



International
Standard

ISO 11452-1

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

**Part 1:
General principles and terminology**

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

Partie 1: Principes généraux et terminologie

**Fifth edition
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CP 401 • Ch. de Blandonnet 8

CH-1214 Vernier, Geneva

Phone: +41 22 749 01 11

Email: copyright@iso.org

Website: www.iso.org

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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*.

This fifth edition cancels and replaces the fourth edition (ISO 11452-1:2015), which has been technically revised.

The main changes are as follows:

- update of the frequency ranges in [Table 1](#);
- update on modulations (type and frequency range);
- technical revision of [Annex B](#);
- new [Annex E](#) on broadband test signal generation;
- new [Annex F](#) on remote/local grounding;
- new [Annex G](#) on evaluation of test instrumentation uncertainties.

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

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Introduction

In recent years, an increasing number of electronic devices for controlling, monitoring, and displaying a variety of functions have been introduced into vehicle designs. It is necessary to consider the electrical and electromagnetic environment in which these devices operate.

Electrical and radio-frequency (RF) disturbances occur during normal operation of many items of motor vehicle equipment. They are generated over a wide frequency range with various electrical characteristics and can be distributed to on-board electronic devices and systems by conduction, radiation, or both. Narrowband signals generated from sources on or off the vehicle can also be coupled into the electrical or electronic system, affecting the normal performance of electronic devices. Such sources of narrowband electromagnetic disturbances include mobile radios and broadcast transmitters.

It is important to establish the characteristics of the immunity of components to radiated disturbances. The ISO 11452 series provides various test methods for the evaluation of component immunity characteristics. Not all test methods need to be used for a given device under test (DUT). For example, stripline and transverse electromagnetic (TEM) cell test methods provide very similar exposure to the DUT. Only those tests necessary for replicating the use and mounting location of the DUT are included in the test plan. This will help to ensure a technically and economically optimized design for potentially susceptible components and systems.

The ISO 11452 series is not intended as a product specification and cannot function as one (see [A.1](#)). Therefore, no specific values for the test severity level are given.

It is important to consider protection from potential disturbances as a part of total vehicle validation as described in the ISO 11452 series, which covers vehicle test methods. A component test method described in the ISO 11452 series is performed prior to vehicle test. Due to the vehicle's shape, harness and component location diversities, conformity to parts of the ISO 11452 series does not guarantee conformity to parts of the ISO 11451 series. Nevertheless, the ISO 11452 series component tests are essential for giving a sufficient level of confidence before integration on vehicle(s).

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