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Intelligent transport systems - eSafety - eCall High level application Protocols (HLAP) using IMS packet switched networks

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National foreword

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Intelligente Verkehrssysteme - eSicherheit - Allgemeines eCall Anwendungsprotokoll (HLAP) unter Verwendung von IMS paketvermittelnden Netzwerken

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European foreword

This document (CEN/TS 17184:2018) has been prepared by Technical Committee CEN/TC 278 "Intelligent transport systems", the secretariat of which is held by NEN.

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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) and EN 16062 specifies High Level Application Protocols for eCall using GSM/UMTS.

The operating requirements for pan-European *eCall* are made using Public Land Mobile Networks (PLMN) (such as GSM and 3G, and latterly LTE/4G/E-UTRAN), 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 affect this service provision.

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.

Subsequent to the publication of the suite of eCall standards which support the eCall Regulations, EN 16072, EN 16062 and EN 16454, new communications technologies have become available. Over the course of time, these networks (such as LTE/4G and in turn their successors) are expected to complement and eventually replace the circuit switched GSM/UMTS networks. These technologies use so called 'packet switched' technologies using Internet protocols (IP). Particularly, 3GPP have evolved a communication management system called IMS (Internet protocol Multimedia System) which is suitable to operate over a number of bearer technologies, including LTE/ 4G/E-UTRAN.

In circuit switched networks the eCall is identified as an emergency call and specifically an eCall in the telecircuit switching (TS) process. The dialling number is not dialled as the TS identifiers inform the MNO that the call is an emergency call/eCall and the MNO has procedures to direct these calls to "the most appropriate" PSAP. Having established a voice channel, GSM/UMTS eCall then mutes microphones and speakers and uses a modem to transfer the Minimum Set of Data (MSD) to the PSAP before opening up the line to enable conversation between the PSAP operator and the occupants of the vehicle.

In a 'packet switched' network, packets of data (including voice) are sent through an internet protocol (IP) communication system, using SIP (Session Initiation Protocol) which is managed, most popularly using IMS.

This document provides High Level Application Protocols (HLAP) for eCall using IMS. It therefore provides the LTE/4G E-UTRAN equivalent of EN 16062 for GSM/UMTS and should be suitable for all/any packet switched networks that support IMS and LTE/ 4G/E-UTRAN wireless access.

This document specifies the protocols to put into effect the pan-European *eCall* operating requirements, and also identifies common elements that can be used in the link between third party services supporting *eCall* and PSAPs.

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, there is a default option to circuit switched eCall in the

specifications below which may involve the use of patents specified in EN 16062, and the reader is directed to EN 16062 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 high level application protocols, procedures and processes required to provide the *eCall service* via a packet switched wireless communications network using IMS (Internet protocol Multimedia System) and LTE/ 4G/E-UTRAN wireless access.

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 or IMS packet switched network) 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 are consistent in respect of the interface to the PSAP. This document 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 15722:2015, *Intelligent transport systems – ESafety - ECall minimum set of data*

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

EN 16072:2015, *Intelligent transport systems – ESafety - Pan-European eCall operating requirements*

EN 16102, *Intelligent transport systems – eCall - Operating requirements for third party support*

EN 16454, *Intelligent transport systems – ESafety - ECall end to end conformance testing*

CEN/TS 17240[1], *Intelligent transport systems - ESafety - ECall end to end conformance testing for IMS packet switched based systems*

ETSI TS 122 003, *Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Circuit Teleservices supported by a Public Land Mobile Network (PLMN) (3GPP TS 22.003)* [version 8.0.0, Release 8, and Release 14]

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]

ETSI TS 122 071, *Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Location Services (LCS); Service description; Stage 1 (3GPP TS 22.071)* [Release 14 or later]

ETSI TS 122 101, *Universal Mobile Telecommunications System (UMTS); LTE; Service aspects; Service principles (3GPP TS 22.101)* [Release 14 or later]

[1] Under preparation. Stage at the time of publication: FprCEN/TS 17240.