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Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy —

Part 4: Harness excitation methods

Véhicules routiers — Méthodes d'essai d'un équipement soumis à des perturbations électriques par rayonnement d'énergie électromagnétique en bande étroite —

Partie 4: Méthodes d'excitation des faisceaux

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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 22, *Road vehicles,* Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

This fifth edition cancels and replaces the fourth edition (ISO 11452-4:2011), which has been technically revised. The main changes compared to the previous edition are as follows:

— extension of the frequency range for BCI test method down to 100 kHz;

— introduction to reference to additional artificial networks (HV-AN, AMN, AAN) for DUT powered by a shielded power system;

— precisions for ground plane dimensions;

— addition of test set-up descriptions and Figures for DUT powered by a shielded power system;

— precisions for DUT with multiple connectors; and

— suppression of Annex C relative to artificial networks which are now defined in ISO 11452-1.

A list of all parts in the ISO 11452 series can be found on the ISO website.

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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Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy —

Part 4: Harness excitation methods

1 Scope

This document specifies harness excitation test methods and procedures for determining the immunity of electronic components of passenger cars and commercial vehicles regardless of the propulsion system (e.g. spark-ignition engine, diesel engine, electric motor).

The bulk current injection (BCI) test method is based on current injection into the wiring harness using a current probe as a transformer where the harness forms the secondary winding.

The tubular wave coupler (TWC) test method is based on a wave coupling into the wiring harness using the directional coupler principle. The TWC test method was developed for immunity testing of automotive components with respect to radiated disturbances in the GHz ranges (GSM bands, UMTS, ISM 2,4 GHz). It is best suited to small (with respect to wavelength) and shielded device under test (DUT), since in these cases the dominating coupling mechanism is via the harness.

The electromagnetic disturbances considered in this document are limited to continuous narrowband electromagnetic fields.

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 11452-1:2015, *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 1: General principles and terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11452-1 apply.

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

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

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

4 Test conditions

The applicable frequency ranges of the BCI and the TWC test methods are direct functions of the transducer characteristics (current probe or tubular wave coupler). More than one type of transducer may be required.

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