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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 20643.1-2025

Replacing GB/T 20643.1-2006

Special environmental condition - Environmental test method - Part 1: General

特殊环境条件 环境试验方法 第1部分：总则

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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 for standardization documents" Drafting is required.

This document is Part 1 of GB/T 20643 "Environmental test methods for special environmental conditions". GB/T 20643 has been published in Lower part. --Part 1: General provisions;

-- Part 2: Artificial simulation test methods and guidelines for electrical and electronic

products (including communication products);

-- Part 3: Artificial simulation test methods and guidelines for polymer materials.

This document replaces GB/T 20643.1-2006 "Environmental test methods for special environmental conditions Part 1: General principles" and Compared with GB/T 20643.1-2006, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) The content of "Environmental conditions" has been modified to include special environmental conditions such as humid heat (including humid heat ocean) and cold weather (see Chapter 4, 2006). 3 of the 2011 edition);

b) "Sample delivery time" was deleted (see 4.2.4 of the 2006 edition);

c) The content of "Test time" has been changed (see 5.2.4, 4.2.5 of the 2006 edition);

d) The content of "standard atmospheric conditions" has been modified (see 5.3.1, 4.3.1 of the 2006 edition);

e) The content of "Selection of artificial simulation test methods" has been changed to add hot and humid environment, hot and humid ocean, cold special environment, and recommended test Method, added heat and humidity, salt spray, mold, lightning strike, earthquake test, deleted corrosive atmosphere (salt spray resistance), comprehensive test, coating Anti-peeling test, vibration (sinusoidal), antistatic test (see 5.3.4, 4.3.4 of the 2006 edition);

f) "Climatic test sequence selection" has been deleted (see 4.3.5 of the 2006 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document is proposed and coordinated by the China Electrical Equipment Industry Association.

This document was drafted by: China Electric Power Research Institute Co., Ltd., Jiangsu Tomilo High-end Equipment Co., Ltd., Southern Electric Grid Integrated Energy Co., Ltd., Shenzhen Inspection Group (Dongguan) Quality Technology Service Co., Ltd., Guangdong Power Grid Co., Ltd. Electric Power Science Research Institute, Tsinghua University Shenzhen International Graduate School, Shenzhen INVT Electric Vehicle Drive Technology Co., Ltd., Mingyang Smart Energy Group Co., Ltd.

China Mobile (Hangzhou) Information Technology Co., Ltd., Chongqing Artec Technology Co., Ltd., Shenzhen Polytechnic, Chinese Academy of Sciences Institute of Space Application Engineering and Technology, University of Science and Technology Beijing, China Special Aircraft Research Institute, General Machinery Key Core Basic Parts Innovation Center Center (Anhui) Co., Ltd., Hainan Power Grid Co., Ltd., and State Grid Fujian Electric Power Co., Ltd. Electric Power Research Institute.

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The previous versions of this document and the documents it replaces are as follows.

--First published in 2006 as GB/T 20643.1-2006; --This is the first revision.

Introduction

GB/T 20643 "Environmental test methods for special environmental conditions" covers the test methods for products and components in China's dry heat, dry hot desert, plateau, Artificial simulation test methods and guidelines for special climate types such as humid heat, humid heat ocean, and cold. Currently, GB/T 20643 consists of three parts. constitute.

-- Part 1: General. The purpose is to provide general rules for natural atmosphere exposure tests and artificial simulation tests under special environmental conditions.

and gives general guidelines for environmental testing.

-- Part 2: Artificial simulation test methods and guidelines for electrical and electronic products (including communication equipment).

Artificial simulation test methods and guidelines for products (including communication equipment) under special environmental conditions.

-- Part 3: Artificial simulation test methods and guidelines for polymer materials. The purpose is to propose the test methods and guidelines for polymer materials under special environmental conditions.

Artificial simulation test methods and guidelines.

"Special environmental conditions test" is to expose the sample to natural or artificial simulated conditions such as dry heat, dry hot desert, plateau, humid heat, The special climate characteristics of hot and humid oceans, cold regions, etc., thus affecting the storage, transportation and If required by the relevant standards, these test methods can also be used for type testing, batch sampling testing, Quality inspection test and other types of tests.

Environmental test methods for special environmental conditions Part 1: General

1 Scope

This document specifies natural atmospheric exposure tests under special environmental conditions such as dry heat, dry hot desert, plateau, humid heat, humid hot ocean, and cold and general requirements for artificial simulation tests, test data processing and result

evaluation.

This document applies to the selection of appropriate environmental tests for electrical and electronic products (including complete machines, components and materials) when used in special environmental conditions. method.

2 Normative references

GB/T 20625-2024

3 Terms and Definitions

The terms and definitions defined in GB/T 20625-2024 apply to this document.

4.1 Overview

This document covers special environmental climate types, namely, dry heat, dry hot desert, plateau, humid heat, humid hot ocean, and cold areas in China.

4.2 Dry-hot and dry-hot desert environmental conditions

Hot and dry climate refers to the annual extreme values of daily average temperature and humidity, with a low temperature of -15 °C, a high temperature of 36 °C, and a maximum absolute humidity of 15 g/m3 climate. Dry hot desert climate refers to a climate type characterized by insufficient water supply for visible plants to survive.

Type, an extremely arid climate, is characterized by high heat (dry heat), strong ultraviolet radiation and very low relative humidity.

For dry heat environmental conditions, see GB/T 19608.1-2022.

For dry hot desert environmental conditions, see GB/T 19608.2-2022.

4.3 Plateau environmental conditions

Plateau climate refers to the climate formed by the geographical conditions of the plateau, with the main characteristics of low air pressure, low temperature, large temperature difference between day and night, and absolute humidity.

Low, the intensity of solar radiation, especially ultraviolet radiation, is strong.

For plateau environmental conditions, see GB/T 19608.3-2004.

4.4 Humid and hot marine environmental conditions

Hot and humid climate refers to the annual extreme values of daily average temperature and humidity, with a low temperature of 9 °C, a high temperature of 35 °C, and a maximum absolute humidity of