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

GB/T 28807.3-2025

Replacing GB/T 28807.3-2017

**Railway applications - Compatibility between rolling stock and
train detection systems - Part 3: Compatibility with axle
counters**

轨道交通 机车车辆和列车检测系统的兼容性 第3部分：与计轴器的兼容性

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Table of Contents

Preface	III
Introduction	IV
1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviations	1
3.1 Terms and Definitions	1
3.2 Abbreviations	2
4 General Principles	2
4.1 Interference Principle	2
4.2 Reliability Margin	3
4.3 Axle counter specific parameters	4
5 Measurement method of interference emitted by rolling stock	4
5.1 Emission limits for rolling stock	4
5.2 Rolling Stock Compatibility Verification Method	4
6 Evaluation method of interference emitted by rolling stock	8
6.1 Evaluation method based on broadband emission	8
6.2 Assessment method based on narrowband emissions	11
Appendix A (Normative) Narrowband emission limits for rolling stock	14
Appendix B (Normative) Broadband emission limits for rolling stock	17
Appendix C (Normative) Axle Counter Immunity Test	19
Appendix D (Informative) Design Guide for Measurement Antennas for Rolling Stock	31

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 3 of GB/T 28807. GB/T 28807 has been published in the following parts.

- Compatibility of detection systems for rail transit locomotives and trains (GB/T 28807);
- Compatibility of detection systems for rolling stock and trains in rail transit Part 2: Compatibility with track circuits (GB/T 28807.2);

- Compatibility of detection systems for rolling stock and trains in rail transit Part 3: Compatibility with axle counters (GB/T 28807.3).

This document replaces GB/T 28807.3-2017 "Compatibility of rail transit locomotive and train detection systems Part 3.

Compared with GB/T 28807.3-2017, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The acceptable error count probability requirement in the reliability margin has been deleted (see 4.2 of the 2017 edition);
- b) The relationship between the duration of interference and the magnetic field limit in the reliability margin has been deleted (see 4.2 of the 2017 edition);
- c) Deleted the technical content about the inflection point in the axle counter parameters (see 4.3 of the 2017 edition);
- d) Added the requirements for emission limits for rolling stock, and divided the emission limits into broadband emission limits and narrowband emission limits (see 5.1);
- e) Added the measurement requirements for ambient noise in the locomotive emission measurement method (see 5.2.1);
- f) Changed the installation position requirements of the measurement antenna (see 5.2.2, 5.2.2 of the 2017 edition);
- g) Added other requirements for measurement antennas (see 5.2.2);
- h) The vehicle test conditions have been changed (see 5.2.3, 5.2.3 of the 2017 edition);
- i) Added infrastructure conditions (see 5.2.4);
- j) The measurement uncertainty has been changed (see 5.2.5, 5.2.4 of the 2017 edition);
- k) The measurement steps for interference emitted by rolling stock have been changed (see Chapter 6, 5.2.5 of the 2017 edition);
- l) The evaluation method of locomotive emission interference has been changed (see Chapter 6, 5.2.5 and 5.2.6 of the 2017 edition);
- m) Added measurement and evaluation methods based on broadband emission, and defined in-band evaluation (Fourier transform, digital bandpass filtering, RMS Calculation), out-of-band assessment and short-term interference assessment processes and parameters (see 6.1);
- n) Added narrowband emission measurement and evaluation methods, including bandpass digital filtering and RMS calculation procedures and parameters (see 6.2);
- o) Added specific limits and evaluation parameters for narrowband emissions from rolling

stock (see Appendix A);

p) Added specific limits and evaluation parameters for broadband emissions of rolling stock (see Appendix B);

q) The axle counter immunity test method has been changed (see Appendix C, Appendix A of the 2017 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document is proposed by the National Railway Administration.

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

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The previous versions of this document and the documents it replaces are as follows.

- First published in 2017 as GB/T 28807.3-2017;

- This is the first revision.

Introduction

In the field of rail transportation, track circuits and axle counters are important components of train detection systems and are used to detect track section occupancy.

Safety device for use/idleness. Track interference current generated by locomotives and vehicles during driving and interference magnetic fields generated by onboard electrical equipment All of these factors directly or indirectly affect the normal operation of the track circuit and axle counter, which may easily cause errors in the detection of track section occupation/vacancy, and in serious cases may endanger GB/T 28807 aims to establish a certification and evaluation system for the compatibility of rolling stock and train detection systems. Part composition.

- Part 1: General. The purpose is to describe the measurement of interference current, electromagnetic sensitivity of train detection system, and traction power supply characteristics.

Methods and procedures are used to determine the workflow for compatibility certification of rolling stock and train detection systems operating on the line.

- Part 2: Compatibility with track circuits. The purpose is to specify the limit requirements and verification of track interference currents generated by rolling stock.

Measurement and evaluation methods to verify that rolling stock meets these limit requirements.

- Part 3: Compatibility with axle counters. The purpose is to specify the limit requirements for the interfering magnetic field emitted by rolling stock and to verify the compatibility of rolling stock with the The measurement and assessment methods for vehicles to meet these limit requirements also include the axle counter immunity measurement methods.

Rail transit locomotive and train detection system Compatibility Part 3: Compatibility with axle counters

1 Scope

This document specifies the limits for interference emissions from rolling stock and the measurement and evaluation methods for verifying the compatibility of rolling stock with axle counters. It also includes Axle counter immunity measurement method.

This document applies to the verification of compatibility between rolling stock and axle counters.

NOTE 1 This document does not take into account the effects of inductively coupled resonant circuits or metal parts on the vehicle, nor the effects of eddy current braking or magnetic track braking.

NOTE 2 This document does not cover wheel sensors and cross-circuit wires.

2 Normative references

GB/T 28807

3.1 Terms and Definitions

The terms and definitions defined in GB/T 28807 and the following apply to this document.

3.1.1 Axle counter

System with wheel detection and detection of track sections free/occupied.

Note 1.The axle counter compares the number of axles of trains entering and leaving the section and generates an indication of track section "free" when the two numbers are equal.

Note 2.The axle counter includes the axle counter detector and evaluation unit, etc.