

ICS 17.220.20

CCS N 29



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

GB/T 44992-2024

Test devices for harmonic active energy meters

谐波有功电能表检验装置

Issued on: December 31, 2024

Implemented on: July 1, 2025

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

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Power Supply Company, State Grid Anhui Electric Power Company Fuyang Power Supply Company, Anhui Rongzhaozhi Energy Co., Ltd., Zhejiang Chentai Technology Co., Ltd., and Zhongnan Instrument Co., Ltd. The main drafters of this document are. Ma Jian, Guo Chuang, Leng Xuedao, Hu Tao, Huang Jianzhong, Cheng Guosheng, Lu Jun, Sun Linzhong, Pan Feng, Wang Huiwu, Wu Weizong, Wang Jundong, Li Helong, Ma Jian, Yao Guojun, Liu Qingchan, Shen Xin, Chen Wenxin, Zeng Shitu, Zhang Enyou, Chu Fugang, Cao Rui, Li Xiaojun, Meng Yuan, Guo Yuehang, Liu Lina, He Peidong, Zhou Jun, Yu Wenbiao, Yang Yuyao, Yin Jiayue, Wang Ying, Yu Lingang, Cui Chao, Miao Xing, Feng Shaoyong, Ye Pengcheng, Kang Jian, Nie Shiguang, Zhang Shaolei, Wang Taofeng, and Lin Keteng. Harmonic active energy meter testing device

1 Scope

China's national standard for laboratory test devices for harmonic active energy meters. The problem these devices exist for is that a growing share of load - drives, LED lighting, chargers, electronic power supplies - draws current that is not sinusoidal, and a conventional meter's reading of such a load depends on its internal design in ways that were never specified. Different meters on the same distorted load disagree, and since somebody is being billed, that disagreement is a commercial dispute. Harmonic energy meters are built to measure it consistently, and testing them requires a source that can generate defined harmonic content accurately and a reference standard that measures it. The standard specifies the classification, structure and mechanical performance, electrical and metrological performance, electromagnetic compatibility and climatic requirements of such devices, with the test methods, inspection rules and packaging provisions.

This document specifies the classification, structure and mechanical performance, electrical performance, metering The quality performance, electromagnetic compatibility, climatic conditions, inspection rules and packaging, transportation and storage requirements are described, and the corresponding test methods are described. This document applies to newly manufactured harmonic active energy meter testing devices used in laboratory environments.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 4208-2017 Enclosure protection degree (IP code)

GB 4824-2019 Limits and measurement methods of radio frequency disturbance

characteristics of industrial, scientific and medical equipment

GB/T 5169.11-2017 Fire hazard tests for electric and electronic products Part

11. Basic test methods for glowing wire/hot wire Glow Wire Flammability Test Method for Products (GWEPT)

GB/T 13384-2008 General technical requirements for packaging of electromechanical products

GB/T 16935.1-2023 Insulation coordination for equipment in low-voltage power supply systems Part

3 Terms and definitions

The terms and definitions defined in GB/T 17215.211-2021 and GB/T 17215.302-2024 and the following apply to this document.

3.1 All equipment combinations that provide test signals to the meter under test and measure its fundamental wave active electric energy and harmonic active electric energy measurement errors.

3.2 Working standard meter working standard meter An instrument used in the device to measure fundamental wave active electric energy and harmonic active electric energy.

3.3 A standard table used to determine the accuracy of a device. NOTE Reference standards are usually designed and operated in a controlled laboratory environment to achieve high accuracy and stability.

3.4 Harmonic source The device is used to provide fundamental voltage, harmonic voltage, fundamental current and harmonic current test signals to the working standard meter and the meter under test.

11 Measuring equipment

GB/T 17215.302-2024 Electrical measuring equipment (AC) Particular requirements Part