

ICS 33.100.01
CCS L 06



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

GB/T 18039.11-2025

**Electromagnetic compatibility - Environment - Part 11:
Classification of HEMP environments
(English Translation)**

Issued on: May 30, 2025

Implemented on: June 1, 2026

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

Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Overview
4 Terms and Definitions
5 Protection category classification
6 Early HEMP environmental classification
7 Mid-term HEMP environment classification
8 Classification of late HEMP environment
9 Principles for selecting the immunity level
9.1 Method
9.2 Test uncertainty
9.3 Hazard Criteria
9.4 Conclusion
Reference

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 11 of GB/T (Z) 18039 "Electromagnetic Compatibility Environment". GB/T (Z) 18039 has published the following part.

- Description and classification of electromagnetic environment (GB/Z 18039.1);
- Evaluation of low-frequency conducted disturbance emission levels of power supplies for industrial equipment (GB/Z 18039.2);
- Compatibility level of low-frequency conducted disturbance and signal transmission in public low-voltage power supply system (GB/T 18039.3);
- Compatibility level of low-frequency conducted disturbances in factories (GB/T 18039.4);
- Electromagnetic environment of low-frequency conducted disturbance and signal transmission in public power supply system (GB/Z 18039.5);

- Low-frequency magnetic fields in various environments (GB/Z 18039.6);
- Voltage sags, short interruptions and their measurement and statistical results in public power supply systems (GB/Z 18039.7);
- Description of conducted disturbances in high altitude nuclear electromagnetic pulse (HEMP) environment (GB/T 18039.8);
- Compatibility level of low-frequency conducted disturbance and signal transmission in public medium voltage power supply system (GB/T 18039.9);
- HEMP environment description radiated disturbance (GB/T 18039.10);
- Part 11: Classification of HEMP environments (GB/T 18039.11).

This document is equivalent to IEC 61000-2-11:1999 "Electromagnetic Compatibility (EMC) Part 2-11.Environmental HEMP Environment kind".

The following minimal editorial changes were made to this document.

- In order to coordinate with the existing standards, the name of the standard is changed to "Electromagnetic Compatibility Environment Part 11: HEMP Environment Classification".

Introduction

Electromagnetic compatibility refers to the ability of electrical and electronic equipment or systems to work properly in their electromagnetic environment and not cause any adverse effects on anything in the environment.

The electromagnetic compatibility problem is one of the important factors affecting the environment and product quality. Its standardization work has attracted in this regard, the IEC 61000 series of standards developed by the International Electrotechnical Commission (IEC) is a key standard for the manufacturing and information industries.

General standards in the fields of industry, electrical engineering and energy, transportation, social services and health, consumer product quality and safety, etc.

There are six categories. description, environment, limit, test and measurement technology, installation and mitigation guidelines, and general standards. my country has carried out research on this series of standards.

Domestic transformation work has been carried out and a corresponding national standard system has been established.

In this standard system, GB/T (Z) 18039 "Electromagnetic Compatibility Environment" is the basic standard for the environment in the field of electromagnetic compatibility.

The standard aims to describe the electromagnetic environment classification, compatibility level, etc., and is planned to consist of 14 parts.

--- Description and classification of electromagnetic environment (GB/Z 18039.1). The purpose is to define the disturbance level of each electromagnetic phenomenon and to the types are classified and their properties are described, providing background information and compatibility levels of different electromagnetic phenomena that may exist in the environment.

The table provides guidance to those who are selecting immunity levels and establishing immunity requirements.

--- Evaluation of low-frequency conducted disturbance emission level of industrial equipment power supply (GB/Z 18039.2). The purpose is to recommend the evaluation of industrial environment Procedure for determining the level of disturbance caused by emissions from devices, equipment and systems installed in non-public power grids.

--- Compatibility level of low-frequency conducted disturbance and signal transmission in public low-voltage power supply system (GB/T 18039.3).

The compatibility level of various electromagnetic disturbances that may occur in low-voltage power supply systems is used to guide the setting of electromagnetic interference protection for public power supply systems.

The limits of disturbance and the immunity level of equipment to conducted disturbances from the public power supply system are specified by the relevant product standardization technical committees.

---Compatibility level of low-frequency conducted disturbance in factories (GB/T 18039.4). The purpose is to guide the internal and external power supply of factories or other non-public power supply.

The compatibility level of the internal connection points of the network, including setting the limit of electromagnetic disturbance to the industrial power grid and selecting the equipment to be compatible with the factory and non-factory Immunity level to conducted disturbances in public power supply systems.

---Electromagnetic environment of low-frequency conducted disturbance and signal transmission of public power supply system (GB/Z 18039.5).

The data on various types of disturbances that can be expected to occur in electrical systems are reference documents for the compatibility level values given in the relevant standards.

--- Low frequency magnetic field in various environments (GB/Z 18039.6). The purpose is to give the measurement results of low frequency magnetic field obtained from the investigation.

The results are provided for reference by those who are concerned about the impact of magnetic fields.

--- Voltage dips, short interruptions and their measurement and statistical results in public power supply systems (GB/Z 18039.7).

The sources, impacts, remedial measures, measurement methods and measurement results of electromagnetic disturbance phenomena caused by voltage sag and short interruption are mainly aimed at Phenomena observed on the lines of the utility power system and the effects on electronic equipment that receives energy from the system.

---High altitude nuclear electromagnetic pulse (HEMP) environment description conducted disturbance (GB/T 18039.8). The purpose is to establish Common standards for environments in order to determine the real electromagnetic disturbance environment for evaluating the performance of affected equipment.

--- Compatibility level of low-frequency conducted disturbance and signal transmission in public medium-voltage power supply system (GB/T 18039.9).

The compatibility level of various electromagnetic disturbances that may occur in medium voltage power supply systems is used to guide the setting of electromagnetic disturbances that may occur in public power grids.

The limits and immunity levels of equipment to conducted disturbances from the public power supply system are specified by the relevant standardization technical committees.

--- HEMP environment description radiated disturbance (GB/T 18039.10). The purpose is to establish a common reference for HEMP environments and to provide a reference for sensitive the sensing device selects the actual environmental parameters to evaluate its sensitivity.

--- Part 11: HEMP environment classification (GB/T 18039.11). The purpose is to define the HEMP environment classification for all components, devices, equipment, subsystems or systems of the circuit that may be disturbed by electromagnetic signals shall be provided with the immunity test level in accordance with.

--- Part 12: Radiated and non-network frequency-related conducted phenomena (GB/Z 18039.12). The purpose is to provide equipment and systems for Test standards (techniques and limits) and mitigation methods (including installation practices) provide the basis for designing to achieve electromagnetic compatibility.

--- Part 13: High power electromagnetic (HPEM) environment radiated and conducted (GB/T 18039.13). The purpose is to define a the typical HPEM radiation and conduction waveforms that may appear in civil facilities are used to study the effects of HPEM on electrical equipment in civil facilities.

Protection methods against damaging effects of gases and electronic equipment.

--- Part 14: Overvoltage in public distribution networks (GB/Z 18039.14). The purpose is to ensure that the environmental description of this standard system Includes important