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

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**Electromagnetic compatibility - General - Part 7: Power factor in
single-phase systems under non-sinusoidal conditions**

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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 is Part 7 of GB /Z 17624 "Overview of Electromagnetic Compatibility": GB /Z 17624 has released the following parts:

- Application and explanation of basic terms and definitions of electromagnetic compatibility (GB/T 17624:1);
- Methods to achieve functional safety for electrical and electronic systems of equipment related to electromagnetic phenomena (GB /Z 17624:2);
- Part 3: Effects of high-altitude electromagnetic pulse (HEMP) on civilian equipment and systems (GB /Z 17624:3);
- Historical basis for limiting the power frequency harmonic current conduction emission of equipment within 2 kHz (GB /Z 17624:4);
- Part 6: Guidelines for Evaluation of Measurement Uncertainty (GB /Z 17624:6);
- Part 7: Power factor of single-phase systems under non-sinusoidal conditions (GB /Z 17624:7):

This document is equivalent to IEC TR61000-1-7:2016 "Electromagnetic Compatibility (EMC) Part 1-7: Overview Ordering under Non-Sinusoidal Conditions"

Power Factor of Phase Systems?: The document type was adjusted from IEC 's technical report to my country's national standardization guidance technical document:

This document has made the following minimal editorial changes:

- In order to be consistent with my country's standard system, the name of the standard is changed to "Overview of Electromagnetic Compatibility Part 7: Single-phase System under Non-Sinusoidal Conditions"

System power factor?;

- Replace the source of terms from IEC standards to converted national standards and update them to references:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

Electromagnetic compatibility is the ability of electrical and electronic equipment or systems to function normally in their electromagnetic environment without causing any adverse effects on anything in that environment:

The ability to withstand electromagnetic disturbance: Electromagnetic compatibility is one of the important factors affecting the environment and product quality, and its standardization work has led to

It has attracted widespread attention at home and abroad: In this regard, the IEC 61000 series of publications developed by the International Electrotechnical Commission (IEC) is a

Common standards in the fields of industry, electrical engineering and energy, transportation industry, social undertakings and health, consumer product quality and safety, etc.; are divided into

There are 6 categories: overview, environment, limits, test and measurement technology, installation and mitigation guidelines, and general standards: Our country has launched a series of publications for this series

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

In this standard system, GB /Z 17624 "Overview of Electromagnetic Compatibility" is a basic standard in the field of electromagnetic compatibility, aiming to describe electrical

Contents such as basic terms and definitions of magnetic compatibility, electromagnetic influence phenomena, historical basis, general parameters, etc: are planned to be composed of 8 parts:

---Application and explanation of basic terms and definitions of electromagnetic compatibility (GB/T 17624:1): The purpose is to describe and explain electromagnetic compatibility

A variety of terms of great significance to basic concepts and practical applications in system design and evaluation:

--- Methods for achieving functional safety of electrical and electronic systems of equipment related to electromagnetic phenomena (GB /Z 17624:2): The purpose is to

Provides guidelines for achieving functional safety of electrical and electronic systems and devices exposed to electromagnetic disturbances:

---Part 3: Effects of high-altitude electromagnetic pulse (HEMP) on civilian equipment and systems (GB /Z 17624:3): The purpose is to describe

Effects that have been produced during actual and simulated electromagnetic pulse tests around the world:

---Historical basis for limiting the power frequency harmonic current conduction emission of equipment within 2 kHz (GB /Z 17624:4): The purpose is to describe the grid

Sources and impacts of power frequency harmonic current conduction emissions within

2kHz:

---Part 5: Effects of high-power electromagnetic environment (HPEM) on civil systems: The purpose is to provide a high-power electromagnetic environment

Background material on standards related to the effects of fields, voltages and currents on civil systems:

---Part 6: Guidelines for evaluation of measurement uncertainty (GB /Z 17624:6): The purpose is to provide an assessment method for measurement uncertainty

and background information, giving guidance on general considerations for measurement uncertainty in relevant national standards:

---Part 7: Power factor of single-phase systems under non-sinusoidal conditions (GB /Z 17624:7): The purpose is to provide various amounts of electrical power

The definition of and their relationship under non-sinusoidal conditions:

---Part 8: Future expectations of harmonic current emission and voltage phase angle of public power grids: The purpose is to provide information about the public power supply network

Information on current conditions and future developments mainly for phase angles of 3rd and 5th harmonic currents:

This document focuses on the power factor of single-phase systems under non-sinusoidal conditions: It provides definitions of various electrical quantities and their effects on non-sinusoidal conditions:

relationship under string conditions, in order to provide clear information on the definition of fundamental power factor and non-fundamental power factor, and provide technical committees, product

Commissions and conformity assessment bodies provide advice on the content of power factors of single-phase systems under non-sinusoidal conditions, experiments with similar influencing quantities

By comparing these reports between laboratories, various domestic technical committees related to electromagnetic compatibility have made a comprehensive assessment of single-phase systems under non-sinusoidal conditions:

The power factor is handled consistently:

Overview of electromagnetic compatibility part 7: non-sinusoidal conditions

The power factor of a single-phase system

1 Scope