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Replacing GB/T 17626.11-2008

**Electromagnetic compatibility - Testing and measurement
techniques - Part 11: Voltage dips, short interruptions and
voltage variations immunity tests for equipment with input
current up to 16 A per phase**

电磁兼容 试验和测量技术 第 11 部分:对每相输入电流小于或等于

16A 设备的电压暂降、短时中断和电压变化抗扰度试验

[IEC 61000-4-11:2020, Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase]

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Foreword

This document is drafted in accordance with the rules provided in GB/T 1.1-2020 *Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents*.

This document is Part 11 of GB/T 17626, *Electromagnetic compatibility - Testing and measurement techniques*. The following parts have been issued for GB/T 17626:

- GB/T 17626.1-2006, Electromagnetic compatibility - Testing and measurement techniques - Overview of immunity tests;
- GB/T 17626.2-2018, Electromagnetic compatibility - Testing and measurement techniques - Electrostatic discharge immunity test;
- GB/T 17626.3-2016, Electromagnetic compatibility - Testing and measurement techniques - Radiated radio-frequency electromagnetic field immunity test;
- GB/T 17626.4-2018, Electromagnetic compatibility - Testing and measurement techniques - Electrical fast transient/burst immunity test;
- GB/T 17626.5-2019, Electromagnetic compatibility - Testing and measurement techniques - Surge immunity test;
- GB/T 17626.6-2017, Electromagnetic compatibility - Testing and measurement techniques - Immunity to conducted disturbances induced by radio-frequency fields;
- GB/T 17626.7-2017, Electromagnetic compatibility - Testing and measurement techniques - General guide on harmonics and inter-harmonics measurements and instrumentation, for power supply systems and equipment connected thereto;
- GB/T 17626.8-2006, Electromagnetic compatibility (EMC) - Part 8: Testing and measurement techniques - Power frequency magnetic field immunity test;
- GB/T 17626.9-2011, Electromagnetic compatibility - Testing and measurement techniques - Pulse magnetic field immunity test;
- GB/T 17626.10-2017, Electromagnetic compatibility - Testing and measurement techniques - Damped oscillatory magnetic field immunity test;
- GB/T 17626.11-2023, Electromagnetic compatibility - Testing and measurement techniques - Part 11: Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase;
- GB/T 17626.12-2023, Electromagnetic compatibility - Testing and measurement techniques - Ring wave immunity test;

- GB/T 17626.13-2006, Electromagnetic compatibility (EMC) - Testing and measurement techniques - Harmonics and inter-harmonics including mains signalling at a.c. power port low frequency immunity test;
- GB/T 17626.14-2005, Electromagnetic Compatibility - Testing and measurement techniques - Voltage fluctuation immunity test;
- GB/T 17626.15-2011, Electromagnetic compatibility - Testing and measurement techniques - Flickermeter - Functional and design specifications;
- GB/T 17626.16-2007, Electromagnetic compatibility - Testing and measurement techniques - Test for immunity to conducted common mode disturbances in the frequency range 0 Hz to 150 kHz;
- GB/T 17626.17-2005, Electromagnetic Compatibility - Testing and measurement techniques - Ripple on d.c. input power port immunity test;
- GB/T 17626.18-2016, Electromagnetic compatibility - Testing and measurement techniques - Damped oscillatory wave immunity test;
- GB/T 17626.19-2022, Electromagnetic compatibility - Testing and measurement techniques - Part 19: Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2 kHz to 150 kHz at a.c. power ports;
- GB/T 17626.20-2014; Electromagnetic compatibility - Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguide;
- GB/T 17626.21-2014, Electromagnetic compatibility - Testing and measurement techniques - Reverberation chamber test methods;
- GB/T 17626.22-2017, Electromagnetic compatibility (EMC) - Testing and measurement techniques - Radiated emissions and immunity measurements in fully anechoic rooms (FARs);
- GB/T 17626.24-2012, Electromagnetic compatibility - Testing and measurement techniques - Test methods for protective devices for HEMP conducted disturbance;
- GB/T 17626.27-2006, Electromagnetic compatibility (EMC) - Testing and measurement techniques - Unbalance immunity test;
- GB/T 17626.28-2006, Electromagnetic compatibility (EMC) - Testing and measurement techniques - Variation of power frequency immunity test;
- GB/T 17626.29-2006, Electromagnetic compatibility (EMC) - Testing and measurement techniques - Voltage dips short interruptions and voltage variations on d.c. input power port immunity tests;

- GB/T 17626.30-2012, Electromagnetic compatibility - Testing and measurement techniques - Power quality measurement methods;
- GB/T 17626.31-2021, Electromagnetic compatibility - Testing and measurement techniques - Part 31: AC mains ports broadband conducted disturbance immunity test;
- GB/T 17626.33-2023, Electromagnetic compatibility - Testing and measurement techniques - Part 33: Measurement methods for high-power transient parameters;
- GB/T 17626.34-2012, Electromagnetic compatibility - Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase;

This Standard replaces GB/T 17626.11-2008, *Electromagnetic compatibility - Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests*. Compared with GB/T 17626.11-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Add the terms and definitions of “rise time” and “fall time” (see Clause 3);
- b) Add the causes of voltage dips and short interruptions (see Clause 4).

This document modifies and adopts IEC 61000-4-11:2020 *Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*.

The technical differences between this document and IEC 61000-4-11:2020, and the causes for these differences are as follows:

- Delete the parameters related to 60 Hz in Tables 1, 2 and 3, including the 60 Hz frequency point of the test levels and durations of voltage dips and short interruptions in Tables 1 and 2, the requirements for 12 cycles, 30 cycles and 300 cycles of Class 2 and Class 3 as well as footnote c in Tables 1 and 2, the 60 Hz frequency point of the time required for voltage increase in Table 3, and the requirements of 30 cycles required for voltage increase when the voltage test level is 70% as well as footnote b in Table 3, so as to be applicable to the national conditions in China (see Clause 5);
- Change "operating voltage (230 V, 120 V, etc.)" in 6.1.3 to "operating voltage (220 V, 120 V, etc.)" to be applicable to the national conditions in China.

This document also makes the following editorial modifications:

- To be consistent with the standard system in our country, change the name of the standard to "Electromagnetic compatibility - Testing and measurement techniques -

Electromagnetic compatibility - Testing and measurement techniques - Part 11: Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase

1 Scope

This document defines the immunity test methods and range of preferred test levels for electrical and electronic equipment connected to low-voltage power supply networks for voltage dips, short interruptions, and voltage variations.

This document applies to electrical and electronic equipment having a rated input current not exceeding 16 A per phase, for connection to 50 Hz AC networks.

It does not apply to electrical and electronic equipment for connection to 400 Hz AC networks. Tests for these networks will be covered by future IEC documents.

The object of this document is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to voltage dips, short interruptions and voltage variations.

Note 1: Voltage fluctuation immunity tests are covered by IEC 61000-4-14.

The test method documented in this document of GB/T 17626 describes a consistent method to assess the immunity of equipment or a system against a defined phenomenon.

Note 2: As described in IEC Guide 107, this is a basic EMC publication for use by product committees of the IEC. As also stated in Guide 107, the IEC product committees are responsible for determining whether this immunity test standard should be applied or not, and, if applied, they are responsible for defining the appropriate test levels. Technical committee 77 and its sub-committees are prepared to co-operate with product committees in the evaluation of the value of particular immunity tests for their products.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Where the equipment has a rated voltage range the following shall apply:

- if the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range, a single voltage within that range may be specified as a basis for the test level specification (U_T);
- in all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range;
- guidance for the selection of test levels and durations is given in IEC TR 61000-2-8.

5.2 Voltage dips and short interruptions

The change between U_T and the changed voltage is abrupt. The step can start and stop at any phase angle on the mains voltage. The following test voltage levels (in % U_T) are used: 0%, 40%, 70% and 80%, corresponding to dips with residual voltages of 0%, 40%, 70% and 80%.

For voltage dips, the preferred test levels and durations are given in Table 1, and an example is shown in Figure 1a) and Figure 1b).

For short interruptions, the preferred test levels and durations are given in Table 2, and an example is shown in Figure 2.

The rise and fall time are detailed in Figure 3.

The preferred test levels and durations given in Table 1 and Table 2 take into account the information given in IEC TR 61000-2-8.

The preferred test levels in Table 1 are reasonably severe, and are representative of many real world dips, but are not intended to guarantee immunity to all voltage dips. More severe dips, for example 0% for 1 s and balanced three-phase dips, may be considered by product committees.

The generator specification for voltage rise time, t_r , and voltage fall time, t_f , during abrupt changes is indicated in Table 4.

The levels and durations shall be given in the product specification. A test level of 0% corresponds to a total supply voltage interruption. In practice, a test voltage level from 0% to 20% of the rated voltage may be considered as a total interruption.

Shorter durations in Table 1, in particular the half-cycle, should be tested to ensure that the equipment under test (EUT) operates within the performance limits specified for it.

When setting performance criteria for disturbances of a half-period duration for products with a mains transformer, product committees should pay particular attention to effects which can result from inrush currents. For such products, these can reach 10

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