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Inteligentni transportni sistemi - e-Varnost - Zahteve za visoko stopnjo prednosti aplikacijskega protokola elektronskega klica v sili (HLAP) z uporabo komutiranega omrežja GSM/UMTS (2020)

Intelligent transport systems - ESafety - eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks (2020)

Intelligente Transportsysteme - ESicherheit - Anforderungen an High-Level-Anwendungsprotokolle für eCall (HLAP) unter Verwendung von geschalteten GSM/UTMS-Netzwerken

Systèmes de transport intelligents - ESafety - Exigences de protocole d'application de haut niveau (HLAP) relatives à l'eCall via des réseaux commutés de circuits GSM/UMTS

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03.220.20	Cestni transport	Road transport
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Intelligent transport systems - ESafety - eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks (2020)

Systèmes de transport intelligents - ESafety - Exigences de protocole d'application de haut niveau (HLAP) relatives à l'eCall via des réseaux commutés de circuits GSM/UMTS

Intelligente Transportsysteme - ESicherheit - Anforderungen an High-Level-Anwendungsprotokolle für eCall (HLAP) unter Verwendung von geschalteten GSM/UTMS-Netzwerken

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

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European foreword

This document (prEN 16062:2020) 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 supersedes EN 16062:2015.

The following changes have been introduced in this revision:

— Improvements in the precision of technical description and update of references;

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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.

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 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.

In order to provide the *eCall* service across a wireless network, high level application protocols are required as an important essential element to effect this service provision. This European Standard specifies the protocols to put into effect the pan-European *eCall* operating requirements using PLMNs, and also identifies common elements that can be used in the link between third-party services supporting *eCall* and PSAPs.

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.

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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 this European Standard.

The patents held may refer to the implementation of *eCall* in general using the specifications in this European Standard, but do not specifically directly refer to specifications of any of the clauses defined herein.

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1 Scope

In respect of pan-European *eCall* (operating requirements defined in EN 16072), this document defines the high-level application protocols, procedures and processes required to provide the *eCall service* using a TS12 emergency call over a mobile communications network.

NOTE 1 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 (TS12 ETSI/TS 122 003) and to provide a means of manually triggering the notification of an emergency incident.

NOTE 2 HLAP requirements for third-party services supporting *eCall* can be found in EN 16102, and have been developed in conjunction with the development of this work item, and is consistent in respect of the interface to the PSAP. This deliverable makes reference to those provisions but does not duplicate them.

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 (MSD)*

EN 16072:2020, *Intelligent transport systems — eSafety — Pan-European eCall operating requirements*

EN 16102:2020, *Intelligent transport systems — eCall — Operating requirements for third party support*

CEN/TS 16454:2020, *Intelligent transport systems — ESafety — ECall end to end conformance testing*

ETSI/TS 122 101, *Universal Mobile Telecommunications System (UMTS); LTE; Service aspects; Service principles (3GPP TS 22.101 [Release 8 or later]*

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 [Release 8 or later]*

ETSI/TS 126 267, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer; In-band modem solution; General description [Release 8 or later]*

ETSI/TS 126 268, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer; In-band modem solution; ANSI-C reference code [Release 8 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 [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) (Teleservice 12/TC12) /E12) [Release 8 or later]*

ETSI/TS 122 011, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Service accessibility [Release 8 or later]*

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ETSI/TS 127 007, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); AT command set for user equipment [Release 8 or later]*

ETSI/TS 102 164, *Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Emergency Location Protocols (version 1.3.1)*

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 version 8.1.0) [Release 8 or later]*

ETSI/TS 121 133, *Universal Mobile Telecommunications System (UMTS); 3G Security; Security Threats and Requirements; (3GPP TS 21.133 version 4.1.0) [Release 4 or later]*

ETSI/TS 122 071, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Location Services (LCS); Service description; Stage 1 [Release 8 or later]*

ISO/IEC 9646 (all parts), *Information technology — Open Systems Interconnection — Conformance testing methodology and framework*

ITU–T:2009, Recommendation G.168 “Digital network echo cancellers”

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 http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

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3.1
112
single European emergency call number supporting Teleservice 12

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[SOURCE: ETSI/TS 122 003]

3.2
call clear-down
termination of call and freeing up of line (usually achieved by hanging up the receiver or pressing ‘end call’ or similar on screen)

3.3
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

3.4
data
representations of static or dynamic objects in a formalized manner suitable for communication, interpretation, or processing by humans or by machines

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3.5
data concept
any of a 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

3.6
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

3.7
E112
emergency communications service using the single European emergency call number, 112, which is enhanced with location information of the calling user TS12

3.8
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*

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3.9
eCall generator
occupant of a vehicle or equipment within a vehicle that has cause to trigger an *eCall* transaction by automatic or manual means

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3.10
eCall identifier
one of two 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

3.11
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

3.12
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

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3.13
emergency control centre
unit which deals with emergency calls and which has the capacity to consider professionally the need for response, and which has the provision to mobilise the needed resources to deal with the emergency in question

3.14
emergency call response centre
term used in ITS Implementation Directive to mean Public Safety Answering Point (PSAP)

3.15
identifier
any 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

3.16
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

3.17
in-vehicle equipment provider
provider of *eCall* in-vehicle equipment

Note 1 to entry: The in-vehicle equipment provider can be the vehicle manufacturer or the provider of aftermarket equipment.

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3.18
in-vehicle system
in-vehicle equipment together with the means to trigger, manage and effect the *eCall* transaction

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3.19
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 15722:2011]

3.20
mobile wireless communications network
wireless communications network with homogeneous handover between *network access points*

3.21
mobile wireless communications network device
device providing communications to a *mobile wireless communications network* with homogeneous handover between *network access points*

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3.22
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.

3.23
network access device (NAD)
see *mobile wireless communications network device*

3.24
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.

3.25
public mobile wireless communications network
mobile wireless communications network with access to a public telecommunications network

3.26
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 European Standard.

3.27
service provider
physical and functional component responsible for providing telematics based services to its subscribers

3.28
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

3.29
vehicle occupant(s)
person(s) inside the vehicle

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3.30
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
ACK	ACKnowledgement
AIeC	automatic initiated *eCall*
AT	attention (part of modem instruction to dial as specified in ETSI/TS 127 007)
BS	bearer services
CAN	controller-area network
CRC	cyclic redundancy check
EC	European Commission
ETSI	European Telecommunications Standards Institute
GSM	global system for mobile communications
HLR	home location registry
HPLMN	home public land mobile network
IAM	initial address message
IMSI	international mobile subscriber identity
IVS	in-vehicle system
LAN	local area network
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
PLMN	public land mobile network
PSAP	**p**ublic safety answering point
REQ	REQuest
SUT	system under test
TPS	third party service
TPSP	third party service provider
TS (i)	technical specification

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