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Intelligent transport systems — Evolved-universal terrestrial radio access network —

Part 3: **LTE-V2X**

Systèmes intelligents de transport) — Réseau d'accès à la radio terrestre universelle évoluée (E-UTRAN) —

Partie 3: LTE-V2X

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

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Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Localized communications are an essential component of hybrid communications in Intelligent Transport Systems (ITS). Various access technologies are suited for localized communications. An increasing interest of ITS stakeholders for "Cooperative ITS" and "Urban ITS" is in the access technology known under the acronym of LTE. LTE refers to a packet switched cellular network technology specified by 3GPP. Beside the "traditional" features of cellular networks, LTE also supports device-to-device communications, e.g. for public safety applications, and vehicle-to-everything communications (LTE-V2X) especially designed for ITS.

This document provides complements to LTE-V2X specifications from 3GPP needed to operate it as an ITS access technology in an ITS station unit specified in ISO 21217. An implementation of this document is referred to as an ITS-LTE-V2X communication interface (CI).

ITS-LTE-V2X CIs are able to

— operate with support of an LTE base station, and

— operate without support of an LTE base station, e.g. outside LTE coverage areas

as specified by 3GPP.

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Intelligent transport systems — Evolved-universal terrestrial radio access network —

Part 3: LTE-V2X

1 Scope

This document provides specifications related to the ITS-S access layer for a communication interface (CI) named "ITS-LTE-V2X".

ITS-LTE-V2X CIs are based on the evolved-universal terrestrial radio access (E-UTRA) vehicle-to-everything (LTE-V2X) technology standardized at 3GPP.

This document enables usage of the LTE-V2X technology as an ITS access technology in an ITS station by reference to respective specifications from 3GPP, and by specifying details of the “Communication Adaptation Layer” (CAL) and the “Management Adaptation Entity” (MAE) of communication interfaces specified in ISO 21218.

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.

ISO/IEC 8824-1:2015, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation — Part 1*

ISO/IEC 8825-2:2015, *Information technology — ASN.1 encoding rules: Specification of Packed Encoding Rules (PER) — Part 2*

ISO 21217, *Intelligent transport systems — Communications access for land mobiles (CALM) — Architecture*

ISO 21218, *Intelligent transport systems — Hybrid communications — Access technology support*

ISO 24102-1, *Intelligent transport systems — ITS station management — Part 1: Local management*

ISO 24102-3,*Intelligent Transport Systems — ITS station management — Part 3: Service access points*

3GPP TS 23.285, *3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Architecture enhancements for V2X services (Release 14)*

3GPP TS 24.334, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Proximity-services (ProSe) User Equipment (UE) to ProSe function protocol aspects; Stage 3 (Release 14)*

3GPP TS 24.386, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; User Equipment (UE) to V2X control function; protocol aspects; Stage 3 (Release 14)*

3GPP TS 36.300, *3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2 (Release 14)*

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3GPP TS 36.331, *3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification (Release 14)*

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 https://www.iso.org/obp

3.1
layer-2 ID
identifier at the OSI layer 2 functionally similar to an IEEE 802 MAC address

3.2
V2X application server
server hosting ITS applications within the LTE networks as specified by 3GPP

4 Symbols and abbreviated terms

CI	Communication Interface [SOURCE: ISO 21217]
eNB	Evolved Node B (Fixed station of a mobile network that directly interacts with UEs); generally called a "cell tower"
E-UTRA	Evolved Universal Terrestrial Radio Access
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
ITS-SU	ITS station unit [SOURCE: ISO 21217]
LGW	Local Gateway
LTE	Long Term Evolution
LTE-D2D	LTE Device-to-Device
LTE-V2X	LTE Vehicle-to-Everything communication
ITS-LTE-V2X	Name of the communication interface specified in this document
eMBMS	Evolved Multimedia Broadcast Multicast Service
MBMS	Multimedia Broadcast Multicast Service
n.a.	not applicable
PC5	ProSe communication 5
PDN GW	Packet Data Network Gateway
PPPP	ProSe Per-Packet Priority

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