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

GB/T 47024.1-2026

**Special test methods for electrical equipment at high altitude -
Part 1: Combined power frequency and harmonic current**

高原电工产品特殊试验方法 第1部分：工频/谐波复合电流

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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 1 of GB/T 47024 "Special Test Methods for Electrical Products Used in High-Altitude Areas". GB/T 47024 has published the following... part.

1.Power Frequency/Harmonic Composite Current;

2.Power Frequency/DC Composite Voltage. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Electrical Equipment Industry Association. This document is under the jurisdiction of the National Technical Committee on Environmental Technology Standardization for High-Altitude Electrical Products (SAC/TC330). This document was drafted by: China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company Electric Power Research Institute and Kunming Electrical Science Research Institute. China Electric Power Research Institute Co., Ltd., Chongqing University, Kunming Power Supply Bureau of Yunnan Power Grid Co., Ltd., and China Electric Equipment Group Co., Ltd. Science and Technology Research Institute Co., Ltd., Dongguan Power Supply Bureau of Guangdong Power Grid Co., Ltd., Honghe Power Supply Bureau of Yunnan Power Grid Co., Ltd. Changjiang Electric Power New Energy Co., Ltd., Guiyang Bureau of China Southern Power Grid Ultra-High Voltage Transmission Company, China Southern Power Grid Co., Ltd. The company's ultra-high voltage power transmission companies include Guangzhou Bureau, Xi'an XD High Voltage

Switchgear Co., Ltd., Xiangtan Electric Machinery Co., Ltd., and Guangdong Yuanguang Cable Co., Ltd. Industry Co., Ltd., Guangzhou Cable Co., Ltd., Yunnan Electric Power Research Institute (Group) Co., Ltd., Shenyang Transformer Research Institute Co., Ltd. Henan High Voltage Electrical Apparatus Research Institute Co., Ltd., Dali Bureau of China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company, State Grid Sichuan Electric Power The company's Electric Power Research Institute, Kunming High Altitude Electrical Testing Co., Ltd., Huadian Tibet Energy Co., Ltd., and Yunnan Duobao Cable Group Co., Ltd. Limited Liability Company, Shenzhen Electric Power Research Institute, Yunnan Power Grid Co., Ltd. Electric Power Research Institute, China Southern Power Grid Co., Ltd. Kunming Bureau of Ultra-High Voltage Transmission Company, Tianshengqiao Bureau of China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company, Shandong Taikai High Voltage Switch Co., Ltd. The company, Shandong Electric Power Equipment Co., Ltd., Qujing Power Supply Bureau of Yunnan Power Grid Co., Ltd., Yunnan Power Grid Co., Ltd., and China Certification & Inspection Group Co., Ltd. Measurement Technology Co., Ltd., Sichuan Electric Group Medium and Low Voltage Intelligent Power Distribution Co., Ltd., Kunming Yutian Technology Engineering Co., Ltd., Guangdong Power Grid Co., Ltd. Electric Power Research Institute, a limited liability company. The main drafters of this document are. Deng Jun, Xie Zhicheng, Zhou Yuling, Zhou Haibin, Yi Li, Cui Yanjie, Pan Zhicheng, Yang Ajuan, Zhang Zhijin, and Wang Qingbo. Wang Chunyan, Wang Jun, Li Jie, Zhong Rongfu, Zhao Zhigang, Zhu Liang, Wang Liu, Zhuang Xiaoliang, Yan Zhanzheng, Zhang Yu, Wu Yue, Wang Xun, Xu Lili, Wu Yangyang, Jiang Lusi Li Qiaoying, Long Jian, Lü Gang, Li Qiang, Xiao Mingying, Liu Jingsong, Guo Shuyong, Ran Yuqi, Wu Lin, Zhu Mengmeng, Cao An, Wang Xiaotong, Guan Qinggang, Yang Cailing Zhao Xingkai, Huang Conglin, Wang Zhi, Gelie Wangjiu, Xu Xueqin, Qian Guochao, Xu Zheng, Sun Youliang, Li Jin, Gao Luoyi, Yang Yong, Huang Xuemin, Zhu Liang Yao Congwei.

GB/T 47024 "Special Test Methods for Electrical Products in High-Altitude Areas" is proposed to consist of the following parts.

1. Power Frequency/Harmonic Composite Current. The purpose is to describe the operation of electrical products in high-altitude areas under power frequency/harmonic composite current. The methods for conducting tensile strength and temperature rise tests include the test principle, test conditions, test circuit and parameter calculation, test procedure, and test... Results evaluation and test report.

2. Power Frequency/DC Composite Voltage. The purpose is to describe the application of power frequency/DC composite voltage in electrical products under high-altitude environmental conditions. The voltage method includes the test principle, test conditions, test circuit and parameter calculation, test procedure, test result evaluation and test. Report.

---Part 3: DC/Impulse Composite Voltage. The purpose is to describe the DC/impulse

composite voltage applied to electrical products under high-altitude environmental conditions. The voltage method includes the test principle, test conditions, test circuit and parameter calculation, test procedure, test result evaluation and test. Report. Special test methods for electrical products in high-altitude areas Part

1 Scope

GB/T 47024.1-2026 is the Chinese national standard covering testing electrical equipment at altitude with a distorted current - thinner air cools less and breaks down at lower voltage, and harmonics heat a device more than their amplitude suggests; this is the combination Tibetan and Qinghai installations actually see. Part 1 of the series, first edition, in force since 1 May 2026. It was issued on 28 January 2026 and has been in force since 1 May 2026, as a first edition. The document is under the responsibility of the China Electrical Equipment Industry Association. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the methods for conducting breaking capacity and temperature rise tests on electrical products in high-altitude areas under combined power frequency/harmonic current conditions, including testing... Test principle, test conditions, test circuit and parameter calculation, test procedure, test result evaluation and test report. This document applies to high-altitude plateau regions (above 1000m to 5000m) and substations with high harmonic content (10kV and above) requiring construction work. Electrical products subjected to breaking capacity and temperature rise tests under combined frequency/harmonic current. For electrical products at other altitudes, the same guidelines apply.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 1984 High Voltage AC Circuit Breakers

GB/T 1094.2 Power Transformers - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 1984, GB/T 10230.1, GB/T 10230.2 and GB/T 14549, as well as the following terms and definitions, apply to this document. document.

3.1 Fourier series decomposition of periodic alternating current yields components with the same frequency as the power frequency. [Source: GB/T 14549-1993, 3.3]

3.2 Harmonic components Fourier series decomposition of periodic alternating currents yields components whose frequencies are integer multiples of the fundamental frequency. [Source: GB/T 14549-1993, 3.4]

3.3 harmonic order The integer ratio of harmonic frequency to fundamental frequency. [Source: GB/T 14549-1993, 3.5]