

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

COMITÉ INTERNATIONAL SPÉCIAL DES PERTURBATIONS RADIOÉLECTRIQUES

**Electric and hybrid electric road vehicles – Radio disturbance characteristics –  
Limits and methods of measurement for the protection of off-board receivers  
below 30 MHz**

**Véhicules routiers électriques et hybrides électriques – Caractéristiques de  
perturbations radioélectriques – Limites et méthodes de mesure pour la  
protection des récepteurs extérieurs en dessous de 30 MHz**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

**ELECTRIC AND HYBRID ELECTRIC ROAD VEHICLES –  
RADIO DISTURBANCE CHARACTERISTICS –  
LIMITS AND METHODS OF MEASUREMENT FOR  
THE PROTECTION OF OFF-BOARD RECEIVERS BELOW 30 MHz**

## FOREWORD

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International Standard CISPR 36 has been prepared by CISPR subcommittee D: Electromagnetic disturbances related to electric/electronic equipment on vehicles and internal combustion engine powered devices.

The text of this International Standard is based on the following documents:

CDV	Report on voting
CISPR/D/462/CDV	CISPR/D/464A/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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## INTRODUCTION

There is a specific need for documents to define acceptable low frequency performance of all electrical/electronic products. CISPR 36 has been developed to serve the electric and hybrid electric road vehicle and related industries with test methods and limits that provide satisfactory protection for radio reception.

Compliance with this document is sometimes insufficient for the protection of receivers used in the residential environment nearer than 10 m to the vehicle. It also sometimes does not provide sufficient protection for new types of radio transmissions.

# **ELECTRIC AND HYBRID ELECTRIC ROAD VEHICLES – RADIO DISTURBANCE CHARACTERISTICS – LIMITS AND METHODS OF MEASUREMENT FOR THE PROTECTION OF OFF-BOARD RECEIVERS BELOW 30 MHz**

## **1 Scope**

This document defines limits for 3 m measurement distance and methods of measurement that are designed to provide protection for off-board receivers (at 10 m distance) in the frequency range of 150 kHz to 30 MHz when used in the residential environment.

NOTE Protection of receivers used on board the same vehicle as the disturbance source(s) is covered by CISPR 25.

This document applies to the emission of electromagnetic energy which might cause interference to radio reception and which is emitted from electric and hybrid electric vehicles propelled by an internal traction battery (see 3.2 and 3.3) when operated on the road.

This document applies to vehicles that have a traction battery voltage between 100 V and 1 000 V.

Electric vehicles to which CISPR 14-1 applies are not in the scope of this document.

This document applies only to road vehicles where an electric propulsion is used for sustained speed of more than 6 km/h.

Vehicles where the electric motor is only used to start up the internal combustion engine (e.g. "micro hybrid") and vehicles where the electric motor is used for additional propulsion only during acceleration (e.g. "48 V mild hybrid vehicles") are not in the scope of this document.

The radiated emission requirements in this document are not applicable to the intentional transmissions from a radio transmitter as defined by the ITU including their spurious emissions.

Annex C lists work being considered for future revisions.

## **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.

CISPR 16-1-1:2015, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus*

CISPR 16-1-4:2019, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-4: Radio disturbance and immunity measuring apparatus – Antennas and test sites for radiated disturbance measurements*

CISPR 16-2-3:2016, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements*

CISPR 16-2-3:2016/AMD1:2019