



SLOVENSKI STANDARD
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Inteligentni transportni sistemi - e-Varnost - e-Klic HLAP v hibridnih omrežnih okoljih s komutiranim vezjem/paketno komutiranim omrežjem

Intelligent transport systems - eSafety - eCall HLAP in hybrid circuit switched/packet switched network environments

Intelligente Verkehrssysteme - eSicherheit - Übergeordnetes eCall-Anwendungsprotokoll (HLAP) in hybriden geschalteten Netzwerkkumgebungen

Systèmes de transport intelligents - eSafety - HLAP d'eCall dans les environnements réseaux hybrides à commutation de circuits et de paquets

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Intelligent transport systems - eSafety - eCall HLAP in hybrid circuit switched/packet switched network environments

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Intelligente Verkehrssysteme - eSicherheit -
Übergeordnetes eCall-Anwendungsprotokoll (HLAP) in
hybriden geschalteten Netzwerkeumgebungen

This European Standard was approved by CEN on 22 October 2023.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 17905:2023) 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of an identical text or by endorsement, at the latest by May 2024, and conflicting national standards shall be withdrawn at the latest by May 2024.

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

This document is the result of narrowing down the scope of PREN 17184 (during its review and upgrade to EN) to exclusively describe the eCall High Level Application Protocols in packet switched networks and as such partly supersedes CEN/TS 17184.

The document complements EN 16062 and prEN 17184.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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EN 17905:2023 (E)

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 Point (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 The term PSAP, 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.

EN 15722 specifies a standardized MSD 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] and Official Journal *eCall* Recommendation C_2011_6269, for more information).

The pan-European *eCall* are made using Public Land Mobile Networks (PLMN) for which operating requirements are specified in a number of ETSI standards and technical specifications. In order to provide the *eCall* service across a wireless network, high level application protocols are required as an essential element to affect this service provision. Originally PLMNs were circuit switched networks for which EN 16062 specifies High Level Application Protocols. In these networks *eCall* uses Teleservice No 12 (TS12) and in-band modem transfer of data.

Over time new communications technologies have become available. These technologies use so called 'packet switched' technologies using Internet Protocols (IP). Particularly, 3GPP has evolved a communication management system called IMS (IP Multimedia Subsystem) which is suitable to operate over a number of bearer technologies, including LTE, NR and their successors. It is anticipated that packet switched networks (such as LTE, NR and their successors), which now co-exist with circuit switched networks (like GSM/UMTS), will, over the course of time, replace circuit switched networks.

EN 17184 provides High Level Application Protocols (HLAP) for *eCall* using IMS over packet switched networks. It provides the equivalent of EN 16062 for circuit switched networks and should be suitable for all/any packet switched networks and wireless access such as LTE, NR and their successors.

During at least a couple of years, packet switched networks will not be available throughout the working area of *eCall*. In other areas both circuit switched and packet switched networks will co-exist, but there will be areas that only have packet switched network services. This document specifies the protocols in this hybrid situation, in order to make sure that pan-European *eCall* will function as efficiently as possible.

NOTE A (possibly) large number of vehicles support circuit switched in-band *eCall* only (and not *eCall* using IMS over packet switched networks). For these to be able to continue using the *eCall* service either the onboard equipment will need to be upgraded (to support *eCall* using IMS) or sufficient circuit switched networks need to remain operational. This falls outside the scope of this document and is not addressed herein.

The European Committee for Standardization (CEN) draws attention to the fact that, while no direct patents are known in express regard to the content of these specifications, the underlying ETSI communications Standards may involve patents and the reader is directed to the referenced ETSI standards in these respects. Similarly, as this standard relies on EN 16062 and EN 17184 the specifications below may involve the use of patents specified in these standards, and the reader is directed to these documents in respect of these aspects.

1 Scope

In respect of 112-eCall (pan-European *eCall*) (operating requirements defined in EN 16072), this document defines the additional high level application protocols, procedures and processes required to provide the *eCall service* whilst there are still both circuit switched and packet switched wireless communication networks in operation.

NOTE The objective of implementing the pan-European in-vehicle emergency call system (eCall) is to automate the notification of a traffic accident, wherever in Europe, with the same technical standards and the same quality of services objectives by using a PLMN (such as ETSI prime medium) which supports the European harmonized 112/E112 emergency number (using TS12 or IMS equivalent) and to provide a means of manually triggering the notification of an emergency incident.

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.

<std>EN 15722, *Intelligent transport systems - ESafety - ECall minimum set of data*</std>

<std>EN 16062, *Intelligent transport systems - ESafety - eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks*</std>

<std>EN 16072, *Intelligent transport systems - ESafety - Pan-European eCall operating requirements*</std>

<std>EN 16454, *Intelligent transport systems - ESafety - ECall end to end conformance testing*</std>

<std>EN 17184:—,¹ *Intelligent transport systems - eSafety - eCall High level application Protocols (HLAP) using IP Multimedia Subsystem (IMS) over packet switched networks*</std>

<std>EN 17240:—,² *Intelligent transport systems - ESafety - ECall end to end conformance testing for IMS packet switched based systems*</std>

<std>EN 18052:—,³ *Intelligent transport systems - ESafety - ECall end to end conformance testing eCall HLAP in hybrid circuit switched/packet switched network environments*</std>

<std>ETSI TS 122 011, *Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Service accessibility (3GPP TS 22.011) [Release 14 or later]*</std>

<std>ETSI TS 123 122, *Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode (3GPP TS 23.122) [Release 14 or later]*</std>

<std>ETSI TS 123 167, *Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS) emergency sessions (3GPP TS 23.167) [Release 14 or later]*</std>

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² To be published. Stage at the time of publication: prEN 17240:2023.

³ To be published. Stage at the time of publication: prEN 18052:2023.

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3 Terms and definitions

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

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

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

3.1

112

single European emergency call number supporting Teleservice 12

Note 1 to entry: See ETSI TS 122 003.

3.2

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

3.3

CS-eCall

CS eCall

eCall over CS

emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants* via a circuit switched mobile network

3.4

data

representations of static or dynamic objects in a formalized manner suitable for communication, interpretation, or processing by humans or by machines; in packet switched networks, voice is carried in packets of data

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3.5

E112

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

Note 1 to entry: The number is not actually used directly in the communication but sets indicators in the IMS call header that identifies the call as an emergency call of type 'eCall' to the MNO.

3.6

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*.

3.7**eCall generator**

occupant of a vehicle or equipment within a vehicle that has caused to trigger an *eCall session* by automatic or manual means

3.8**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

3.9**eCall session**

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

3.10**emergency call response centre**

term used in ITS Implementation Directive to mean Public Safety Answering Point (PSAP)

3.11**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

3.12**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 session* 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

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3.13**in-vehicle system****IVS**

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

3.14**IMS-eCall****IMS eCall****eCall over IMS**

manually or automatically initiated IMS emergency call, from an IVS, supplemented with a minimum set of data (MSD), via a packet switched mobile network

3.15**minimum set of data****MSD**

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

Note 1 to entry: See EN 15722.

EN 17905:2023 (E)**3.16****mobile wireless communications network**

wireless communications network with homogeneous handover between *network access points*

3.17**mobile wireless communications network device**

device providing communications to a *mobile wireless communications network* with homogeneous handover between *network access points*

3.18**most appropriate PSAP**

destination for eCall 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.

3.19**Network Access Device****NAD**

see *mobile wireless communications network device*

3.20**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 organization recognized 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.

3.21**service provider**

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

3.22**vehicle occupant**

person inside the vehicle

3.23**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.