

Wegvoertuigen. Elektrische storingen door elektromagnetische energie uitgestraald in een smalle band. Beproevingmethoden voor onderdelen. Deel 3: Cel met transversaal-elektromagnetische modus (TEM-modus) (ISO 11452-3:1995)

Road vehicles. Electrical disturbances by narrowband radiated electromagnetic energy. Component test methods. Part 3: Transverse electromagnetic mode (TEM) cell (ISO 11452-3:1995)

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

**Part 3:
Transverse electromagnetic (TEM) cell**

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

Partie 3: Cellule à mode électromagnétique transverse (TEM)



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Preview
 11452-3:2001

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 3.

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 part of ISO 11452 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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

This second edition cancels and replaces the first edition (ISO 11452-3:1995), which has been technically revised.

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 and definitions*
- *Part 2: Absorber-lined shielded enclosure*
- *Part 3: Transverse electromagnetic (TEM) cell*
- *Part 4: Bulk current injection (BCI)*
- *Part 5: Stripline*
- *Part 6: Parallel plate antenna*
- *Part 7: Direct radio frequency (RF) power injection*

Annexes A to D of this part of ISO 11452 are for information only.

Introduction

Immunity measurements of complete road vehicles are generally able to be carried out only by the vehicle manufacturer, owing to, for example, high costs of absorber-lined shielded enclosures, the desire to preserve the secrecy of prototypes or a large number of different vehicle models.

For research, development and quality control, a laboratory measuring method can be used by both vehicle manufacturers and equipment suppliers to test electronic components.

The TEM-cell method has the major advantage of not radiating energy into the surrounding environment. The method can be used for testing either the immunity of a component with the field coupling to the wiring harness or the immunity of the component alone with minimum exposure to the wiring harness.

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

Part 3: Transverse electromagnetic (TEM) cell

1 Scope

This part of ISO 11452 specifies transverse electromagnetic (TEM) cell tests for determining the immunity of electronic components of passenger cars and commercial vehicles to electrical disturbances from narrowband radiated electromagnetic energy, 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.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 11452. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11452 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 11452-1, *Road vehicles — Component test methods for electrical disturbances by narrowband radiated electromagnetic energy — Part 1: General and definitions*.

3 Terms and definitions

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

4 Test conditions

The upper frequency range limit of the TEM cell is a direct function of the TEM cell dimensions.

For testing automotive electronic systems, a 0,01 MHz to 200 MHz TEM cell should be used. See annex A for suggested cell dimensions.

The user shall specify the test severity level or levels over the frequency range. See annex D for suggested test severity levels.

Standard test conditions shall be those given in ISO 11452-1 for the following:

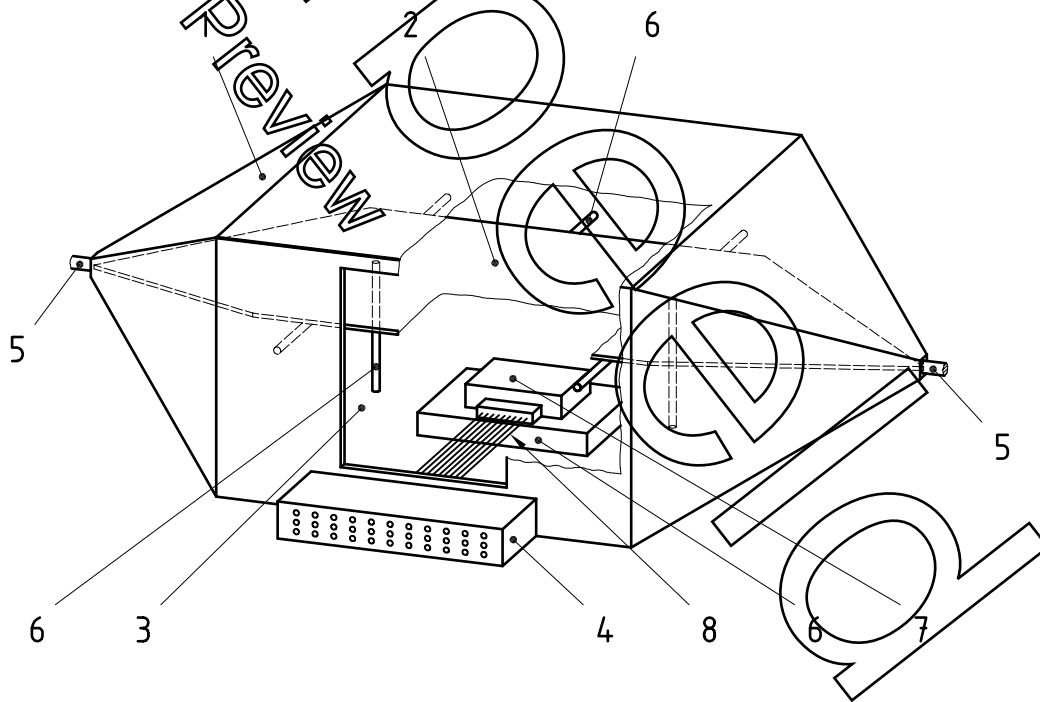
- test temperature;
- supply voltage;
- modulation;
- dwell time;
- frequency/step sizes;
- definition of test severity levels;
- test-signal quality.

5 Test apparatus

5.1 TEM cell

The TEM cell used for this test is a rectangular coaxial line with a 50 Ω characteristic impedance (see Figure 1). The device under test is exposed to a uniform TEM field.

The TEM cell is a laboratory measurement system which can be used to generate test fields within 2 dB of the theoretical value if the device under test does not occupy an excessive portion of the test volume (see 5.3).



Key

- | | | | |
|---|----------------------------|---|---|
| 1 | Outer conductor (shield) | 5 | Coaxial connectors |
| 2 | Septum (inner conductor) | 6 | Dielectric support (relative permittivity $\epsilon_r \leq 1,4$) |
| 3 | Access door | 7 | Device under test |
| 4 | Connector panel (optional) | 8 | Input/output leads |

Figure 1 — TEM cell

Bestelformulier

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