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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 33014.3-2016

**Road vehicles -- Component test methods for electrical/electronic
disturbances from narrowband radiated electromagnetic energy -- Part
3: Transverse electromagnetic (TEM) cell**

道路车辆 电气电子部件对窄带辐射电磁能的抗扰性试验方法 第3部分：横电磁波
(TEM) 小室法

(English Translation)

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Foreword

GB/T 33014 "Road vehicles - Component test methods for electrical/electronic disturbances from narrowband radiated electromagnetic energy" consists of the following parts.

- Part 1.General;
- Part 2.Absorber-lined shielded enclosure;
- Part 3.Transverse electromagnetic (TEM) cell;
- Part 4.Bulk current injection (BCI);
- Part 5.Stripline;
- Part 7.Direct radio frequency (RF) power injection;
- Part 8.Magnetic field immunity;
- Part 9.Portable transmitter simulation;
- Part 10.Conduction immunity method for extended audio range;
- Part 11.Reverberation chamber.

This Part is Part 3 of GB/T33014.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part uses the re-drafting method to modify and adopt ISO 11452-3:2001 "Road vehicles - Component test methods for electrical disturbances from narrowband

radiated electromagnetic energy - Part 2. Transverse electromagnetic (TEM) cell".

The technical differences between this Part and ISO 11452-3:2001 are as follows.

- PREPARE Clause 1 according to the provisions of GB/T 1.1-2009;
- REPLACE the reference standard ISO 11452-1 WITH GB/T 33014.1 modifying and adopting ISO 11452-1;
- The artificial network in Annex C of the original international standard references CISPR25, which is modified to the equivalent GB/T 33014.2. At the same time add GB/T 33014.2 in the normative references;
- For consistency in understanding and presentation with Part 1, I, II, III, IV, V of Table C.1 are changed to L1, L2, etc., and I, II, III, etc. are understood as state I, II, III, etc.;
- Equation (B.1) in the original international standard is wrong, which is amended in this Part.

The following editorial changes have been made in this Part.

- DELETE the foreword, introduction and bibliography of the original international standard.

This Part is proposed by Ministry of Industry and Information Technology of the People's Republic of China.

This Part is under the jurisdiction of National Technical Committee of Auto Standardization (SAC/TC 114).

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Road vehicles - Component test methods for
electrical/electronic disturbances from narrowband
radiated electromagnetic energy - Part 3. Transverse
electromagnetic (TEM) cell

1 Scope

This Part of GB/T 33014 specifies the immunity test for electrical/electronic components to continuous electrical disturbances from narrowband radiated electromagnetic energy - transverse electromagnetic (TEM) cell.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the dated edition cited applies. For undated references, the latest edition of the referenced document (including all amendments) applies.

GB/T 33014.1 Road vehicles - Component test methods for electrical/electronic disturbances from narrowband radiated electromagnetic energy - Part 1. General (GB/T 33014.1-2016, ISO 11452-1:2005, MOD)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 33014.1 apply.

4 Test conditions

For transverse electromagnetic (TEM) cell, the useful frequency range is 0.01 MHz to

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

TEM cell dimensions. See annex A for suggested cell dimensions.

5 Test apparatus and instrumentation

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

The shield shall be in electrical contact with the cell floor, but shall not be in contact with the case of the DUT.

6 Test

Prior to performing the test, a test plan shall be generated which shall cover the following.

Make a net, or output, power (see Figure 2) measurement and calculate the electric field using equation 1.

As required by the test plan, a test report shall be submitted detailing information on the test equipment used, systems tested, frequencies, power levels, system interactions and other relevant information regarding the test.

Annex A

(informative)

TEM cell dimensions

The dimensions of a typical TEM cell are shown in Figure A.1 and given in Table A.1.

Dimensions in millimetres

Annex B

(informative)

Calculations and measurements of TEM-cell frequency range

The useful frequency range for each TEM cell and its test set-up can be determined by one of two methods using instrumentation (e.g. a network analyzer).