Technical Report

ISO/TR 17716

Road vehicles — Electrical disturbances from narrowband radiated electromagnetic energy — Radiated immunity for V2X

Véhicules routiers — Perturbations électriques dues à l'énergie électromagnétique rayonnée en bande étroite — Immunité rayonnée pour V2X

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Foreword

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

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Introduction

V2X (Vehicle-to-Everything), including DSRC (Dedicated Short-Range Communication) and C-V2X (Cellular Vehicle-to-Everything), is one of the technologies applied in vehicles supporting automated driving.

Dealing with immunity of components and vehicles equipped with V2X communication, can help to avoid unreasonable degradation of automated driving from electromagnetic interference. When considering simulating V2X operation during an immunity test, this can prove to be difficult.

The purpose of this document is to describe the background of V2X operating conditions and information on the V2X simulation in the laboratory during the immunity test.

Due to the complexity of the vehicles and the conditions in an EMC chamber, some tests may only be possible with significant modifications of vehicle or vehicle systems under test or EMC chamber.

This type of testing is very complex on complete vehicle level and is therefore not readily applied as a formal technical requirement with a straightforward pass/fail verdict. For that reason, this document is created as a guidance technical report when performing quality assurance work.

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Road vehicles — Electrical disturbances from narrowband radiated electromagnetic energy — Radiated immunity for V2X

1 Scope

This document describes the introduction of radiated immunity testing for the components and vehicles equipped with V2X communications. The link communication connection and V2X scenario simulation are considered to make the V2X functions and their communications operate normally during the immunity testing. Examples of monitoring are also discussed to show the electromagnetic interference reactions of the device with V2X under test. In addition, test hints are described to provide information on radiated immunity for V2X. Technical specifications are not within the scope of this document.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 General

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.2 Abbreviated terms

For the purposes of the present document, the following abbreviations apply:

ALSE	Absorber Lined Shielded Enclosure
BSM	Basic Safety Message
BSS	Basic Service Set
CAL	Communication Adaptation Layer
C-V2X	Cellular Vehicle-to-Everything
C2C	Car-to-Car
C2I	Car-to-Infrastructure
C2P	Car-to-Pedestrian
C2N	Car-to-Network
DCC	Distributed Congestion Control

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