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# Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Mobile Standards Group (MSG).

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# Modal verbs terminology

In the present document "shall", "shall not", "should", "should not", "may", "need not", "will", "will not", "can" and "cannot" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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# 1 Scope

The present document specifies the Pan-European eCall end to end and in-band modem conformance testing.

This is a complete test specification. The following information can be found in the present document:

- the overall test structure;
- the test configurations;
- the conformance requirement and reference to the core specifications;
- the test purposes; and
- a brief description of the test procedure, the specific test requirements and <eventually> short message exchange table;
- the default setting of the test parameters;
- the applicability of each test case.

The present document is valid for a Pan-European (PE) eCall IVS.

---

## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] CEN EN 16454:2015: "Intelligent transport systems - ESafety - ECall end to end conformance testing".
- [2] 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)".
- [3] ETSI TS 102 936-1 (V1.1.1) (2011-04): "eCall Network Access Device (NAD) conformance specification; Part 1: Protocol test specification".
- [4] ETSI TS 102 936-2 (V1.1.1) (2011-04): "eCall Network Access Device (NAD) conformance specification; Part 2: Test suites".
- [5] ETSI TS 126 269 (V13.0.0) (2015-09): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer; In-band modem solution; Conformance testing (3GPP TS 26.269 version 13.0.0 Release 13)".
- [6] CEN EN 16062:2015: "Intelligent transport systems - ESafety - eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks".
- [7] ETSI TS 127 007: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; AT command set for User Equipment (UE) (3GPP TS 27.007)".

- [8] CEN EN 16072:2015: "Intelligent transport systems - ESafety - Pan-European eCall operating requirements".
- [9] ETSI TS 151 010-1: "Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformance specification; Part 1: Conformance specification (3GPP TS 51.010-1)".
- [10] ETSI TS 136 508: "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing (3GPP TS 36.508)".
- [11] 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 (3GPP TS 24.008)".
- [12] CEN EN 15722:2015: "Intelligent transport systems - ESafety - ECall minimum set of data".
- [13] ETSI TR 126 969: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer; In-band modem solution; Characterization report (3GPP TR 26.969)".
- [14] Directive 96/27/EC of the European Parliament and of the Council of 20 May 1996 on the protection of occupants of motor vehicles in the event of a side impact and amending Directive 70/156/EEC or equivalent Regulation No 95 of the Economic Commission for Europe of the United Nations (UN/ECE) Uniform provisions concerning the approval of vehicles with regard to the protection of the occupants in the event of a lateral collision. Addendum 94: Regulation No 95.
- NOTE: Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:313:0001:0057:EN:PDF>.
- [15] ETSI TS 100 910: "Digital cellular telecommunications system (Phase 2+); Radio Transmission and Reception (3GPP TS 05.05)".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI TS 103 321: "Mobile Standards Group (MSG); eCall HLAP Conformance Testing; Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".
- [i.2] ETSI MSG(14)042005r1: "STF483(eCallHLAPTesting)-Feedback-CEN16454".
- [i.3] 3GPP RAN5 PRD 13: "3rd Generation Partnership Project; Technical Specification Group RAN WG5; Permanent Reference Document (PRD); EPS (E-UTRAN & EPC) TC prose specification requirements".
- [i.4] ISO 15031-3:2004: "Road vehicles -- Communication between vehicle and external equipment for emissions-related diagnostics -- Part 3: Diagnostic connector and related electrical circuits, specification and use".
- [i.5] ETSI TS 134 108: "Universal Mobile Telecommunications System (UMTS); LTE; Common test environments for User Equipment (UE); Conformance testing (3GPP TS 34.108)".
- [i.6] ETSI TS 122 011: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Service accessibility (3GPP TS 22.011)".

- [i.7] ETSI TS 123 122: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode (3GPP TS 23.122)".
- [i.8] ETSI TS 126 132: "Universal Mobile Telecommunications System (UMTS); LTE; Speech and video telephony terminal acoustic test specification (3GPP TS 26.132)".

### 3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACK	ACKnowledgement
AL	Application Layer
AL-ACK	Application Layer - ACKnowledgement
AL-ACK	Application Layer ACKnowledgement
AT	ATtention
CAN	Controller Area Network
CCFT	Call Cleardown Fallback Timer
CEN	European Committee for Standardization
CM	Communication Management
CRC	Cycle Redundancy Check
CTP	Conformance Test Point
DTX	Discontinuous Transmission
ECE	(United Nations) Economic Commission for Europe
EN	European Norm
FDN	Fixed Dialing Number
GERAN	GSM/EDGE Radio Access Network
GMSK	Gaussian Minimum Shift Keying
GNSS	Global Navigation Satellite System
GSM	Global System for Mobile communications
HLAP	Higher Layer Application Protocol
HMI	Human Machine Interface
ICS	Implementation Conformance Statement
IE	Information Element
IGN_ON	IGNition ON
IMSI	International Mobile Subscriber Identity
ISO	International Standardization Organization
IVS	In-Vehicle System
LL	Link Layer
LL-ACK	Link Layer - ACKnowledgement
MM	Mobility Management
MMI	Man Machine Interface
MNO	Mobile Network Operator
MS	Mobile Station
MSD	Minimum Set of Data
MSG	Mobile Standards Group
NACK	Negative ACKnowledge
NAD	Network Access Device
PCM	Pulse Code Modulation
PE	Pan-European
PIXIT	Protocol Implementation eXtra Information for Testing
PLMN	Public Land Mobile Network
PRD	Permanent Reference Document
PSAP	Public Safety Answering Point
RACH	Random Access CHannel
RAN	Radio Access Network
RRC	Radio Resource Control
SDN	Service Dialing Number
SIM	Subscriber Identity Module
SS	System Simulator

TC	Test Case
TMSI	Temporary Mobile Subscriber Identity
TP	Test Purpose
TTCN	Testing and Test Control Notation
UE	User Equipment
UMTS	Universal Mobile Telecommunications System
USIM	Universal Subscriber Identification/Identity Module
UTRA	UMTS Terrestrial Radio Access

## 4 Glossary

### 4.1 Intention of the glossary

For eCall there exists several specifications that use different wording. The main intention of the glossary is to provide background information on the formulations used in the present document, especially in figures 5.2.3-1 to 5.2.3-3, and to prevent ambiguities. The expressions are used throughout the whole document e.g. in the test case section as well. Please note that other documents may contain the same formulation with a different meaning.

The state diagram introduces several categories (see legend in figure 5.2.3-1) according to which the glossary is sorted:

- States are the mirrored states of the IVS as perceived monitored at the tester. A mirror state will remain until there is any tester input/output, internal tester actions/trigger.
- Decisions are alternatives in the process. The tester makes the decision.
- Procedures describe multiple step message exchange between the IVS and the MNO/PSAP/tester. The messages may vary for different Radio Access Technologies used.
- Tester input/output, internal tester actions/trigger are events that enable a state transition. The tester input and tester output are visible on the interfaces between the IVS, the tester and the user interface. The internal tester actions/trigger are not visible on any interface but necessary within the tester to emulate the timers running in the IVS and the PSAP and enable the tester to check for correct behaviour e.g. in case of expiry of a timer. A detailed description of the timers is available in CEN EN 16062 [6], annex A.

### 4.2 General

PE eCall capable IVS	PE eCall capable IVS are devices that comprise commercial UE functionality as well as eCall service.
PE eCall only IVS	PE eCall only IVS support only eCall service.
PE eCall IVS	The expression PE eCall IVS comprises both kind of devices: PE eCall capable IVS and PE eCall only IVS.

### 4.3 States

IGNITION OFF	The vehicle ignition is switched off, i.e. the vehicle battery does not supply the IVS module with power. The IVS module is unpowered.
Self-test	The self-test is ongoing within the IVS.
IGNITION ON eCall INACTIVE/IDLE, registered	This is the normal state of the IVS during vehicle operation when no eCall has been triggered. Depending on the device capability the device is either registered to the network (IDLE, registered) for a PE eCall capable IVS or not registered to the network (eCall INACTIVE) for a PE eCall only IVS.
False triggering "eCall activation"	In case the vehicle occupants trigger a manual eCall by mistake they can cancel/abort the call during the time period T1.
Waiting for HMI alert	This state follows T1 expiry and ends with the IVS sending an HMI alert to the vehicle occupants.
In-band modem connected	In this state the mobile network connection is completed and the in-band modem message exchange can start.