



**International  
Standard**

**ISO 11451-2**

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

**Part 2:  
Off-vehicle radiation sources**

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

*Partie 2: Sources de rayonnement hors du véhicule*

**Fifth edition  
2025-06**



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CP 401 • Ch. de Blandonnet 8

CH-1214 Vernier, Geneva

Phone: +41 22 749 01 11

Email: [copyright@iso.org](mailto:copyright@iso.org)

Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

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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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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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](http://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 11451-2:2015) which has been technically revised.

The main changes are as follows:

- test setup in charging mode has been upgraded according to state-of-the-art and the wireless power transfer (WPT) charging mode has been added;
- calibration: 4-probe calibration applies now in transmission line system (TLS) and for antennas up to 6 GHz;
- field uniformity has been modified up to 6 GHz by adding one position 1 m in front of the reference line and changing the calculation (the average of 4-probe measurement up to 6 GHz);
- precision about testing the vehicle with other orientation than front illumination has been added;
- new [Annex B](#) giving an evaluation of test instrumentation uncertainty with associated ballot has been added;
- new [Annex C](#) presenting testing with multiple signals has been added;
- new [Annex D](#) presenting guidelines for testing large vehicles has been added.

A list of all parts in the ISO 11451 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](http://www.iso.org/members.html).

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

## Part 2: Off-vehicle radiation sources

### 1 Scope

This document specifies a method for testing the immunity of passenger cars and commercial vehicles to electrical disturbances from off-vehicle radiation sources, regardless of the vehicle propulsion system (e.g. spark ignition engine, diesel engine, electric motor).

The electromagnetic disturbances considered are limited to continuous narrowband electromagnetic fields.

While this document refers specifically to passenger cars and commercial vehicles, generalized as “vehicle(s)”, it can readily be applied to other types of vehicles.

ISO 11451-1 specifies general test conditions, definitions, practical use, and basic principles of the test procedure.

Function performance status classification guidelines for immunity to electromagnetic radiation from an off-vehicle radiation source are given in [Annex A](#).

### 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 11451-1:2025, *Road vehicles — Vehicle 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 11451-1 and the following apply.

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/>

#### 3.1

##### large vehicle

vehicle which is longer than 12 m and/or wider than 2,6 m and/or higher than 4 m

#### 3.2

##### reference point centre

##### RPC

point located at the middle of the segment joining the middle of the front bumper to the middle of the rear bumper of the vehicle