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

GB/T 32577-2025

Replacing GB/T 32577-2016, GB/T 34574-2017

**Railway applications - Electromagnetic emission limits and
measurements in the railway environment with respect to
human exposure**

轨道交通 有人环境中电磁发射限值与测量
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document supersedes GB/T 32577-2016 "Methods for measuring the magnetic field strength generated by electronic and electrical equipment in manned environments of rail transit".

This document is based on GB/T 32577-2016 and integrates GB/T 34574-2017 "Limits and Measurement of Electromagnetic Emissions from High-Speed Trains". It also references GB/T 32577-2016.

Compared with GB/T 32577-2016, the main technical changes in GB/T 34574-2017, apart from structural adjustments and editorial modifications, are as follows.

as follows.

- a) Abbreviations have been added (see 3.2);
- b) Increased limits for DC and AC magnetic field strength (see Chapter 4);
- c) The test method for measuring magnetic field strength using the "plane method" has been removed (see 4.2.4 in the 2016 version);
- d) The schematic diagram of the location of the measurement points on the outer surface of

the locomotive and rolling stock for magnetic field strength measurement and the planar method has been deleted (see Figure 2 in the 2016 edition);

e) The magnetic field strength monitoring height for open-track lines has been changed (see 5.3.2, 4.3.2 in the 2016 version);

f) The platform magnetic field strength measurement height has been changed (see 5.3.4, 4.3.4 in the 2016 version);

g) The frequency range for magnetic field strength measurement has been changed (see 6.2, 5.2 in the 2016 edition);

h) The requirement for a field strength probe using a "magnetic flux sensor" to measure AC magnetic field strength has been removed (see 5.3.2 in the 2016 version);

i) The minimum dynamic range of the measurement pathway has been changed (see 6.3.5, 5.3.5 in the 2016 version);

j) The window time for the FFT processing method of magnetic field strength measurement has been changed (see 6.4.3.2, 5.4.3.2 in the 2016 version);

k) The prerequisites for dynamic measurement of magnetic field strength in locomotives and rolling stock have been changed (see 6.5.2, 5.5.2 in the 2016 version);

l) The report preparation requirements have been changed (see Chapter 7, Chapter 6 of the 2016 edition);

m) The attribute of Appendix A has been changed to normative (see Appendix A, Appendix A of the 2016 edition).

This document is modified to adopt IEC 62597:2019 "Methods for measuring the magnetic field strength generated by electronic and electrical equipment in manned environments of rail transport".

Law".

Compared with IEC 62597:2019, this document has undergone the following structural adjustments.

---Chapter 4 has been added;

---Chapters 5 through 7 correspond to Chapters 4 through 6 of IEC 62597:2019, with section 6.1 corresponding to IEC 62597.

Sections 5.1 and 5.3.1, and 6.3.1 to 6.3.7 in IEC 62597:2019 correspond to sections 5.3.2 to 5.3.8 in IEC 62597:2019.

---Appendix C in IEC 62597:2019 has been removed.

The technical differences between this document and IEC 62597:2019, and the reasons

therefor, are as follows.

---The normative references to GB/T 4365 (see 3.1) and GB/T 27025 (see Chapter 7) have been added to adapt to my country's technical requirements.

Add components to increase operability;

---IEC 62311, which has been normatively referenced, has been removed from this document; this document does not require a normative reference to that document.

---The terms "electromagnetic launch," "contact rail," and "network current" (see 3.1) have been added to define the objects described in this document and to adapt to my country's technological requirements.

Technical conditions;

---The term "electric traction power supply system" (see 3.1.4) has been changed to suit my country's technical conditions;

---Abbreviations such as AC, EMF, IEEE, and LIM have been removed (see 3.2) to comply with the requirements for drafting Chinese national standards;

---Added limits on AC and DC magnetic field strength (see Chapter 4), thus constraining my country's testing methods and limits together.

Magnetic field emissions from electronic and electrical equipment in rail transit environments that are relevant to human exposure;

---The term "third rail" has been changed to "contact rail" (see 5.2.4) to suit my country's technical conditions;

---The test conditions for locomotives and rolling stock affected by other vehicles have been changed from a requirement to a suggestion to adapt to the actual situation in my country (see...).

5.4.1).

The following editorial changes have been made to this document.

---To align with existing standards, the standard title has been changed to "Limits and Measurement of Electromagnetic Emissions in Manned Environments of Rail Transit";

---The note regarding conformity verification for both rolling stock and ground equipment has been removed, and it has been added to the overview of rolling stock and ground equipment.

Add descriptions to each;

---The note regarding the validation suitability of rail transit equipment and active implantable medical devices has been removed;

---Notes regarding country-specific measurement procedures/requirements have been removed;

---Added explanations of simulation/calculation methods;

---The note regarding field strength measurements at frequencies above 20kHz has been removed;

---Added introductory text to the list items.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the National Railway Administration.

This document is under the jurisdiction of the National Technical Committee on Standardization of Rail Transit Electrical Equipment and Systems (SAC/TC278).

1 Scope

This document specifies the electrical and electronic equipment emissions in the rail transit environment that are related to human exposure in the frequency range of 0Hz to 20kHz.

The limits for magnetic field strength were defined, the magnetic field strength measurement procedure was established, and the magnetic field strength measurement technology was described.

The measurement procedures and techniques described in this document are applicable to equipment and systems operating in the frequency range of 0Hz to 300GHz in rail transit environments.

Integration and ground-based equipment.

The measurement procedures and points in this document take into account relevant factors for individuals wearing active implantable medical devices, but are not applicable to rail transit.

Risk assessment of the magnetic fields generated by electronic and electrical equipment on people wearing active implantable medical devices.

This document does not apply to the personal electronic devices (such as mobile phones, laptops, and wireless communication systems) of passengers and staff.

Magnetic emission.

This document does not apply to electromagnetic transmissions from dedicated transmitters with frequencies above 20 kHz.