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Intelligent transport systems – eSafety – eCall via an ITS-station

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National foreword

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English Version

Intelligent transport systems - eSafety - eCall via an ITS-station

Systèmes de transport intelligents - ESafety - eCall via une station ITS

Intelligente Verkehrssysteme - eSicherheit - eCall über eine ITS-Station

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

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European foreword

This document (CEN/TS 17182:2018) 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

As a result of European Regulation, from 2018, all new model Class M1/N1 vehicles (3.13) will be equipped with112-eCall (3.1). Other model class M1/N1 vehicles may be voluntarily equipped with 112-eCall (3.1), and work is underway to provide the benefit of eCall to other classes of vehicle, including commercial vehicles (3.5), busses and coaches.

In the event of an incident, in-vehicle sensors will automatically trigger a 112-eCall (3.1), or it may be manually triggered by the vehicle occupants. A voice connection is established with the European emergency number 112 and routed to the most appropriate Public Safety Answering Point (3.15) (PSAP). As soon as the connection is established, in the case of a GSM/UMTS connection using circuit switched networks, a "Minimum set of data" (3.14) (as defined in EN 15722), providing information such as the time, location, vehicle VIN number, and driving direction, is sent as data via the voice channel. With the advent of packet switched, IP addressed, networks, a variant has been developed, that establishes an IMS connection (IMS supports IP multimedia applications (3.4) via IP multimedia sessions over a multitude of IP Connectivity Access Networks, such as E-UTRAN, UTRAN, GERAN, LAN, DOCSIS®, WiMAX™, cdma2000® and DVB-RCS2 access) in which the MSD is part of the SIP message header, so is already available to the PSAP as soon as the communication link is established.

The cooperative ITS (C-ITS) environment is one where ITS station units (ITS-SUs) (e.g. in vehicles, at the roadside,...) securely cooperate to exchange data with other ITS-SUs using wireless communications technologies. The C-ITS approach provides for hybrid communications (3.11), i.e. simultaneous availability of multiple wireless communications technologies. There is already provision for such networks at 5,8 GHz (widely already used for road tolling and soon to be used for tachograph monitoring and weigh in motion monitoring), 5,9 GHz for road safety applications (3.4), and of course the packet switched cellular networks mentioned above. In the future, 60 GHz and other wireless networks may be employed.

The key to managing these cooperative systems is an ITS station and communications architecture which enables operation of ITS applications (3.4) in a managed, secure, and prioritized way. This is support of a functionality rather than a specification of a single black box, and may be achieved in different ways within e.g. vehicle ITS-SUs. The common functionality is defined in ISO 21217:2014 (Intelligent transport systems – Communications access for land mobiles (CALM) – Architecture) whose abstract defines *"ISO 21217:2014 describes the communications reference architecture of nodes called "ITS station units" designed for deployment in intelligent transport systems (ITS) communication networks. The ITS station reference architecture is described in an abstract way. While ISO 21217:2014 describes a number of ITS station elements, whether or not a particular element is implemented in an ITS station unit depends on the specific communication requirements of the implementation.*

ISO 21217:2014 also describes the various communication modes for peer-to-peer communications over various networks between ITS communication nodes. These nodes may be ITS station units as described in ISO 21217:2014 or any other reachable nodes.

ISO 21217:2014 also specifies the minimum set of normative requirements for a physical instantiation of the ITS station based on the principles of a bounded secured managed domain."

Within vehicles equipped to support this context, it is appropriate to consider eCall as a priority ITS application (3.4) that can use this in-vehicle functionality, rather than duplicate the in-vehicle equipment.

This Technical Specification provides the specifications enabling 112-eCall (3.1) to function via an ISO 21217 complaint "ITS-station unit". (ITS-SU).

1 Scope

In respect of 112-eCall (3.1) (operating requirements defined in EN 16072:2015), this Technical Specification defines the high level application protocols (3.10), procedures and processes required to provide the eCall service via an ISO 21217 compliant "ITS station unit"

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 'Public Land Mobile Network' (PLMN) (such as ETSI prime medium) which supports the European harmonized 112/E112 emergency number and to provide a means of manually triggering the notification of an emergency incident.

NOTE 2 Requirements for third party services supporting eCall can be found in EN 16102 [6], and have been developed in conjunction with the development of EN 16072:2015 and EN 16072:2015, and are consistent in respect of the interface to the PSAP. This technical specification applies only to 112-eCall (3.1) service provision and makes no specifications in respect of third party eCall service provision, and the reader is referred to EN 16102 [6] for any third party eCall specifications.

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.

CEN/TS 17184:2018, *Intelligent transport systems — eSafety — eCall high level application Protocols (HLAP) using IMS packet switched networks*

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

EN 15722:2015, *Intelligent transport systems — ESafety — ECall minimum set of data*

EN 16062:2015, *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 16454:2015, *Intelligent transport systems — ESafety — ECall end to end conformance testing*

EN ISO 17419:2018, *Intelligent transport systems — Cooperative systems — Globally unique identification (ISO 17419)*

EN ISO 17423:2018, *Intelligent transport systems — Cooperative systems — Application requirements and objectives (ISO 17423)*

CEN ISO/TS 21176, *Intelligent transport systems — Cooperative ITS — Position, velocity and time functionality in the ITS station*

ISO/TS 16460:2016, *Intelligent transport systems — Communications access for land mobiles (CALM) — Communication protocol messages for global usage*

[1] Under preparation. Stage at the time of publication: FprCEN/TS 17240:2018.