

ICS 53.100
CCS P 97



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

GB/T 22359-2008

Replacing GB/T 22359-2008

**Earth-moving and building construction machinery - Electromagnetic compatibility(EMC)
of machines with internal electrical power supply - Part 1: General EMC requirements
under typical electromagnetic environmental conditions**

(English Translation)

Issued on: October 14, 2022

Implemented on: October 12, 2022

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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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 of Standardization Documents"

drafted.

This document is part 1 of GB/T 22359 "Electromagnetic Compatibility (EMC) of Earth-moving Machinery and Construction Machinery with Built-in Power Supply" point. GB/T 22359 has released the following parts.

--- Part 1: EMC general requirements under typical electromagnetic environmental conditions;

--- Part 2: EMC additional requirements for functional safety.

This document and Part 2 of GB/T 22359 together replace GB/T 22359-2008 "Electromagnetic Compatibility of Earthmoving Machinery". and Compared with GB/T 22359-2008, in addition to structural adjustment and editorial changes, the main technical changes are as follows.

- a) changed the scope (see Chapter 1, Chapter 1 of the 2008 edition);
- b) Changed terms and definitions (see Chapter 3, Chapter 3 of the 2008 edition);
- c) Changed the compliance requirements, and added the performance criteria of the whole machine and ESA performance criteria (see Chapter 4, Chapter 4 of the 2008 edition);
- d) Changed the additional requirements for immunity test (see 4.1.3, 5.2 of the 2008 edition);
- e) Changed the coefficient requirements for the measured value of a single test sample (see 4.2.2, 4.3.2, 4.5.2 and 4.6.2, 5.3.2, 2008 edition 5.4.2, 5.6.2 and 5.7.2);
- f) The test method for the immunity of machinery in the 800MHz~2000MHz frequency band has been changed (see 4.4.1.1, 5.5.1 of the 2008 edition);
- g) Added the specific requirements for the electromagnetic radiation immunity test (substitute method) of the whole machine (see 4.4.1.2);
- h) Changed the requirements for the reference limit of mechanical immunity (see 4.4.2, 5.5.2 and 5.5.3 of the 2008 edition);
- i) The specific requirements of ESA electromagnetic radiation immunity test have been changed, and the test frequency band has been expanded to 20MHz~2000MHz (see 4.7.1, 5.8.1 of the 2008 edition);
- j) Changed the requirements for the ESA immunity reference limit, and added the limit requirements for the measurement by the tubular wave coupler (TWC) method (see 4.7.2, 5.8.2 of the 2008 edition);
- k) The requirement for the reference limits of ESA or ESA functional elements that do not control the movement of the machine is deleted (see 5.8.3 of the 2008 edition);
- l) Changed the test method of ESD, and revised the requirements of the reference limit (see

4.8, 5.9 of the 2008 edition);

m) Added the conducted emission reference limit requirements and the functional status of conducted immunity (see 4.9.3, 4.9.4 and Tables 1 to 3);

n) Changed the description of exceptions (see Chapter 5, Chapter 6 of the 2008 edition);

o) Change the information to be included in the test report (see Chapter 6, Chapter 7 of the 2008 edition);

p) the correction factor used by the peak detector was added (see B.2);

q) Changed the requirements for the relative position of the antenna and the machine (see B.5.3 and C.5.3, B.4.3 and C.4.3 of the 2008 edition);

r) a note on AV detectors was added (see C.1.2 and E.1.2);

s) Changed the configuration of ESA (see D.4.3, Figure D.2, Figure D.3, D.3.2, Figure D.2, Figure D.3 of the 2008 edition);

t) The test method for ESA narrow-band electromagnetic emission radiation has been changed (see E.1.3, see E.1.3 of the 2008 edition).

This document is equivalent to ISO 13766-1:2018 "Electromagnetic Compatibility of Earth-moving Machinery and Construction Machinery with Built-in Power Supply" (EMC) Part 1: General Requirements for EMC under Typical Electromagnetic Environmental Conditions".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

GB/T 22359 provides test methods and standards covering the characteristics and operating parameters of the machine, and is intended to consist of two parts.

--- Part 1: EMC general requirements under typical electromagnetic environmental conditions. The purpose is to determine the evaluation of earthmoving machinery and building construction Test methods and acceptance criteria for mechanical electromagnetic compatibility (EMC).

--- Part 2: EMC additional requirements for functional safety. The purpose is to evaluate electromagnetic compatibility (EMC) for earth-moving machinery and construction Effects of functional safety of construction machinery controls.

The scope of this document describes the relevant machinery and the extent of the hazard, hazardous situation or hazardous event.

This document is a Type C standard described by ISO 12100:2010. When the requirements

of Type C standards are different from those of Type A or Type B standards, for machines designed and manufactured in accordance with the requirements of this Class C Standard, the requirements of this Class C Standard take precedence over the requirements of other standards.

With the widespread use of electronic equipment in earthwork applications and mechanical work areas, it is necessary to ensure that the machinery has adequate noise immunity. As more and more machinery is equipped with electrical and electronic equipment, it is also necessary to ensure that the electromagnetic field emissions of the machinery comply with the acceptable subject to limits.

Most parts of machinery, equipment and systems will form electronic disturbances and high-frequency disturbances during normal operation. These harassments will in the frequency range, it will cause interference to other electrical/electronic equipment and systems through a certain propagation path (conduction or radiation). by the machine Narrowband signals generated by external or external sources of interference may also couple into electrical/electronic systems and affect the normal functioning of electrical/electronic equipment.

Electrostatic discharge is mechanically related because control elements can be placed outside the driver's position and potential differences can develop at the contact points.

Machinery may contain open systems that combine multiple devices or components to complete the machine's function, it is necessary to consider conduction in power wiring transient.

Although a large number of current electromagnetic compatibility standards in my country are applicable to various types of products and systems, the test methods proposed in GB/T 22359 Specific test conditions for mechanical, electrical/electronic devices (ESAs) and individual ESAs within its scope are specified. This test method states that due to the Machines vary in size and use characteristics, and the arrangement of machines in a test facility needs to have their typical operating characteristics.

Machinery has multiple systems, including components that can be used in multiple machine types. ESA specified in this document or ESA separated from machinery the test methods are suitable for measuring the immunity and radiation of these components and make these components available in existing laboratory facilities (including specially equipped prepared shielded room) for evaluation. When testing electrical/electronic subassemblies, it is necessary to consider the any additional effects. These tests can also be performed mechanically.

Earthmoving Machinery and Construction Machinery Electromagnetic Compatibility (EMC) of Machines with Built-in Power Supply Part 1: EMC under typical electromagnetic environmental conditions General requirements