropriate criteria are taken into account if necessary
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.8 paragraph 1; EN 16102:2011, 9.9 paragraph 2
Initial conditions	TPS-eCall has been received

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-R SUT	1	TPS-eCall responder operator has received voice call and has received the corresponding data presented to them Start timing pre-qualification time	
TPS-R SUT	2	TPS-eCall responder operator examines data and talks with vehicle occupants to determine whether they should classify the emergency as requiring PSAP notification or not	Decision has been reached as to whether the situation is likely to require assistance from the emergency services
TPS-R SUT	3	Determine how long the operator decision took (pre-qualification time)	Pre-qualification time did not exceed 90 s
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.4.2 CTP 4.1.3.2 Call to vehicle if receiving data-only – TPS-R

SUT reference	'TPS-eCall responder'
CTP/ TPS-R/ECP/4.1.3.2	Call to vehicle if receiving data-only
SUT test objective	Test that the TPSP processes ensure that they attempt to establish a voice connection with the vehicle if data-only is received
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.7 paragraph 1
Initial conditions	TPS-R has provided details of operator procedures regarding this type of incident TPS-eCall IVS dataset has been received Corresponding TPS-eCall voice call was not established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-R SUT	1	IVS dataset is received and presented to a TPS-R operator Corresponding voice call was not received	
TPS-R SUT	2	Start timer since data-only was received	
TPS-R SUT	3	TPS-R operator attempts to call the vehicle Note that the vehicle's TPS-IVS may be busy.	Call-back attempt was made
MNO test point	4	Note time taken before call-back is attempted. Determine (taking into account relevant TPS-R procedures) whether the call-back was attempted within a reasonable delay.	Call-back attempt was made within a reasonable time since data-only TPS-eCall was received.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.4.3 CTP 4.1.3.3 Call-back to vehicle if call drops – TPS-R

SUT reference	'TPS-eCall responder'
CTP/ TPS-R/ECP/4.1.3.3	Call-back to vehicle if call drops
SUT test objective	Test that the TPSP can re-establish a voice connection with the vehicle
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 11; EN 16102:2011, 6.5, paragraph 1
Initial conditions	No error is detected on the TPS-IVS Ignition ON TPS-IVS is in mobile network coverage Position confidence is good MNO and TPSP test points are available A manual or automatic eCall sequence is triggered, voice connection established VehiclePhoneNumber is known by the TPSP If redial mechanism activated, maximum of redial attempts is reached (so TPS-IVS does not automatically redial upon disconnection).

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS test point , MNOtesdt point, TPS-R SUT	1	Request TPSP test point to redial to vehicle if connection drops	
TPS-IVS test point MNO test point TPS-R SUT	2	Disconnect voice connection (e.g. caused by a network issue)	Voice communication disconnected
TPS-R SUT	3	TPSP starts to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's instructions	
MNO test point TPS-R SUT	4	Check that the voice call attempt is accepted by the MNO test point	
MNO test point TPS-R SUT	5	If the MNO test point does not report a positive result, TPSP starts again to attempt a voice call with the VehiclePhoneNumber in accordance with the TPSP's instructions Repeat this step as necessary until a positive result is achieved	
TPS-IVS test point MNO, test point TPS-R SUT	6	Check that the MNO test point routes the voice call attempt to the IVS	
TPS-IVS test point MNO test point TPS-R SUT	7	Check that the IVS accepts the call (automatically or manually by the vehicle occupants)	A voice connection was established
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.5 CTP 4.1.4 Trigger PSAP notification – TPS-R

SUT reference	'TPS-eCall receiver'
CTP/ TPS-R/ECP/4.1.4	Trigger PSAP notification
SUT test objective	Test that a TPS-eCall receiver can trigger a TPS-eCall notification if required
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 7, paragraph 8
Initial conditions	TPS-eCall is established

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS test point TPS-R SUT	1	Ask TPS-R to confirm verbally whether they could trigger a PSAP notification to the most appropriate PSAP	TPS-R confirmed that they could trigger a PSAP notification if necessary
TPS-IVS test point TPS-R SUT TPS-N test point	2	Ensure that CTP 4.2.2.1 has already been executed to confirm that notification can be made if needed	CTP 4.2.2.1 has been passed
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.6 CTP 4.1.5 Make voice connection between vehicle and PSAP if required – TPS-R

All requirements are covered by performing tests CTP 4.2.4.1 and CTP 4.2.4.2

12.3.7 CTP 4.1.6 Confirmation received from PSAP that call with vehicle can be ended – TPS-R

SUT reference	'TPS-eCall receiver'
CTP/ TPS-R/CLR/4.1.6	Confirmation received from PSAP that call with vehicle can be ended
SUT test objective	Test that call with vehicle was not ended before receipt of confirmation from PSAP that call with vehicle can be ended
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.9 paragraph 5; A.2.3.4.2; A.24.2.3 Table A.1 Row 'cleardown...'
Initial conditions	TPS-eCall is established PSAP notification has been made PSAP has not yet confirmed that call may be ended

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-IVS test point PSAP test point	1	PSAP does not confirm that call can be ended	Call with vehicle was maintained
TPS-IVS test point PSAP test point	1	PSAP confirms verbally that call can be ended OR PSAP confirms via electronic data interface that call may be ended	TPS-R confirmed that they have received PSAP confirmation that the call with the vehicle may be ended.
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.8 CTP 4.1.7 Call cleardown with vehicle – TPS-R

SUT reference	TPSP-PSAP, TPS-IVS
CTP/ *TPS-R*/CLR/4.1.7	Call cleardown
SUT test objective	Verify TPSP operator is able to clear down the call
CTP origin	Original
Reference requirement	EN 16102:2011, A 2.3.4; A.2 Table A.1 Row 'cleardown...'
Initial conditions	eCall is in progress Confirmation has been received from the PSAP that the call can be ended

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPSP test point	1	TPSP test point operator clears down the call with PSAP	
PSAP test point	2	Verify operator line is free	Operator line became free
TPS-IVS test point	3	TPSP test point operator clears down the call with TPS-IVS	
TPS-IVS test point	4	Verify TPS-IVS line is free	IVS line became free as in a) Disconnected or b) Available for other service provision If ALL individual pass conditions listed in this table column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.3.9 CTP 4.1.8 Call-back to vehicle – TPS-R

SUT reference	'TPS-eCall receiver'
CTP/ TPS-R/CLB/4.1.8	Support call-back
SUT test objective	Test that a call-back from a PSAP is supported Test that the operator can access relevant emergency details Test that the operator can establish a call to the vehicle if necessary
CTP origin	CEN
Reference requirement	EN 16102:2011, 9.11
Initial conditions	TPS-eCall has been received, processed, notified, and terminated Vehicle phone number is known TPS-IVS is registered and able to receive incoming calls

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-N test point	1	PSAP calls back to TPS-N test point using using the supplied call-back number	PSAP call-back received
TPS-N test point	2	PSAP identifies themselves and provides the identification (including TPS-eCall-SID) of the relevant TPS-eCall	TPS-eCall identification provided to TPSP
TPS-N test point	3	TPS-N test point accesses the emergency details for this TPS-eCall using the TPS-eCall-SID	TPS-N can confirm emergency details to PSAP
TPS-IVS test point, TPSP	4	TPS-N test point attempts a call-back to VehiclePhoneNumber for the identified TPS-eCall	TPS-IVS received an incoming call from the TPSP
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.4 TPS-eCall notifier tests – TPS-N

12.4.1 General

The following tests, shown in Figure 21, are in addition to the TPSP general tests above:

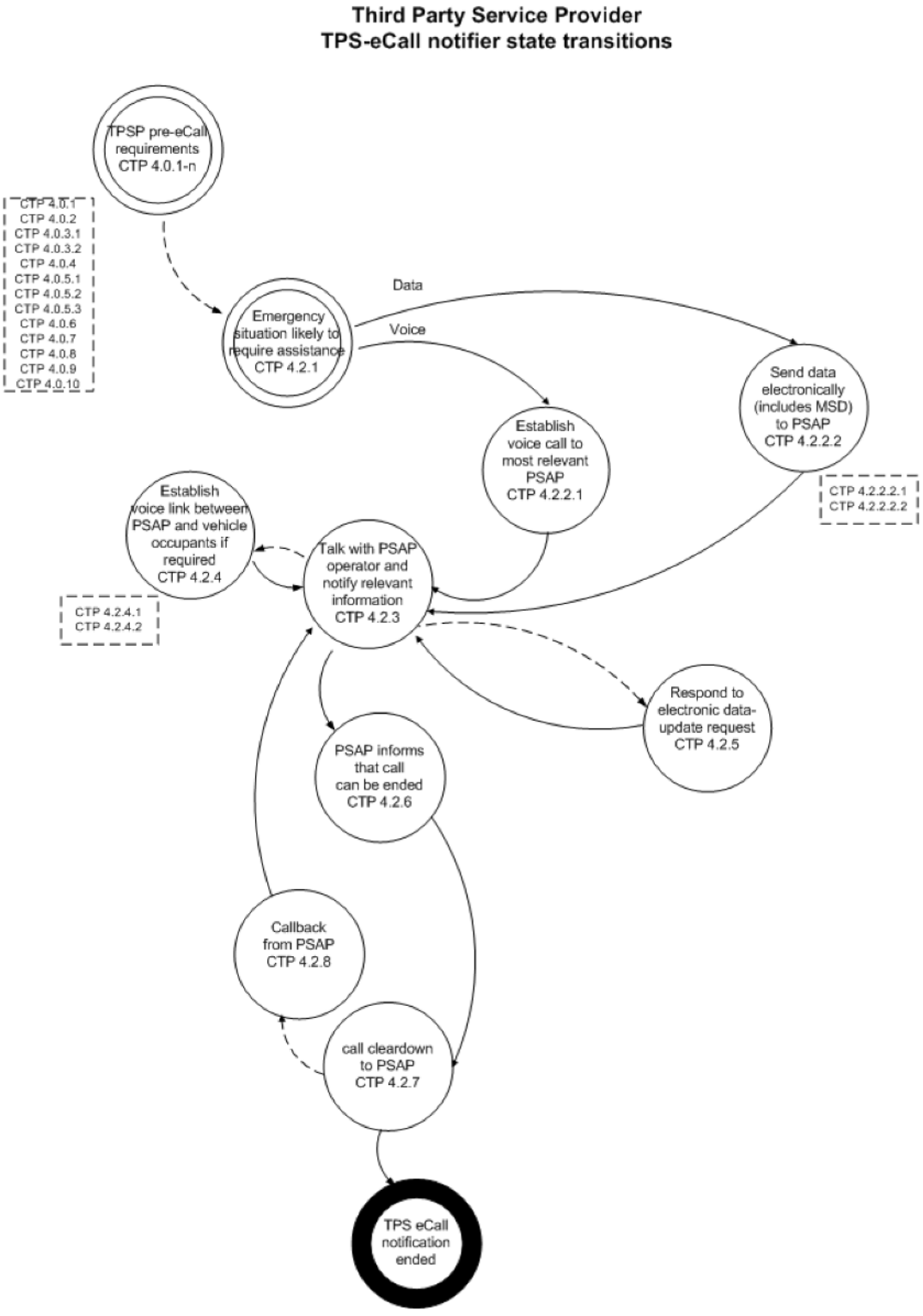

Figure 21 — TPS-eCall Notifier state transitions with associated CTPs

12.4.2 CTP 4.2.1 Emergency situation likely to require assistance – TPS-N

CTP tests conformance requirements related to determining an emergency situation likely to require emergency assistance as a result of receiving a TPS-eCall.

This step is only shown in the notification diagram for clarity, and does not require any further tests.

12.4.3 CTP 4.2.2 Establish contact with PSAP – TPS-N

12.4.3.1 CTP 4.2.2.1 Establish voice call to most relevant PSAP – TPS-N

SUT reference	'TPS-eCall notifier'
CTP/ TPS-N/ECP/4.2.2.1	Establish voice call to most relevant PSAP
SUT test objective	Test that the TPSP can establish a voice call to the most appropriate PSAP as part of a notification
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 7, paragraph 8; 9.8 paragraph 2; 10.3 paragraph 1
Initial conditions	Criteria are defined for determining the most appropriate from at least 2 PSAPs (e.g. based on vehicle position) TPS-eCall received and processed containing necessary matching criteria for selecting a given one of these PSAPs TPSP has decided that it is necessary to notify the most appropriate PSAP

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-N SUT	1	Check that TPSP can identify the most appropriate PSAP according the defined criteria, including the vehicle (TPS-IVS) location determined from the TPS-eCall	PSAP emergency telephone number determined
TPS-N SUT	2	Operator attempts to establish a voice call to the most appropriate PSAP PSAP accepts call	Call established from TPS-eCall notifier to relevant PSAP-test-point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.4.3.2 CTP 4.2.2.2 Send data electronically to PSAP – TPS-N

12.4.3.2.1 CTP 4.2.2.2.1 Send data electronically (includes MSD) to PSAP – TPS-N

SUT reference	'TPS-eCall notifier'
CTP/ TPS-N/ECP/4.2.2.2.1	Send data electronically (includes MSD) to PSAP
SUT test objective	Test that the TPSP can provide all relevant information to the PSAP Test that the information includes at least the mandatory MSD data Test that the location data format is as required Test that position confidence bit is set appropriately Test that a call back number at the TPSP is provided to the PSAP Test that the supported interface for data transmission to the PSAP is used Show that a reliable data transmission means from TPSP to PSAP is used
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 7, paragraph 8; 5.3 paragraph 8 '*... contained in this Standard*'; 6.1 paragraph 1, paragraph 3; 7.2.1 paragraph 1; 7.2.2 paragraph 4; 7.4.1 paragraph 1 '*... in EN 15722:2015*', paragraph 5, paragraph 11; 7.4.2 paragraph 3, paragraph 4; 7.4.3 paragraph 3 '*The TPSP code ...*'; 9.8 paragraph 2; 9.9 paragraph 1, paragraph 4 '*... TPSP and PSAP*'; 9.11 ,... callback is required'; Clause 11
Initial conditions	Criteria are defined for determining the most appropriate from at least 2 PSAPs (e.g. based on vehicle position) TPS-eCall received containing necessary matching criteria for selecting a given one of these PSAPs TPSP has decided that it is necessary to notify the most appropriate PSAP TPSP and PSAP support electronic data exchange IF the PSAP does not support electronic data exchange for TPS-eCall notification then this CTP is deemed to have been passed

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-N SUT	1	Check that TPSP can identify the most appropriate PSAP according the defined criteria from location of IVS for a TPS eCall	Most appropriate PSAP identified
TPS-N SUT	2	Check that TPSP can identify the emergency TSD-push address and transfer method for the most appropriate PSAP	
TPS-N SUT	3	Check that TPSP can send TSD to PSAP push address	Most appropriate PSAP received the TSD via the push address
TPS-N SUT	4	Check that TSD of TSP notification includes the location data according to EN 15722	Location data are compliant EN 15722
TPS-N SUT	5	Check that the position confidence bit within the MSD are compliant to EN 15722	position confidence flag has the value 'position can be trusted'
TPS-N SUT	6	Check that operator can access TPSPCall-backNumber and a VehiclePhoneNumber if available for the TSP eCall	TSP notification included TPSPCall-backNumber and Vehicle Phone Number
TPS-N SUT	7	Check that TSD includes the data specified as 'Mandatory' in EN 15722	MSD conformed to EN 15722
			If ALL individual pass conditions listed in this column above have been met **OR** PSAP did not support electronic data exchange for TPS-eCall notification THEN CTP PASS ELSE CTP FAIL

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12.4.3.2.2 CTP 4.2.2.2.2 Support Standardized PSAP data interface – TPS-N

SUT reference	'TPS-eCall notifier'
CTP/ TPS-N/ECP/4.2.2.2.2	Support Standardized PSAP data interface
SUT test objective	Test that the TPSP supports the standardized PSAP data interface Test that the TPSP posts the TSD to the PSAP Test that the TSD is in the correct format and contains the necessary data Test that the TPSP allows the PSAP to inform the TPSP processing is finished
CTP origin	CEN
Reference requirement	EN 16102:2011, 7.4.1 paragraph 1 '*... EN 15722:2015*', paragraph 2, paragraph 5, paragraph 11; 9.9 paragraph 1, paragraph 4; 10.4 paragraph 1, paragraph 4, paragraph 8; Clause 11
Initial conditions	Criteria are defined for determining the most appropriate from at least 2 PSAPs (e.g. based on vehicle position) TPS-eCall received containing necessary matching criteria for selecting a given one of these PSAPs TPSP has decided that it is necessary to notify the most appropriate PSAP TPSP and PSAP support the standardized electronic data exchange from EN 16102:2011, Annex A. IF the PSAP does not support electronic data exchange then this CTP is deemed to have been passed

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-N SUT	1	Check that TPSP can identify the most appropriate PSAP according the defined criteria from location of IVS for a TPS eCall	Most appropriate PSAP identified
TPS-N SUT	2	Check that TPSP can identify the emergency TSD-push address, security access methods, and Standardized transfer method for the most appropriate PSAP	
TPS-N SUT PSAP test point	3	Check that TPSP can send TSD to PSAP test point push address using the standardized transfer methods	Most appropriate PSAP test point received the TSD via the push address
TPS-N SUT PSAP test point	4	Check that the TPSP has generated a TSD conformant to the description and reference implementation included in Annex A *[of EN 16102:2011]*	TSD conformant Annex A *[of EN 16102:2011]*
TPS-N SUT PSAP test point	5	Check that TSD of TSP Notification includes the location data according to EN 15722	Location data compliant to EN 15722
TPS-N SUT PSAP test point	6	Check that the position confidence bit within the MSD are compliant to EN 15722	position confidence flag has the value 'position can be trusted'
TPS-N SUT PSAP test point	7	Check that operator can access TPSPCall-backNumber and a VehiclePhoneNumber if available for the TSP eCall	TSP Notification includes TPSPCall-backNumber and Vehicle Phone Number
TPS-N SUT PSAP test point	8	Check that TSD includes the data specified as 'Mandatory' in EN 15722	MSD conforms to EN 15722
			If ALL individual pass conditions listed in this column above have been met **OR** PSAP did not support standardized electronic data exchange for TPS-eCall notification THEN CTP PASS ELSE CTP FAIL

.

12.4.4 CTP 4.2.3 Talk with PSAP operator and notify relevant information – TPS-N

SUT reference	'TPS-eCall notifier'
CTP/TPS-N/ECP/4.2.3	Talk with PSAP operator and notify relevant information
SUT test objective	Test that a PSAP notification is made as required , i.e: Test that the TPSP can notify the most appropriate PSAP Test that the TPSP can provide all relevant information to the PSAP Test that the information includes at least the mandatory MSD data Test that the TPS-eCall-SID is supplied Test that a call back number at the TPSP is provided to the PSAP
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 7, paragraph 8; 7.4.3 paragraph 3 '*The TPSP code...*'; 9.8 paragraph 2; 9.9 paragraph 1, paragraph 4 '*... TPSP and PSAP*'; 9.11 ,*... callback is required*'; 10.5 paragraph 3
Initial conditions	TPS-eCall received containing necessary matching criteria for selecting a given PSAP. Voice call has been established to the most appropriate PSAP (see CTP 4.2.1) TPS-N has received all necessary information for the notification

Stimulus and expected behavior

Test point		Tester action	Pass condition
TPS-N SUT PSAP test point	1	TPS-N informs the PSAP test point about the emergency, according to procedures relevant for this particular PSAP test point	PSAP test point received information about the emergency
TPS-N SUT PSAP test point	2	Check that the Information supplied to PSAP test point includes at least all mandatory information elements of the "MSD" if known and if required by the PSAP i.e: TestCall type: Test call or emergency Activation type: Automatic or manual Vehicle location Vehicle direction Position confidence: Position can be trusted or low confidence in position Vehicle type: Passenger vehicle / bus or coach / light commercial vehicle / heavy duty vehicle / motorcycle	PSAP test point received all necessary available information about the emergency

		Vehicle identification (VIN) Original vehicle propulsion storage type i.e. one or more of: Gasoline, diesel, CNG, LPG, electric, hydrogen Timestamp of incident Other information may also be supplied if known and required - e.g.: Number of wounded people Details of known or suspected injuries Number of known occupants Number of vehicles involved Vehicle brand, model, and colour Whether occupants are responding by voice Language of the vehicle occupant Name of the TPSP and notifying operator It may have been agreed in advance with a PSAP that some or all of this information should be provided without a need for them to ask for it on a case-by-case basis.	
TPS-N SUT PSAP test point	3	TPSP informs PSAP test point of the TPSPCall-backNumber in case of further queries and VehiclePhoneNumber if required	PSAP test point received necessary phone number information
TPS-N SUT PSAP test point	4	If an electronic data interface is supported, the TPSP supplied the PSAP test point with a reference to access the electronic information (e.g. TPS-eCall-SID)	PSAP test point received reference required to access electronic information (e.g. TPS-eCall-SID) **OR** PSAP test point did not support an electronic data exchange **OR** PSAP test point's electronic data exchange mechanism did not require a unique reference to access the relevant data
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

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12.4.5 CTP 4.2.4 Establish voice link between PSAP and vehicle occupants if required by PSAP – TPS-N

12.4.5.1 CTP 4.2.4.1 Make conference call voice connection between TPSP, vehicle and PSAP if required – TPS-N

SUT reference	'TPS-eCall notifier'
CTP/ TPS-N/ECP/4.2.4.1	Establish conference between PSAP, TPSP, and vehicle if required by PSAP
SUT test objective	Test that the TPSP can reliably establish a conference call voice connection between vehicle occupants, TPSP, and PSAP
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 7, paragraph 9; 5.3 paragraph 8 '…to establish an audio/voice link'; 6.1 paragraph 1, paragraph 4; 9.3
Initial conditions	TPS-eCall received containing necessary matching criteria for selecting a given PSAP. Voice call has been established to the most appropriate PSAP (see CTP 4.2.1)

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-N SUT PSAP test point	1	Give a verbal request from the PSAP test point to the TPS-eCall Notifier test point that the PSAP operator wishes to establish a conference call with the TPSP operator and affected vehicle occupants	TPSP-Notifier has received PSAP's request for a conference call
TPS- N SUT TPS-R test point PSAP test point	2	TPSP establishes conference call between vehicle and PSAP test point.	
TPS-IVS test point TPS-N SUT TPS-R test point PSAP test point	3	Apply speech input (or equivalent tones) at the TPS-IVS test point	Speech input applied at TPS-IVS heard at TPSP. **AND** Speech input applied at TPS-IVS heard at PSAP
TPS-IVS test point TPS-R test point TPS-N SUT PSAP test point	4	Apply speech input (or equivalent tones) at the TPSP	Speech input applied at TPSP operator heard at TPS-IVS **AND** Speech input applied at TPSP operator can be heard at PSAP
TPS-IVS test point TPS-R test point TPS-N SUT PSAP test point	5	Apply speech input (or equivalent tones) at the PSAP test point	Speech input applied at PSAP test point heard at TPS-IVS **AND** Speech input applied at PSAP test point heard at TPSP operator
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.4.5.2 CTP 4.2.4.2 Make voice connection between vehicle and PSAP if required – TPS-N

SUT reference	'TPS-eCall notifier'
CTP/ TPS-N/ECP/4.2.4.2	Establish voice communication between vehicle and PSAP if required by PSAP
SUT test objective	Test that the TPSP can reliably establish voice communication between vehicle occupants and PSAP if required by PSAP
CTP origin	CEN
Reference requirement	EN 16102:2011, 5.1 paragraph 7, paragraph 9; 5.3 paragraph 8 '…to establish an audio/voice link'; 6.1 paragraph 1, paragraph 4
Initial conditions	TPS-eCall received containing necessary matching criteria for selecting a given PSAP. Voice call has been established to the most appropriate PSAP (see CTP 4.2.1)

Stimulus and expected behaviour

Test point		**Tester action**	**Pass condition**
TPS-N SUT PSAP test point	1	Give a verbal request from the PSAP test point to the TPS-eCall notifier test point that the PSAP operator wishes to speak with the affected vehicle occupants	TPSP-Notifier has received PSAP's request to speak with the vehicle occupants
TPS-IVS test point TPS-R test point TPS-N SUT PSAP test point	2	TPSP establishes voice communication between vehicle and PSAP test point	
TPS-IVS test point TPS-R test point TPS-N SUT PSAP test point	3	Apply speech input (or equivalent tones) at the TPS-IVS test point	Speech input applied at TPS-IVS test point heard at PSAP test point
TPS-IVS test point TPS-R test point TPS-N SUT PSAP test point	4	Apply speech input (or equivalent tones) at the PSAP test point	Speech input applied at PSAP test point heard at TPS-IVS test point
			If ALL individual pass conditions listed in this column above have been met THEN CTP PASS ELSE CTP FAIL

.

12.4.6 CTP 4.2.5 Respond to electronic data update request – TPS-N

SUT reference	'TPS-eCall notifier'
CTP/ TPS-N/ECP/4.2.5	Respond to electronic data update request
SUT test objective	Test that the TPSP allows the PSAP to request retransmission
CTP origin	CEN
Reference requirement	EN 16102:2011, A.2.3.2 A.2.3.3
Initial conditions	TPS-eCall received containing necessary matching criteria for selecting a given PSAP. Voice call has been established to the most appropriate PSAP (see CTP 4.2.1)

Stimulus and expected behaviour

Test point		Tester action	Pass condition
TPS-N SUT	1	PSAP test point requests a retransmission using the function requestEmergencyData as defined in Annex A of EN 16102:2011	
TPS-N SUT PSAP test point	2	Check that TPSP can respond to the retransmit request by sending the TSD to the PSAP test point push address using the standardized transfer methods	Most appropriate PSAP received the updated TSD via the push address
TPS-N SUT PSAP test point	3	Check that the TPSP has generated a TSD conformant to the description and reference implementation included in Annex A *[of EN 16102:2011]*	TSD conformant Annex A *[of EN 16102:2011]*
			If ALL individual pass conditions listed in this column above have been met **OR** PSAP did not support standardized electronic data exchange for TPS-eCall notification
			THEN CTP PASS ELSE CTP FAIL

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12.4.7 CTP 4.2.6 PSAP informs that call can be ended – TPS-N

Conformance tested by CTP 4.1.6.

12.4.8 CTP 4.2.7 Call cleardown to PSAP – TPS-N

There are no conformance tests associated with call cleardown with the PSAP.

12.4.9 CTP 4.2.9 Call-back from PSAP – TPS-N

Test requirements are covered by CTP 4.1.8.

13 Marking, labelling and packaging

There are no physical marking, labelling and packaging requirements defined in this document other than that any marking shall be in accordance with relevant European Directives.

Where a supplier elects to mark that its product or service is in accordance with the provisions of this document, it shall only do so if it can evidence that it has undertaken the test procedures relevant to its product(s) and/or service(s) as defined herein and has met all of the PASS criteria requirements defined in the tests appropriate to its product(s) and/or service(s) that are defined herein.

If a supplier has undertaken the test procedures relevant to its product(s) and/or service(s) as defined herein and has NOT MET all of the PASS criteria requirements defined in the tests appropriate to its product and/or service(s) that are defined herein, i.e. its product or service has failed ANY of the tests relevant to its product or service according to the methods and criteria determined herein, it SHALL NOT mark or label its product(s) and/or service(s) to claim compliance to this document. A supplier shall not mark or label its product(s) and/or service(s) to claim 'partial compliance' nor 'compliance to selected tests' of this document.

14 Declaration of patents and intellectual property

No patent or intellectual property have been declared to affect the provisions of this European Standard, other than those declared in the normatively referenced documents, and attention is drawn to such declarations in the referenced ETSI deliverables.

Annex A
(normative)

Proforma conformance test report for Pan European eCall in-vehicle system (IVS)

NOTE This conformance test proforma is based on ISO/IEC 9646-6. Refer to ISO/IEC 9646-6 for any additional information required.

A.1 Conformance test report

A.1.1 System under test: .....

Table A.1 — Conformance test report

CTR Number:	
CTR Date:	
Related CTR Number:	
Related CTR Date:	
Test Laboratory Identification:	
Test Laboratory Manager:	
Signature	

A.1.2 System under test identification

Table A.2 — SUT identification

Name:	
Version:	
Protocol specification:	
PICS:	
Previous CTR if any:	

A.1.3 Testing environment

Table A.3 — Testing environment

PIXIT Number:	
ATS Specification:	
Abstract Test Method:	
Means of Testing identification:	
Date of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

A.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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A.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the CTR, for example, to note disagreement between the two parties.

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A.2 SUT conformance status

This SUT has or has not been shown by conformance assessment to be none conforming to the specified protocol specification.

Strike the appropriate words in the previous sentence. If the PICS for this SUT is consistent with the static conformance requirements (as specified in A.3 in the present document) and there are no "FAIL" verdicts to be recorded (in A.6 in the present document) strike the words "has or", otherwise strike the words "or has not".

A.3 Static conformance summary

The PICS for this SUT is or was not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in the previous sentence.

A.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the SUT.

Strike the appropriate words in the previous sentence. If there are no "FAIL" verdicts to be recorded (in A.6 of the present document) strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

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A.5 Static conformance review report

If A.3 indicates non-conformance, this clause itemises the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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A.6 Test campaign report

Table A.4 — IVS Test cycle report

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in A.7)
IVS				
CTP/PRE/1.1.0.1	Yes/No	Yes/No		
CTP/I-ON/1.1.0.2	Yes/No	Yes/No		
CTP/TRG/1.1.0.3	Yes/No	Yes/No		
CTP/I-ON/1.1.1.1	Yes/No	Yes/No		
CTP/TRG/1.1.2.1	Yes/No	Yes/No		
CTP/TRG/1.1.2.2	Yes/No	Yes/No		
CTP/TRG/1.1.2.3	Yes/No	Yes/No		
CTP/TRG/1.1.2.4	Yes/No	Yes/No		
CTP/TRG/1.1.2.5	Yes/No	Yes/No		
CTP/TRG/1.1.3.1	Yes/No	Yes/No		
CTP/TRG/1.1.3.2	Yes/No	Yes/No		
CTP/TRG/1.1.4.1	Yes/No	Yes/No		
CTP/ECI/1.1.5.1	Yes/No	Yes/No		
CTP/CLR/1.1.5.2	Yes/No	Yes/No		
CTP/CLR/1.1.5.3	Yes/No	Yes/No		
CTP/CLR/1.1.5.4	Yes/No	Yes/No		
CTP/CLR/1.1.5.5	Yes/No	Yes/No		
CTP/ECI/1.1.5.6	Yes/No	Yes/No		
CTP/ECP/1.1.6.1	Yes/No	Yes/No		
CTP/ECI/1.1.7.1	Yes/No	Yes/No		
CTP/ECI/1.1.8.1	Yes/No	Yes/No		
CTP/ECI/1.1.9.1	Yes/No	Yes/No		
CTP/ECI/1.1.10.1	Yes/No	Yes/No		
CTP/ECP/1.1.10.2	Yes/No	Yes/No		
CTP/ECP/1.1.10.3	Yes/No	Yes/No		
CTP/TRG/1.1.11.1	Yes/No	Yes/No		
CTP/TRG/1.1.12.1	Yes/No	Yes/No		
CTP/TRG/1.1.13.1	Yes/No	Yes/No		
CTP/ECP/1.1.14.1	Yes/No	Yes/No		
CTP/ECP/1.1.14.2	Yes/No	Yes/No		
CTP/ECP/1.1.15.1	Yes/No	Yes/No		
CTP/ECP/1.1.15.2	Yes/No	Yes/No		
CTP/ECP/1.1.15.3	Yes/No	Yes/No		
CTP/ECP/1.1.15.4	Yes/No	Yes/No		
CTP/ECP/1.1.15.5	Yes/No	Yes/No		
CTP/CLR/1.1.16.1	Yes/No	Yes/No		
CTP/CLR/1.1.16.2	Yes/No	Yes/No		
CTP/CLB/1.1.16.3	Yes/No	Yes/No		
CTP/CLB/1.1.17.1	Yes/No	Yes/No		
CTP/CLB/1.1.17.2	Yes/No	Yes/No		
CTP/CLB/1.1.17.3	Yes/No	Yes/No		
CTP/CLB/1.1.17.4	Yes/No	Yes/No		
IVS - additional tests for eCall Only				
CTP/I-ON/1.1.1.2	Yes/No	Yes/No		
CTP/I-ON/1.1.1.3	No test required	No test required		
CTP/ECI/1.1.10.4	Yes/No	Yes/No		
CTP/CLB/1.1.17.5	Yes/No	Yes/No		

A.7 Observations

Additional information relevant to the technical content of the CTR is given here.

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Annex B
(normative)

ProForma conformance test report for Third Party Service Provider In-Vehicle System (TPS-IVS)

NOTE This conformance test proforma is based on ISO/IEC 9646-6. Cf. ISO/IEC 9646-6 for any additional information required.

B.1 Conformance test report

B.1.1 System under test: .....

Table B.1 — Conformance test report

CTR Number:	
CTR Date:	
Related CTR Number:	
Related CTR Date:	
Test Laboratory Identification:	
Test Laboratory Manager:	
Signature	

B.1.2 System under test identification

Table B.2 — SUT identification

Name:	
Version:	
Protocol specification:	
PICS:	
Previous CTR if any:	

B.1.3 Testing environment

Table B.3 — Testing environment

PIXIT Number:	
ATS Specification:	
Abstract Test Method:	
Means of Testing identification:	
Date of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

B.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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B.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the CTR, for example, to note disagreement between the two parties.

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B.2 SUT conformance status

This SUT has or has not been shown by conformance assessment to be none conforming to the specified protocol specification.

Strike the appropriate words in the previous sentence. If the PICS for this SUT is consistent with the static conformance requirements (as specified in B.3 in the present document) and there are no "FAIL" verdicts to be recorded (in B.6 in the present document) strike the words "has or", otherwise strike the words "or has not".

B.3 Static conformance summary

The PICS for this SUT is or was not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in the previous sentence.

B.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the SUT.

Strike the appropriate words in the previous sentence. If there are no "FAIL" verdicts to be recorded (in B.6 of the present document) strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

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B.5 Static conformance review report

If B.3 indicates non-conformance, this clause itemises the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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B.6 Test campaign report

Table B.4 — TPS-IVS Test cycle report

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in B.7)
IVS - additional tests for TPSP eCall				
CTP/PRE/1.2.0.1	Yes/No	Yes/No		
CTP/PRE/1.2.0.2	Yes/No	Yes/No		
CTP/PRE/1.2.0.3	Yes/No	Yes/No		
CTP/I-ON/1.2.1.1	Yes/No	Yes/No		
CTP/I-ON/1.2.1.2	Yes/No	Yes/No		
CTP/TRG/1.2.2.1	Yes/No	Yes/No		
CTP/TRG/1.2.2.2	Yes/No	Yes/No		
CTP/TRG/1.2.2.3	Yes/No	Yes/No		
CTP/TRG/1.2.2.4	Yes/No	Yes/No		
CTP/I-OFF/1.2.2.5	Yes/No	Yes/No		
IVS - additional tests for manually triggered TPSP eCall				
CTP/TRG/1.2.3.1	Yes/No	Yes/No		
CTP/TRG/1.2.3.2				
CTP/ECI/1.2.4.1				
CTP/ECP/1.2.5.1				
CTP/ECP/1.2.5.2				
CTP/ECI/1.2.5.3				
CTP/ECP/1.2.5.4				
CTP/ECP/1.2.5.5				
CTP/ECP/1.2.6.1				
CTP/ECP/1.2.6.2				
CTP/ECP/1.2.6.3				
CTP/ECP/1.2.7.1				
CTP/CLR/1.2.8.1				
CTP/CLB/1.2.9.1				
CTP/CLB/1.2.9.2				
CTP/CLB/1.2.9.3				

B.7 Observations

Additional information relevant to the technical content of the CTR is given here.

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Annex C
(normative)

ProForma conformance test report for mobile network operator (MNO)

NOTE This conformance test proforma is based on ISO/IEC 9646-6. Cf. ISO/IEC 9646-6 for any additional information required.

C.1 Conformance test report

C.1.1 System under test: .....

Table C.1 — Conformance test report

CTR Number:	
CTR Date:	
Related CTR Number:	
Related CTR Date:	
Test Laboratory Identification:	
Test Laboratory Manager:	
Signature	

C.1.2 System under test identification

Table C.2 — SUT identification

Name:	
Version:	
Protocol specification:	
PICS:	
Previous CTR if any:	

C.1.3 Testing environment

Table C.3 — Testing environment

PIXIT Number:	
ATS Specification:	
Abstract Test Method:	
Means of Testing identification:	
Date of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

C.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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C.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the CTR, for example, to note disagreement between the two parties.

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C.2 SUT conformance status

This SUT has or has not been shown by conformance assessment to be none conforming to the specified protocol specification.

Strike the appropriate words in the previous sentence. If the PICS for this SUT is consistent with the static conformance requirements (as specified in C.3 in the present document) and there are no "FAIL" verdicts to be recorded (in C.6 in the present document) strike the words "has or", otherwise strike the words "or has not".

C.3 Static conformance summary

The PICS for this SUT is or was not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in the previous sentence.

C.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the SUT.

Strike the appropriate words in the previous sentence. If there are no "FAIL" verdicts to be recorded (in C.6 of the present document) strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

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C.5 Static conformance review report

If C.3 indicates non-conformance, this clause itemises the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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C.6 Test campaign report

Table C.4 — MNO Test cycle report

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in C.7)
MNO				
CTP/PRE/2.0.1	Yes/No	Yes/No		
CTP/PRE/2.0.2	Yes/No	Yes/No		
CTP/PRE/2.0.3	Yes/No	Yes/No		
CTP/PRE/2.1.1	Yes/No	Yes/No		
CTP/ECI/2.1.2	Yes/No	Yes/No		
CTP/ECI/2.1.3	Yes/No	Yes/No		
CTP/ECI/2.2.1.1	Yes/No	Yes/No		
CTP/ECI/2.2.1.2	Yes/No	Yes/No		
CTP/ECP/2.2.1.3	Yes/No	Yes/No		
CTP/ECP/2.2.2.1	Yes/No	Yes/No		
CTP/ECI/2.2.3.1	Yes/No	Yes/No		
CTP/ECP/2.2.3.2	Yes/No	Yes/No		
CTP/ECP/2.3.1	No test required	No test required		
CTP/CLR/2.4.1	Yes/No	Yes/No		
CTP/CLB/2.5.1	Yes/No	Yes/No		
CTP/CLB/2.6.1	No test required	No test required		
CTP/CLB/2.7.1	No test required	No test required		

C.7 Observations

Additional information relevant to the technical content of the CTR is given here.

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Annex D
(normative)

ProForma conformance test report for public service answering point (PSAP)

NOTE This conformance test proforma is based on ISO/IEC 9646-6. Cf. ISO/IEC 9646-6 for any additional information required.

D.1 Conformance test report

D.1.1 System under test: .....

Table D.1 — Conformance test report

CTR Number:	
CTR Date:	
Related CTR Number:	
Related CTR Date:	
Test Laboratory Identification:	
Test Laboratory Manager:	
Signature	

D.1.2 System under test identification

Table D.2 — SUT identification

Name:	
Version:	
Protocol specification:	
PICS:	
Previous CTR if any:	

D.1.3 Testing environment

Table D.3 — Testing environment

PIXIT Number:	
ATS Specification:	
Abstract Test Method:	
Means of Testing identification:	
Date of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

D.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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D.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the CTR, for example, to note disagreement between the two parties.

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D.2 SUT conformance status

This SUT has or has not been shown by conformance assessment to be none conforming to the specified protocol specification.

Strike the appropriate words in the previous sentence. If the PICS for this SUT is consistent with the static conformance requirements (as specified in D.3 in the present document) and there are no "FAIL" verdicts to be recorded (in D.6 in the present document) strike the words "has or", otherwise strike the words "or has not".

D.3 Static conformance summary

The PICS for this SUT is or was not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in the previous sentence.

D.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the SUT.

Strike the appropriate words in the previous sentence. If there are no "FAIL" verdicts to be recorded (in D.6 of the present document) strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

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D.5 Static conformance review report

If D.3 indicates non-conformance, this clause itemises the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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D.6 Test campaign report

Table D.4 — PSAP Test cycle report

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in D.7)
PSAP – eCall				
CTP/PRE/3.1.0.1	Yes/No	Yes/No		
CTP/PRE/3.1.0.2	Yes/No	Yes/No		
CTP/ECI/3.1.1.1	Yes/No	Yes/No		
CTP/ECP/3.1.1.2	Yes/No	Yes/No		
CTP/ECP/3.1.2	Yes/No	Yes/No		
CTP/ECP/3.1.3.1	Yes/No	Yes/No		
CTP/ECP/3.1.3.2	Yes/No	Yes/No		
CTP/ECP/3.1.3.3	Yes/No	Yes/No		
CTP/ECP/3.1.4	Yes/No	Yes/No		
CTP/ECP/3.1.5.1	Yes/No	Yes/No		
CTP/ECP/3.1.5.2	Yes/No	Yes/No		
CTP/ECP/3.1.6	Yes/No	Yes/No		
CTP/ECP/3.1.7.1	Yes/No	Yes/No		
CTP/ECP/3.1.7.2	Yes/No	Yes/No		
CTP/ECP/3.1.7.3	Yes/No	Yes/No		
CTP/ECP/3.1.7.4	Yes/No	Yes/No		
CTP/ECP/3.1.7.5	Yes/No	Yes/No		
CTP/ECP/3.1.8	No test required	No test required		
CTP/ECP/3.1.9	Yes/No	Yes/No		
CTP/ECP/3.1.10	Yes/No	Yes/No		
CTP/ECP/3.1.11	Yes/No	Yes/No		
CTP/ECP/3.1.12	Yes/No	Yes/No		
CTP/ECP/3.1.13	Yes/No	Yes/No		
CTP/CLR/3.1.14.1	Yes/No	Yes/No		
CTP/CLR/3.1.14.2	Yes/No	Yes/No		
CTP/CLR/3.1.15	Yes/No	Yes/No		
CTP/CLR/3.1.16	Yes/No	Yes/No		
PSAP – TPSP eCall				
CTP/PRE/3.2.0.1	Yes/No	Yes/No		
CTP/PRE/3.2.0.2.1	Yes/No	Yes/No		
CTP/PRE/3.2.0.2.2	Yes/No	Yes/No		
CTP/PRE/3.2.0.3	Yes/No	Yes/No		
CTP/PRE/3.2.0.4	Yes/No	Yes/No		
CTP/PRE/3.2.0.5.1	Yes/No	Yes/No		
CTP/PRE/3.2.0.5.2	Yes/No	Yes/No		
CTP/**PRE**/3.2.0.6	Yes/No	Yes/No		
CTP/ECP/3.2.1	Yes/No	Yes/No		
CTP/ECP/3.2.2	Yes/No	Yes/No		
CTP/ECP/3.2.3	Yes/No	Yes/No		
CTP/ECP/3.2.4	Yes/No	Yes/No		
CTP/ECP/3.2.5	Yes/No	Yes/No		
CTP/ECP/3.2.6	Yes/No	Yes/No		
CTP/CLR/3.2.7	Yes/No	Yes/No		
CTP/CLR/3.2.8	Yes/No	Yes/No		
CTP/CLR/3.2.9	Yes/No	Yes/No		
CTP/CLB/3.2.10	Yes/No	Yes/No		
CTP/CLB/3.2.11	Yes/No	Yes/No		
CTP/CLB/3.2.12	Yes/No	Yes/No		

D.7 Observations

Additional information relevant to the technical content of the CTR is given here.

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Annex E
(normative)

ProForma conformance test report for third party service provider (TPS-eCall)

NOTE This conformance test proforma is based on ISO/IEC 9646-6. Cf. ISO/IEC 9646-6 for any additional information required.

E.1 Conformance test report

E.1.1 System under test: .....

Table E.1 — Conformance test report

CTR Number:	
CTR Date:	
Related CTR Number:	
Related CTR Date:	
Test Laboratory Identification:	
Test Laboratory Manager:	
Signature	

E.1.2 System under test identification

Table E.2 — SUT identification

Name:	
Version:	
Protocol specification:	
PICS:	
Previous CTR if any:	

E.1.3 Testing environment

Table E.3 — Testing environment

PIXIT Number:	
ATS Specification:	
Abstract Test Method:	
Means of Testing identification:	
Date of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

E.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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E.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the CTR, for example, to note disagreement between the two parties.

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E.2 SUT conformance status

This SUT has or has not been shown by conformance assessment to be none conforming to the specified protocol specification.

Strike the appropriate words in the previous sentence. If the PICS for this SUT is consistent with the static conformance requirements (as specified in E.3 in the present document) and there are no "FAIL" verdicts to be recorded (in E.6 in the present document) strike the words "has or", otherwise strike the words "or has not".

E.3 Static conformance summary

The PICS for this SUT is or was not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in the previous sentence.

E.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the SUT.

Strike the appropriate words in the previous sentence. If there are no "FAIL" verdicts to be recorded (in E.6 of the present document) strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

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E.5 Static conformance review report

If E.3 indicates non-conformance, this clause itemises the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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E.6 Test campaign report

Table E.4 — TPS-eCall Test cycle report

ATS Reference	Selected?	Run?	Verdict	Observations (Reference to any observations made in E.7)
TPSP eCall				
CTP/PRE/4.0.1	Yes/No	Yes/No		
CTP/PRE/4.0.2	Yes/No	Yes/No		
CTP/PRE/4.0.3.1	Yes/No	Yes/No		
CTP/PRE/4.0.3.2	Yes/No	Yes/No		
CTP/PRE/4.0.4	Yes/No	Yes/No		
CTP/PRE/4.0.5.1	Yes/No	Yes/No		
CTP/PRE/4.0.5.2	Yes/No	Yes/No		
CTP/PRE/4.0.5.3	Yes/No	Yes/No		
CTP/PRE/4.0.6	Yes/No	Yes/No		
CTP/PRE/4.0.7	Yes/No	Yes/No		
CTP/PRE/4.0.8	Yes/No	Yes/No		
CTP/PRE/4.0.9	Yes/No	Yes/No		
CTP/PRE/4.0.10	Yes/No	Yes/No		
TPS-eCall Responder				
CTP/TRG/4.1.1.1	Yes/No	Yes/No		
CTP/TRG/4.1.1.2	Yes/No	Yes/No		
CTP/ECI/4.1.2.1	Yes/No	Yes/No		
CTP/ECP/4.1.2.2	Yes/No	Yes/No		
CTP/ECP/4.1.3.1	Yes/No	Yes/No		
CTP/ECP/4.1.3.2	Yes/No	Yes/No		
CTP/ECP/4.1.3.3	Yes/No	Yes/No		
CTP/ECP/4.1.4	Yes/No	Yes/No		
CTP/ECP/4.1.5	No test required	No test required		
CTP/CLR/4.1.6	Yes/No	Yes/No		
CTP/CLR/4.1.7	Yes/No	Yes/No		
CTP/CLB/4.1.8	Yes/No	Yes/No		
TPS-eCall Notifier				
CTP/TRG/4.2.1	No test required	No test required		
CTP/ECP/4.2.2.1	Yes/No	Yes/No		
CTP/ECP/4.2.2.2.1	Yes/No	Yes/No		
CTP/ECP/4.2.2.2.2	Yes/No	Yes/No		
CTP/ECP/4.2.3	Yes/No	Yes/No		
CTP/ECP/4.2.4.1	Yes/No	Yes/No		
CTP/ECP/4.2.4.2	Yes/No	Yes/No		
CTP/ECP/4.2.5	Yes/No	Yes/No		
CTP/CLR/4.2.6	No test required	No test required		
CTP/CLR/4.2.7	Yes/No	Yes/No		
CTP/CLR/4.2.8	No test required	No test required		
CTP/CLB/4.2.9	No test required	No test required		

E.7 Observations

Additional information relevant to the technical content of the CTR is given here.

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