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Specification for measuring laboratory power source characteristics

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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 of Standardization Documents" drafted.

This document is modified to adopt IEC EEOD-5010.2021 "Measurement Procedures for Laboratory Power Characteristics". The file type is operated by IEC EE

The document is adjusted to the national standard of our country.

This document has the following structural adjustments compared to IEC EEOD-5010.2021.

---Introduction corresponds to Chapter 1 and 2.3~2.5 of IEC EEOD-5010.2021;

--- Chapter 1 corresponds to 2.1, 2.2 and 2.6 of IEC EEOD-5010.2021;

--- Chapter 2 corresponds to Chapter 3 of IEC EEOD-5010.2021;

--- Chapter 3 corresponds to 4.1 and 4.2 of IEC EEOD-5010.2021;

--- Chapter 4 corresponds to Chapter 5 of IEC EEOD-5010.2021;

--- Chapter 5 corresponds to Chapter 6 of IEC EEOD-5010.2021;

--- Chapter 6 corresponds to Chapter 7 of IEC EEOD-5010.2021;

--- Chapter 7 corresponds to Chapter 8 of IEC EEOD-5010.2021;

--- Chapter 8 corresponds to Chapter 9 of IEC EEOD-5010.2021;

--- Chapter 9 corresponds to Chapter 4.3 and Chapter 10 of IEC EEOD-5010.2021;

--- Chapter 10 corresponds to Chapter 11 of IEC EEOD-5010.2021.

The following editorial changes have been made to this document.

--- Change the standard name to "Measurement Specifications for Laboratory Power Characteristics".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

The purpose of this document is to establish specifications for measuring laboratory power supply characteristics at test connection locations to determine whether laboratory power supplies comply with national

International Electrotechnical Commission Electrotechnical Products Qualification Testing and Certification Organization Mutual Recognition (IEC EE-CB) system requirements for power supply (see GB/T 27025-

6.3.1 and 6.3.2 in.2019).

When tested in accordance with electrical safety standards, the test results of electrical products depend on the characteristics of the power supply for them. E.g.

a) The temperature of electrical heating parts is affected by the supplied voltage. In most cases, an increase in voltage leads to an increase in temperature. and

For some products, a decrease in voltage can also cause their temperature to increase.

b) The frequency of the power supply also affects the temperature of electrical heating components, such as motors, transformers and electromagnetic coils.

c) Harmonic distortion of the power supply not only affects the temperature of electrical heating components, such as motors, transformers and electromagnetic coils, but also affects the production

leakage current of the product.

The relevant test standards specify the voltage, frequency and waveform characteristics of the power supply used, such as 230V, 50Hz sine wave power supply.

source. The specifications in this document are based on the fact that the characteristics of the power supply are maintained throughout the test. but actually

On the other hand, it is impossible for a power supply to meet these ideal technical characteristics. Therefore, some standards introduce tolerances in the characteristics of power supply specifications, but still

Some standards do not have relevant provisions. IEC EE-CB Test Laboratory Committee when test standards do not include tolerances/requirements for the power supply used

It is clarified that the power supply of the laboratory should meet the requirements of

consistent power supply characteristics. These requirements define the actual electrical

characteristics of the source, so that laboratories can obtain consistent, uniform and repeatable test results, thereby further promoting the test in the IEC EE-CB system.

Mutual recognition of test results.

The power supply stability requirements of this document apply to tests of products connected to residential and commercial ordinary power supply branch circuits, such as 120V,

15A or 20A, 240V, 15A circuits in North America and 230V, 10A or 16A branch circuits in Europe. When according to this document

When evaluating the test circuit and determining that it complies with the documentation requirements, only the initial test conditions are allowed to be recorded without further monitoring of the power supply; when using

When testing a circuit beyond its evaluation range, it is necessary to monitor the stability of the circuit throughout the test. Except for the above mentioned

Except for the type of power supply, this document does not specify the requirements for other laboratory power supplies. However, these laboratory power supplies still need to comply with GB/T 27025-

Requirements of 6.3.1 and 6.3.2 in.2019.

Measurement Specification for Laboratory Power Supply Characteristics

1 Scope

This document specifies the requirements for the measurement of laboratory power characteristics and establishes the procedures for the measurement of laboratory power characteristics.

This document applies to.

--- Test within the maximum rated current of the power supply;

--- The tested sample is in normal working condition.

This document does not apply to.

--- Building power supplies for laboratories, such as power supplies for test instruments, environmental test chambers, lighting, etc.

--- DC power supply for the DC electrical equipment under test.

---Testing of photovoltaic arrays. Photovoltaic arrays generate their own electricity (if auxiliary equipment used is connected to branch circuits to which this document applies,

This document applies to the testing of such photovoltaic array auxiliary equipment).

--- Short-circuit current test, abnormal test, switch test and similar tests related to power supply capacity.

--- Electromagnetic compatibility test.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document.

GB/T 27025-2019 General requirements for the competence of testing and calibration laboratories (ISO /IEC 17025.2017, IDT)

IEC 60038.2009 standard voltages (IEC standardvoltages)

Note. GB/T 156-2017 standard voltage (IEC 60038.2009, MOD)

3.1 Terms and Definitions

The following terms and definitions apply to this document.

3.1.1

A means of regulation that automatically maintains voltage and/or frequency at specified values by electronic, electrical or mechanical means.

3.1.2

Maintain voltage and/or frequency at specified values by manually adjusting autotransformers, tap transformers with selector switches, or similar devices

Way.

3.1.3

nominal voltage nominalvoltage

Test the circuit voltage supplied at the connection location (see 8.2.1).