SLOVENSKI STANDARD
oSIST prEN 16062:2010

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Inteligentni transportni sistemi - ESafety - Zahteve za visoko stopnjo prednosti aplikacijskega protokola elektronskega klica v sili (HLAP)

Intelligent transport systems - ESafety - ECall high level application requirements (HLAP)

Stransverkehrstelematik - Notruf - Anwendungsprotokolle

Systemes de transport intelligents - ECall - HLAP

Ta slovenski standard je istoveten z: **prEN 16062**

ICS:

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

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Intelligent transport systems - ESafety - ECall high level application requirements (HLAP)

Systemes de transport intelligents - ECall - HLAP

Stransverkehrstelematik - Notruf - Anwendungsprotokolle

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Foreword

This document (prEN 16062:2010) has been prepared by Technical Committee CEN/TC 278 “Road transport and traffic telematics”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

Normative references are made to eCall PEOR (WI00278220) which is in concurrent ballot and EN number will be added once assigned. TPS eCall OR (WI002744) will commence ballot shortly and EN number will be added once assigned, or it will be moved to Bibliography if publication stage reached before its approval.

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's (PSAP), by means of *mobile wireless communications networks* and carries a defined standardised *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 'Minimum set of Data' for eCall, and EN XXXXX specifies 'Pan European eCall- Operating requirements'. (for third party systems EN XXXXX specifies 'Third party services supporting eCall -Operating requirements').

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 'Public Safety Answering Points'.

1 Scope

In respect of 'Pan European' eCall (operating requirements defined in EN xxxxxxx Intelligent transport systems- eCall- Pan European eCall operating requirements), this European Standard 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.

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 mobile telecommunication network (e.g. GSM) which supports the European harmonised 112/E112 emergency number (TS12 ETSI TS 122 003) and to provide a means of manually triggering the notification of an emergency incident.

NOTE HLAP requirements for 'Third party services supporting eCall" are to be found in the deliverable. 'Third party services supporting eCall -Operating requirements', 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 Conformance

Conformance to this European Standard is achieved by conforming to the Requirements clauses of this European Standard specified in Clause 7 below, the test methods specified in Clause 11 of this European Standard.

NOTE Pan European eCall equipment providers, PLMNs and PSAPs that cannot support the eCall flag and MSD, as defined within this European Standard and EN 15722 cannot claim compliance to this European Standard.

Pan-European eCall system conformance testing ensures the full interoperability of its distributed elements, in an emergency context, to conform to Pan-European eCall service functional and operating requirements.

This Standard makes no conformance specifications or requirements in respect of TPS eCall Operating requirements, and conformance requirements in respect of TPS eCall are to be found in prEN 278244 (under development).

The first step enabling the interoperability of the Pan-European eCall system elements is to verify the conformity of each element to the relevant Pan-European eCall set of standards. In such cases, each element becomes a 'System Under Test' (SUT)which is tested against a reference conformance test system. Two levels of conformity have to be achieved:

— Conformity of the SUT to the network standards being used to achieve the end to end transport of information between the IVS and the PSAP and the establishment maintenance and termination of an audio link between both using the 112 emergency number (or dedicated test number).

— Conformity of the SUT to the high level application protocol as specified in this document and conformity to both EN 15 722 (MSD) and ENxxxxx (Pan-European eCall Operating Requirements).

A second step will be necessary to test in real conditions the interoperability between a given vehicle type and an operational PSAP. Such test shall be achieved without generating significant interference to an operational emergency system.

Both conformance testing and ongoing maintenance testing are specified in Clause 11 of this European Standard

The eCall system is composed of three distributed main subsystems to which shall be added some conformance test system as represented on Figure 1 below.

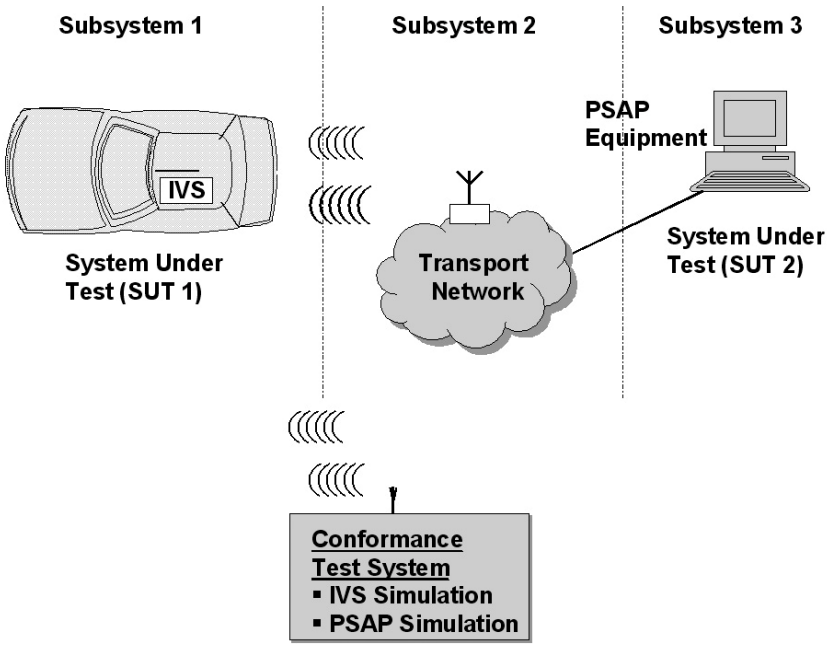

Figure 1: End-to-End eCall system extended with conformance test system

Clause 11 of this document provides the test and conformance requirements for both the IVS and the PSAP equipment. The only evolution of the transport network is the processing of eCall flags.

Consequently, at the transport network level, the conformance testing shall be simply achieved by verifying that the eCalls are correctly routed to relevant PSAPs designated to handle them according to their triggering sources (manual or automatic).

3 Normative references

The following referenced documents are indispensable for the application 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; Road transport and traffic telematics, eSafety, 'eCall' minimum set of data

prEN 278220[1]; Intelligent transport systems, eSafety, Pan European eCall – Operating requirements

prEN 278244[2]; Intelligent transport systems, eSafety, Third party support for eCall – Operating requirements

ETSI TS 122 101; TSG Services and system aspects: service aspects; service principles (Release 8)

ETSI TS 124 008; TSG core network and terminals: mobile radio interface layer 3 specification; core network protocols; stage 3 [Release 8]

ETSI TS 126 267;TSG services and system aspects; eCall data transfer – in-band modem solution; general description [Release 8]

ETSI TS 126 268;eCall data transfer – in-band modem solution; ANSI-C reference code [Release 8]

[1] Under development

[2] Under development

ETSI TS 126 269; eCall data transfer – in-band modem solution; conformance testing [Release 8]

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]

ETSI TS 122 011; Digital cellular telecommunications system (phase 2+); Universal mobile telecommunications system (UMTS); LTE; Service accessibility [Release 8]

ETSI TS 127 007; Digital cellular telecommunications system (phase 2+); Universal mobile telecommunications system (UMTS); AT command set for user equipment [Release 8]

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; 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]

ETSI TS 124 123; Universal Mobile Telecommunications System (UMTS);User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (3GPP TS 34.123-1 version 8.6.0 [Release 8]

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]

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]

ISO/IEC 9646; Information technology - Open Systems Interconnection - Conformance testing methodology and framework

4 Terms and definitions

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

4.1
112
single European emergency call number supporting Teleservice 12 (ETSI TS 122 003).

4.2
E112
emergency communications service using the single European emergency call number, 112, which is enhanced with location information of the calling user TS12

4.3
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

4.4
data
representations of static or dynamic objects in a formalized manner suitable for communication, interpretation, or processing by humans or by machines

4.5
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

4.6
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, *association*, state, event) considered to be indivisible in a particular context

4.7
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 standardised *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 *'Public Safety Answering Point'*

4.8
eCall generator
occupant of a vehicle or equipment within a vehicle that has cause to trigger an 'eCall' transaction by automatic or manual means

4.9
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

4.10
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

4.11
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*

4.12
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' *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*

4.13
in-vehicle equipment provider
provider of 'eCall' *in-vehicle equipment* which is given access to the relevant minimum set of data by the vehicle manufacturer for a vehicle in order to effect the 'eCall' service

NOTE the in-vehicle equipment provider may be the vehicle manufacturer or the provider of aftermarket equipment

4.14
in-vehicle system
in-vehicle equipment together with the means to trigger, manage and effect the eCall transaction

4.15
minimum set of data
standardised *data concept* comprising *data elements* of relevant vehicle generated data essential for the performance of the 'eCall' *service; as defined in EN 15722*

4.16
mobile wireless communications network
wireless communications network with homogeneous handover between network access points

4.17
mobile wireless communications network device
device providing communications to a *mobile wireless communications network* with homogeneous handover between *network access points*

4.18
most appropriate PSAP
PSAP defined beforehand by national authorities to cover emergency calls from a certain area or for emergency calls of a certain type. *See also PSAP*

NOTE A number of different instantiations of PSAP service are supported within this European Standard. A PSAP ay be a Public Authority or a private service provider operating under the control of a Public Authority

4.19
network access device (NAD)
see mobile wireless communications network device

4.20
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 a network access point may or may not provide homogeneous or heterogeneous handover to another network access point

4.21
public mobile wireless communications network
mobile wireless communications network with access to a public telecommunications network

4.22
'Public Safety Answering Point' (PSAP)
physical location where emergency calls are first received under the responsibility of a public authority or a private organisation recognised by the government. *See also 'most appropriate' PSAP*

NOTE A number of different instantiations of PSAP service are supported within this European Standard

4.23
service provider
physical and functional component responsible for providing telematics based services to its subscribers

4.24
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

4.25
vehicle occupant(s)
person(s) inside the vehicle

4.26
wireless communications network
network operating using an air-interface capable of bi-directional transfer of data and or voice

NOTE There are different types of wireless communications such as *PAN, LAN, cellular network* etc.

5 Symbols and abbreviations

3G	third generation mobile telecommunication system
ACK	positive 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
EGEA	expert group on emergency access

ETSI	European Telecommunications Standards Institute
GIS	geographic information system
GNSS	global navigation satellite system
GSM	global system for mobile communications
HGV	heavy goods vehicle
HLR	home location registry
HMI	human machine interface
HPLMN	Home 'Public Land Mobile Network'
IAM	immediate alert message
IMEI	international mobile equipment identity
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 emergency call
MSC	mobile switching centre
MNO	mobile network operator
MSISDN	Mobile subscriber ISDN (integrated services digital network)
MSD	minimum set of data (CEN 15722)
NACK	negative acknowledgement
NAD	network access device (e.g. a GSM or UMTS module)
telephone system	private automatic branch exchange
PAN	personal area network
PLMN	'Public Land Mobile Network'
PSAP	'Public Safety Answering Point'
SIM	subscriber identity module (GSM/3GPP)
TPS	third party service
TPSP	third party service provider`
TS (i)	technical specification
TS (ii)	teleservice
TS12	Teleservice 12 ETSI TS 122 003
UML	Unified Modeling Language (ISO 15901)
UMTS	universal mobile telecommunication system
USIM	user service identity module
WGS	world geodetic system
WGS 84	world geodetic system; issue 1984 (last revised 2004]

6 General overview of the eCall transaction

In the introduction to this document, eCall was described as "an emergency call generated either automatically via activation of in-vehicle sensors or manually by the vehicle occupants (the eCall generator); when activated, to provide notification and relevant location information to the most appropriate 'Public Safety Answering Points', by means of *mobile wireless communications networks* and carries a defined standardised *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 *'Public Safety Answering Point'* .

Pan European eCall effects this service using a 'Circuit Teleservice' supported by a 'Public Land Mobile Network' (PLMN) (Teleservice 12/TS12) ETSI TS 122 003.

NOTE Should the MSD not be sent or received for any reason then the eCall continues as a normal 112/E112 emergency call and is afforded the same protection and priority as a Teleservice 12 (ETSI TS 122 003) emergency voice call.

Figure 2 shows an illustrative view of the Pan European eCall Service, as defined in prEN 278220 (under development),

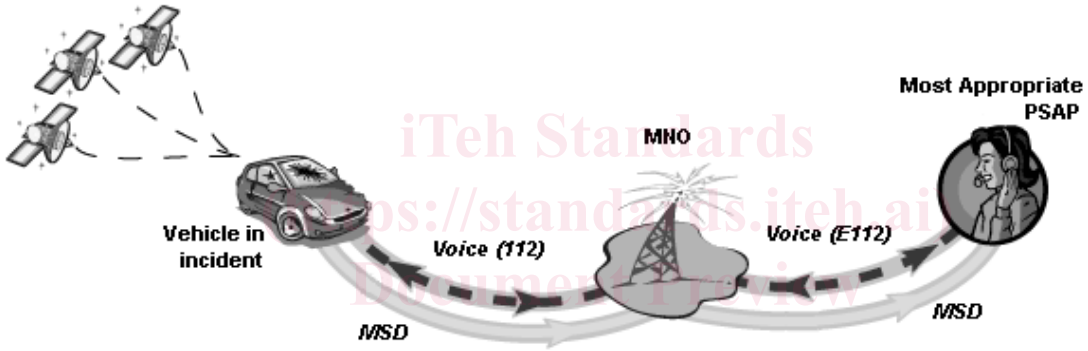

Figure 2: eCall overview

Figure 3 shows the relationship of the eCall process to European Standards.