

---

---

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

**Part 8:  
Immunity to magnetic fields**

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

*Partie 8: Méthodes d'immunité aux champs magnétiques*



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword.....	iv
1 Scope .....	1
2 Normative references .....	1
3 Test conditions .....	1
3.1 General.....	1
3.2 Frequency step sizes.....	2
4 Test location.....	2
5 Test apparatus description and specification .....	2
5.1 General.....	2
5.2 Field generating device.....	3
5.3 Current monitor.....	4
5.4 Magnetic field intensity monitor.....	4
5.5 Stimulation and monitoring of the DUT.....	4
6 Test set-up.....	5
6.1 General.....	5
6.2 Power supply.....	5
6.3 Location of the test harness.....	5
6.4 Radiating loop method.....	5
6.5 Helmholtz coil method.....	6
7 Test procedure .....	8
7.1 General.....	8
7.2 Test plan .....	8
7.3 Test method.....	9
7.4 Test report .....	13
Annex A (informative) Function performance status classification (FPSC) and test severity levels.....	14
Bibliography .....	17

## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 11452-8 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 11452 consists of the following parts, under the general title *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy*:

- *Part 1: General principles and terminology*
- *Part 2: Absorber-lined shielded enclosure*
- *Part 3: Transverse electromagnetic mode (TEM) cell*
- *Part 4: Bulk current injection (BCI)*
- *Part 5: Stripline*
- *Part 7: Direct radio frequency (RF) power injection*
- *Part 8: Immunity to magnetic fields*

The following parts are under preparation:

- *Part 9: Portable transmitters*
- *Part 10: Conducted immunity in the extended audio frequency range*
- *Part 11: Radiated immunity test method using a reverberation chamber*

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

## Part 8: Immunity to magnetic fields

### 1 Scope

This part of ISO 11452 specifies tests for the electromagnetic immunity of electronic components for passenger cars and commercial vehicles, regardless of the propulsion system (e.g. spark-ignition engine, diesel engine, electric motor), to magnetic fields generated by power transmission lines and generating stations and some powerful electrical equipment, such as motors. To perform this test, the device under test (DUT) is exposed to a magnetic disturbance field.

The radiating loop method can be applied to small DUTs or to larger DUTs by positioning the coil in multiple locations.

The Helmholtz coil is sometimes used as an alternative method. This technique is limited by the relationship between the size of the DUT and the size of the coils.

The electromagnetic disturbances considered in this part of ISO 11452 are limited to continuous narrowband electromagnetic fields.

Immunity measurements of complete vehicles can generally only be carried out by the vehicle manufacturer for reasons including the high cost of an absorber-lined shielded enclosure preserving the secrecy of prototypes or the large number of different vehicle models. Consequently, for research, development and quality control, a laboratory measuring method is used by the vehicle manufacturer and equipment suppliers to test electronic components.

ISO 11452-1 specifies general test conditions, definitions, practical use and basic principles of the test procedure.

### 2 Normative references

The following referenced documents are indispensable for the application 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, *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 1: General principles and terminology*

### 3 Test conditions

#### 3.1 General

The applicable frequency range of this test method is 15 Hz to 150 kHz.