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GB/T 18387-2008

Replace GB/T 18387-2001

**Limits and Test Method of Magnetic and Electric
Field Strength from Electric Vehicles, Broadband, 9
kHz to 30 MHz**

**电动车辆的电磁场发射强度的限值和测量方法，宽带，9kHz
- 30MHz**

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Contents

FOREWORD	I
1. Scope	5
2. Normative References	5
3. Terms and Definitions	5
4. Limits of Disturbance	5
5. Method of Measurement	7
5.1 Measuring instrument requirements	7
5.2 Measuring location requirements for radiated emissions	8
5.3 Measuring location requirements for conducted emissions	8
5.4 Pre-scan process	8
5.5 Measurements of vehicle	9
5.6 Measurement of battery-charging systems mounted on the vehicle	10
Annex A (Normative) Rod Antenna Calibration – The Equivalent Capacitance Substitution Method	11
Annex B (Informative) Notes on Conversion of Limits for the Change of Measurement Distance from 10 m to 3 m	14

FOREWORD

This Standard is developed by following, with modifications to, the standard of Society of Automotive Engineers – SAE J551-5 JAN 2004 “Performance levels and methods of measurement of magnetic and electric field strength from electric vehicles”. As compared with SAE J551-5 JAN 2004, this Standard presents the main technical differences and their reasons as follows:

- In Section 2 “Normative References”, this Standard cites GB/T 4365 instead of SAE J551-1 (with regard to terms and definitions), and cites GB/T 14023 instead of SAE J551-2 (containing the identical specifications, both of them are interchangeable); and the following publications merely taken as reference are written off: “Federal Regulation No. 47 of the United States – Communications; Part 15 – Radio frequency equipment; and “IEEE std. 291”.
- In Paragraph 4.2 “Conducted emissions”, the limit for non-commercial areas (i.e., 250 μ V) is removed. That is, the limit is unified, without regard to commercial or non-commercial areas.
- This Standard inserts a new Annex A “Rod antenna calibration – The equivalent capacitance substitution method”. Derived from the version 2001 of this Standard, such an annex is intended for guiding the accuracy of measurement, running consistent with Annex A to SAE J551-5 Dec 1997.

Also, difference exists in the arrangement of sections when compared with SAE J551-5 JAN 2004:

- This Standard combines Sections 6, 7 and 8 under SAE J551-5 JAN 2004 (with regard to procedures of measurement) and inserts them in Section 5 of this Standard, corresponding to Paragraphs 5.4, 5.5, and 5.6, respectively.
- A new Annex A is inserted in this Standard.
- Annex B of this Standard corresponds to Annex A to SAE J551-5 JAN 2004.

This Standard sets out the limits and measurement methods of magnetic and electric field strength from electric vehicles over the frequency range of 9 kHz ~ 30 MHz, remaining concerted with GB 14023 “Limits and methods of measurement of radio interference characteristics of vehicles, motorboats and spark ignition engine-driven devices”, which applies to the frequency range of 30MHz ~ 1,000 MHz.

This Standard supersedes its previous version, i.e., GB/T 18387-2001 “Performance levels and methods of measurement of magnetic and electric field strength from electric vehicles, broadband, 9 kHz to 30 MHz”. As compared to the previous version, this version involves such main changes as follows:

- In Section 1, further clarifying the applicable scope of this Standard;
- In Section 2, adding the references: GB 9254, ANSI C63.4, and ANSI C63.12;
- In Section 4, largely modifying the disturbance limits for radiated emissions (comparison of Figures 1 & 2 of this version against Figures 1 & 2 of the previous version); and, in Paragraph 4.2, newly inserting the limits of conducted emissions for battery-charging systems mounted on the vehicle (see Table 3);
- In Section 5, the distance for measurement of magnetic field specified in Paragraph 5.2 is changed from 1 m \pm 0.2 m (the previous version) into 3 m \pm 0.2 m (this version); Paragraph 5.3 “Requirements for measurement site of conducted emissions” is newly added; Paragraphs 5.4 & 5.5 of this version correspond to Sections 6 and 7 of the previous version, respectively; and a new Paragraph 5.6 “Measurement of battery-charging systems mounted on the vehicle” is added;
- In Annex A, Figure A.2 is added;
- Inserting a new Annex B “Notes on conversion of limits for the change of measurement distance from 10 m to 3 m”.

Annex A herein is normative, while Annex B is informative.

This Standard was proposed by National Development and Reform Commission (NDRC).

This Standard shall be subject to the administration of SAC/TC 114 (National Technical Committee on Motor Vehicles of Standardization Administration of China).

This Standard was drafted by CATARC (China Automotive Technology and Research Center).

Main drafter: Xu Li.

Previous editions of releases replaced by this Standard:

- GB/T 18387-2001.

Limits and Test Method of Magnetic and Electric Field Strength from Electric Vehicles, Broadband, 9 kHz to 30 MHz

1. Scope

This Standard specifies the limits and test method of radiated emissions of magnetic and electric field from electric vehicles over the frequency range of 9 kHz ~ 30 MHz, as well as the limits and test method of conducted emissions over the frequency range of 450 kHz ~ 30 MHz.

Conducted emission measurements in this Standard are applicable only to battery-charging systems which utilize a switching frequency above 9 kHz, are mounted on the vehicle, and whose power is transferred by metallic conductors. Conducted emissions requirements apply only during charging of the batteries from AC power lines.

Conducted and radiated emissions measurements of battery-charging systems that use an induction power coupling device are not covered by this Standard.

Note: GB 14023 shall govern in the case of measurement of electromagnetic disturbances over the frequency range of 30 MHz ~ 1,000 MHz.

2. Normative References

The articles contained in the following documents have become this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 4365	Electromagnetic compatibility -- Terms [GB/T 4365-2003, IEC 60050 (161) : 1990 + Amd. 1:1997 + Amd. 2 : 1998, IDT]
GB/T 6113	Specifications of equipment for the measurement of radio disturbance and immunity [GB/T 6113-1995, idt CISPR 16-1 : 1993]
GB 9254	Information technology equipment – Radio disturbance characteristics –Limits and methods of measurement [GB/T 9254-1998, idt CISPR 22 : 1997]
GB/T 14023	Limits and methods of measurement of radio interference characteristics of vehicles, motorboats and spark ignition engine-driven devices [GB/T 14023-2006, CISPR 12 : 2005, IDT]
ANSI C63.4-1992	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz ~ 40 GHz
ANSI C63.12-1987	Electromagnetic compatibility limits – Recommended practice

3. Terms and Definitions

The terms and definitions established in GB/T 4365 apply to this Standard.

4. Limits of Disturbance

4.1 Radiated emissions

The limits of electric field strength are given in Table 1 and Figure 1.

The limits of magnetic field strength are given in Table 2 and Figure 2.

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