



**SLOVENSKI STANDARD**  
**oSIST prEN 16454:2022**  
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**Inteligentni transportni sistemi - e-Varnost - Preskušanje skladnosti e-klica v zvezi pošiljatelj-prejemnik**

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

Intelligente Verkehrssysteme - eSicherheit - Vollständige Konformitätsprüfungen für eCall

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

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**ICS:**

13.200	Preprečevanje nesreč in katastrof	Accident and disaster control
35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport
43.040.15	Avtomobilska informatika. Vgrajeni računalniški sistemi	Car informatics. On board computer systems

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**DRAFT**  
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ICS 35.240.60

Will supersede EN 16454:2015

English Version

## Intelligent transport systems - ESafety - ECall end to end conformance testing

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

Intelligente Verkehrssysteme - eSicherheit -  
Vollständige Konformitätsprüfungen für eCall

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 278.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (prEN 16454:2022) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16454:2015.

The following changes have been introduced in this revision:

- IVS and PSAP test added to check for EN 15722:2020 compliance
- PSAP test added to check for EN 15722:2015 compliance
- PSAP tests added to check for ASN.1 compliance
- Corrections in multiple tests

**iTeh STANDARD PREVIEW**  
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<https://standards.iteh.ai/catalog/standards/sist/c885c2ac-53db-4d8b-8675-5061a6b2aaf0/osist-pren-16454-2022>

## 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 document 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 document 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 document 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),

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

EN 15722:2020, *Intelligent transport systems — ESafety — ECall minimum set of data*

EN 16062:2021, *Intelligent transport systems — ESafety — eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks*

EN 16072:2021, *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 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)*

**prEN 16454:2022 (E)**

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,<sup>1</sup> *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]*

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 134 123-1:2020, *Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (3GPP TS 34.123-1 version 8.6.0 or later)*

ETSI TS 151 010-1:2020, *Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformance specification; Part 1: Conformance specification (3GPP TS 51.101-1 version 8.4.0 or later).*

ETSI TS 103 412:2020, *Mobile Standards Group (MSG); Pan-European eCall end to end and in-band modem conformance testing; Prose test specification (Version 1.3.1 or later)*

**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]

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<sup>1</sup> 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.



### 3.2

#### **call clear-down**

act of ending a call, following call completion

Note 1 to entry: The event is signalled in accordance with ISUP (ISDN User Part) 'Release Cause Codes'

Note 2 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

**prEN 16454:2022 (E)****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*

Note 1 to entry: 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 15722:2020]

**3.26****mobile wireless communications network**

wireless communications network with homogeneous handover between network access points

**prEN 16454:2022 (E)****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 document. 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 document.

**3.32****service provider**

physical and functional component responsible for providing telematics-based services to its subscribers

**3.33****Teleservice**

services 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 ; 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

<b>3G</b>	third generation mobile telecommunication system
<b>ACD</b>	automatic call distribution
<b>ACK</b>	ACKnowledgement
<b>AL-ACK</b>	application layer acknowledgement
<b>AIeC</b>	automatic Initiated <i>eCall</i>
<b>AT</b>	attention (part of modem instruction to dial as specified in ETSI TS 127 007)
<b>CLB</b>	call-back and post eCall
<b>CLR</b>	call clear-down
<b>CRC</b>	cyclic redundancy check
<b>CTP</b>	conformance test point
<b>EC</b>	European Commission
<b>ECI</b>	eCall initiation
<b>ECP</b>	eCall in progress
<b>ETSI</b>	European Telecommunications Standards Institute
<b>GCF</b>	Global Certification Forum
<b>GIS</b>	Geographic Information System
<b>GNSS</b>	Global Navigation Satellite System
<b>GSM</b>	Global System for Mobile communications
<b>HMI</b>	human machine interface
<b>IE</b>	information entity
<b>I-OFF</b>	ignition off/engine control deactivated
<b>I-ON</b>	ignition on/engine control activated
<b>IAM</b>	Immediate Alert Message
<b>IMSI</b>	International Mobile Subscriber Identity

<b>IVS</b>	In-Vehicle System
<b>LAN</b>	Local Area Network
<b>LL-ACK</b>	link layer acknowledgement
<b>LTE</b>	Long Term Evolution (of 3G UMTS access network)
<b>MiEC</b>	Manually Initiated <i>eCall</i>
<b>MSC</b>	Mobile Switching Centre
<b>MNO</b>	Mobile Network Operator
<b>MSISDN</b>	Mobile Subscriber ISDN (integrated services digital network)
<b>MSD</b>	Minimum Set of Data (EN 15722)
<b>NAD</b>	Network Access Device (e.g. a GSM or UMTS module)
<b>PAN</b>	Personal Area Network
<b>PE</b>	Pan-European
<b>PLMN</b>	Public Land Mobile Network
<b>PSAP</b>	Public Safety Answering Point
<b>RSSI</b>	Received signal strength indicator
<b>SID</b>	Session identification
<b>SIM</b>	Subscriber Identity Module (GSM/3GPP)
<b>SUT</b>	System Under Test
<b>TRG</b>	Trigger
<b>TPS</b>	Third Party Service
<b>TPS-eCall-SID</b>	TPS-eCall short reference identification
<b>TPSP</b>	Third Party Service Provider
<b>TPS-N</b>	Third Party Service-Notifier
<b>TPS-R</b>	Third Party Service-Responder
<b>TPS-SID</b>	Third party service-short reference identification
<b>TPS-UID</b>	Third party service-unique reference identification
<b>TS (i)</b>	Technical Specification
<b>TS (ii)</b>	Teleservice
<b>TS12</b>	Teleservice 12 ETSI TS 122 003