This document is a preview generated by EVS

Intelligent transport systems - ESafety - Pan-European eCall operating requirements

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

This document is a preview generated by EVS

See Eesti standard EVS-EN 16072:2015 sisaldab Euroopa standardi EN 16072:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 16072:2015 consists of the English text of the European standard EN 16072:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 22.04.2015.	Date of Availability of the European standard is 22.04.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 35.240.60, 43.040.15

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16072

April 2015

ICS 35.240.60; 43.040.15

Supersedes EN 16072:2011

English Version

Intelligent transport systems - ESafety - Pan-European eCall operating requirements

Systèmes de transport intelligents - ESafety - Exigences opérationnelles du service eCall paneuropéen

Intelligente Transportsysteme - ESicherheit - Paneuropäische Notruf-Betriebsanforderungen

This European Standard was approved by CEN on 1 February 2015.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

This document is a preview generated by EVS



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2015 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 16072:2015 E

Contents

Page

Foreword 4

Introduction 5

1 Scope 7

2 Normative references 7

3 Terms and definitions 8

4 Symbols and abbreviations 12

5 Conformance 13

6 High level functional requirements 13
6.1 General high level functional requirements 13
6.1.1 General 13
6.1.2 Linguistic aspects 13
6.1.3 High level In-vehicle system requirements 13
6.1.4 eCall architecture 13
6.1.5 eCall operation sequence 14
6.2 eCall service chain 15
6.2.1 General 15
6.2.2 Actors in eCall service provision 15
6.2.3 Privacy aspects 15
6.2.4 Use of location and heading at PSAP 15

7 Operational requirements 16
7.1 General 16
7.2 Liability 16
7.3 Routing of an eCall 17
7.3.1 General 17
7.3.2 eCall 'flag' 17
7.3.3 eCall routing to PSAP 18
7.4 Prioritisation of an eCall 18
7.5 Post crash performance of in-vehicle equipment 18
7.6 Location and direction 18
7.6.1 Location data 18
7.6.2 Data concerning direction and location 19
7.6.3 Optional data regarding location and direction 19
7.7 Minimum Set of Data (MSD) 20
7.7.1 Data within the MSD 20
7.7.2 Optional additional data 20
7.8 Modes of operation for automatic triggered eCall 21
7.9 In-vehicle 'Human Machine Interface' (HMI) aspects 21
7.9.1 General 21
7.9.2 HMI aspects in the case of automatic triggering 21
7.9.3 HMI aspects in the case of a manual triggering 21
7.9.4 Alerting of initiated eCall (automatically or manually triggered) 21
7.10 Triggering 22
7.10.1 Automatic eCall triggering strategy 22
7.10.2 Manual eCall triggering strategy 22
7.10.3 Manual termination of eCall by vehicle occupants before trigger confirmation 22
7.11 Termination of an in progress eCall 22
7.12 Requirements to physical layer 23

This document is a preview generated by EVS

7.12.1 Transport protocol 23
7.12.2 Performance requirements- time required to transmit data 23
7.12.3 End-to-end performance criteria 23
7.12.4 Performance criteria – Wireless network 24
7.12.5 Performance criteria – PSAP 24
7.13 Establish voice channel 24
7.13.1 General 24
7.13.2 Service area issues 24
7.13.3 Roaming requirements for service 24
7.14 Acknowledgement of eCall 24
7.15 Continuing availability 25
7.16 PSAP response 25
7.17 eCall termination 25
7.17.1 General 25
7.17.2 IVS redial 25
7.17.3 PSAP call-back 25
7.17.4 Record transaction 26

8 Defences against attack 26
8.1 Call line security 26
8.2 Hoax calls 26
8.3 False generation of eCalls 26
8.4 End of life management 27
8.5 Denial of service attack 27
8.6 Malicious attack on PSAP 27

9 Different requirements for HGVs 27

10 Different requirements for 2 wheel vehicles 27

11 Test and conformance requirements 28
11.1 General 28
11.2 eCall conformance 28
11.3 In-vehicle equipment conformance 28
11.4 Network conformance 28
11.5 PSAP conformance 29
11.6 Interoperability conformance 29

12 Marking, labelling and packaging 29

Bibliography 30

This document is a preview generated by EVS

Foreword

This document (EN 16072:2015) 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 October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

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 EN 16072:2011.

The following revisions have been introduced:

— References to CEN/TS 16454, and other relevant standards deliverables have been added;

— New notes have been added for clarification;

— Subclause 7.10.1 has been clarified;

— ‘Coverage’ has been replaced by ‘service area’ in 7.13.2;

— A paragraph has been removed from 7.13.3;

— The term USIM is now used consistently, and the term SIM is no longer used (for consistency with the ETSI eCall NAD standards deliverables);

— As later instantiations of eCall may use E_UTRAN or other communications technologies, references to ETSI standards are now made specific that they are in respect of GSM/UMTS instantiation;

— A clause (8.3) has been moved from EN 16062 re the role of USIM in managing false generation of eCalls);

— A clause (8.3) has been moved from EN 16062 re End of life management of IMEI;

— References/cross references have been updated;

— IVS has been changed to “IVS responsible for the eCall system” throughout;

— IVS redial (7.17.2) and PSAP call-back (7.17.3) have been reorganized and some content moved from one section to the other and the text clarified;

— Data storage. A reminder that data retention ‘shall respect European data protection regulations’ has been added to 7.17.4.

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.

This document is a preview generated by EVS

Introduction

The scale of death and injury on roads in Europe needs to be fully comprehended to understand the need for 'Emergency Call' (eCall). In 2008 there were 38 900 fatalities in EU-27. The figure for 2009 is around 34 500 fatalities. The trend 2001 to 2008 is around 5 % reduction annually. Road accident injuries are in the region of 1,7 million (2008). Roads remain unsafe and further efforts are needed. The pan-European in-vehicle emergency call, eCall, is estimated to have the potential to save up to 2 500 fatalities annually in EU-28 when fully deployed and furthermore to reduce the severity of injuries, to bring significant savings to the society in and to reduce human suffering.

Emergency calls made from vehicles or mobile telephones using wireless technologies can assist with the objectives of significantly reducing road deaths and injuries, but drivers often have poor (imprecise) location-awareness, especially on interurban roads or abroad. Additionally, in many situations, the car occupants may not be in a position to call using a normal mobile phone.

The situation is worse for those travelling abroad: A high (and increasing) number of vehicles travelling outside their home country is thus also contributing to the need for automated emergency call system in vehicles. In EU there are over 100 million trips to another EU country per year (EU-15). 65 % people feel less protected while abroad and most do not know which number to call in an emergency (in some countries over 60 %). Language problems are pertinent and may render proper communication difficult. Yet, in the most crucial cases, the victim(s) may not be able to call because they have been injured/trapped, do not know the local number to call and in many cases, particularly in rural situations and late at night, there may be no witnesses, who happen to have a mobile phone and a sense of community.

eCall, in the context of 'Road Traffic and Transport Telematics' (otherwise known as 'Intelligent Transport Systems' or 'ITS'), can be described as an 'automatic or user instigated system to provide notification to Public Safety Answering Points (PSAP), by means of wireless communications, that a vehicle has crashed, and to provide coordinates, a defined Minimum Set of Data, and where possible a voice link to the PSAP'.

The objective of implementing the pan-European in-vehicle emergency call system (eCall) is to automate the notification of a traffic accident, wherever in the European Union and associated countries, with the same technical standards and the same quality of services objectives of other emergency (TS12) services.

Definition of the Minimum Set of Data, the communications media and means of transferring the data are not specified in this European Standard.

This European Standard specifies the generic operational requirements for the provision of an eCall service. The practical provision and operation of eCall service and equipment is dependent on the communications medium being available throughout the lifetime of equipment installed in vehicles.

NOTE The term PSAP, which is most widely used in the eCall documentation, European Commission documents etc., equates to the term emergency call response centre.

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 network access device referenced (but not defined) in this European Standard, but do not specifically directly refer to any of the application specification clauses defined herein.

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

This document is a preview generated by EVS

The holder of these patent rights has assured to CEN that he/she is willing to negotiate licenses under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holders of these patent rights are registered with CEN. Information may be obtained from:

Mr. Thomas R. Rouse

VP QTL Patent Counsel QUALCOMM Incorporated

5775 Morehouse Drive

San Diego, California 92121

Phone: +1-858-587-1121

Fax: +1-858-658-2503

Email: trouse@qualcomm.com

URL: www.qualcomm.com

Mr. Thomas W. Davis Jr. General Council AIRBIQUITY Incorporated

1011 Western Avenue, Suite 600

Seattle, Washington 98104

USA

Phone: +1.206.219.2700

Fax: +1.206.842.9259

Toll-Free:+1.888.334.7741

Email: tdavis@airbiquity.com

URL: www.airbiquity.com

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

This document is a preview generated by EVS

1 Scope

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 'Public Land Mobile Networks'(PLMN) (such as GSM and UMTS), which supports the European pre-assigned emergency destination address (see normative references) and to provide a means of manually triggering the notification of an incident.

This European Standard specifies the general operating requirements and intrinsic procedures for in-vehicle emergency call (eCall) services in order to transfer an emergency message from a vehicle to a Public Safety Answering Point (PSAP) in the event of a crash or emergency, via an eCall communication session and to establish a voice channel between the in-vehicle equipment and the PSAP.

Private third party in-vehicle emergency supporting services may also provide a similar eCall function by other means. The provision of such services are defined in EN 16102, and are outside the scope of this European Standard.

The communications protocols and methods for the transmission of the eCall message are not specified in this European Standard.

This European Standard specifies the operating requirements for an eCall service. An important part of the eCall service is a Minimum Set of Data (MSD). The operating requirements for the MSD are determined in this European Standard, but the form and data content of the MSD is not defined herein. A common European MSD is determined in EN 15722.

This European Standard does not specify whether eCall is provided using embedded equipment or other means (for example in the case of aftermarket equipment).Conformance

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 (MSD)*

EN 16062:2011, *Intelligent transport systems — eSafety — eCall high level application requirements (HLAP)*

EN ISO 24978:2009, *Intelligent transport systems — ITS Safety and emergency messages using any available wireless media — Data registry procedures (ISO 24978:2009)*

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

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)*

This document is a preview generated by EVS

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)*

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)*

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

3.3
association
data concept; structural relationship

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

3.6
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

3.7
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, *association*, state, event) considered to be indivisible in a particular context

3.8
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* notifying that there has been an incident that requires response from the

This document is a preview generated by EVS