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

GB/T 18039.3-2017

Replacing GB/T 18039.3-2003

**Electromagnetic compatibility -- Environment -- Compatibility
levels for low-frequency conducted disturbances and signalling
in public low-voltage power supply systems**

(English Translation)

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Foreword

The Electromagnetic Compatibility Environment currently includes the following sections.

- GB/Z 18039.1 Electromagnetic compatibility environment Electromagnetic environment classification;
- GB/Z 18039.2 Electromagnetic compatibility environment Industrial equipment power supply low frequency conducted disturbances emission level assessment;
- GB/T 18039.3 electromagnetic compatibility environment common low-voltage power supply system low frequency conducted disturbances and signal transmission compatible level;
- GB/T 18039.4 Electromagnetic compatibility environment Factory compatible level of low frequency conducted disturbance;
- GB/Z 18039.5 electromagnetic compatibility environment common power supply system low frequency conducted disturbances and electromagnetic transmission signal environment;
- GB/Z 18039.6 Electromagnetic compatibility environment A variety of environments in the low-frequency magnetic field;
- GB/Z 18039.7 electromagnetic compatibility environment public power supply system voltage dips, short interruptions and their measurement statistics result;
- GB/T 18039.8 Electromagnetic compatibility environment High altitude nuclear electromagnetic pulse (HEMP) Environmental Description Conducted disturbance;
- GB/T 18039.9 EMC common medium voltage power supply system low frequency conducted disturbances and signal transmission compatible level.

This section is the third part of the "electromagnetic compatibility environment." this section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 18039.3-2003 "common low-voltage electromagnetic interference environment and low-frequency power supply system harassment and signal transmission the level of compatibility. " this section compared with GB/T 18039.3-2003 main technical changes are as follows.

- Modify the frequency range of conducted disturbances, increasing the frequency range of the grid signal (see Chapter 1);
- Increased high-frequency voltage distortion and transient over-voltage phenomenon (see Chapter 1 and 4.7);
- Increasing the normative references and terms and definitions (see Chapter 2, Chapter 3);

- Modify the calculation of total harmonic distortion harmonic frequency (see 3.2.7);
- Increasing the calculation of the severity of flicker caused by voltage fluctuations (see 4.2);
- Modify the low-voltage power grid harmonic voltage components of the level of compatibility (see 4.3);
- Modify the level of inter-harmonics compatible with flicker (see 4.4);
- Increased voltage imbalance compatibility levels that may occur when connecting large single-phase loads (see 4.6);
- Modify the frequency range of the ripple control system, increase the Meters curve of the public power network control system (see 4.10.2);
- Added informative appendices (see Appendix A and Appendix B).

This section uses the translation method identical with IEC 61000-2-2:2002

"Electromagnetic Compatibility Environment Part 2-2. Public low-voltage power supply system System low-frequency conducted disturbances and signal transmission compatible level. " the documents of our country that are consistent with the corresponding international documents that are normative references in this section are as follows.

- GB/T 16935.1-2008 Insulation coordination of equipment in low-voltage systems - Part 1. Principles, requirements and tests (IEC 60664-1:2007, IDT);
- GB/Z 18039.5-2003 Electromagnetic compatibility Environment Common power supply system Low-frequency conducted disturbances and signal transmission electromagnetic ring Habitat (IEC/T R61000-2-1.1990, IDT);
- GB/T 17625.2-2007 Electromagnetic compatibility limit for each phase rated current $\leq 16\text{A}$ and unconditional access to the equipment in the public Limitations on voltage variations, voltage fluctuations and flicker generated in low voltage supply systems (IEC 61000-3-3:2005, IDT);
- GB/T 17626.7-2017 Electromagnetic compatibility test and measurement technology Power supply systems and connected devices Harmonic, inter-harmonic wave measurement Guidance on measuring and measuring instruments (IEC 61000-4-7:2009, IDT);
- GB/T 17626.15-2011 Electromagnetic compatibility test and measurement technology Scintillator function and design specifications (IEC 61000-4-15:2003, IDT).

This section made the following editorial changes.

- In line with the existing standard series, the name of this section was changed to "electromagnetic compatibility environment of public low-voltage power supply system low-frequency conduction Interfere with the compatibility of signal transmission. " this part

of the National Electromagnetic Compatibility Standardization Technical Committee (SAC/TC246) and focal point.

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1 Scope

GB/T 18039 This section relates to the frequency range of 0kHz ~ 9kHz conducted disturbances and extended to 148.5kHz power grid Signal transmission system. This section gives the nominal voltage up to 420V (single phase) or 690V (three phase), the nominal frequency of 50Hz AC Common low-voltage power supply system compatibility level.

This part of the compatibility level for the public connection point. When the device's power input port absorbs power from the above system, most in cases where the intensity of harassment is equal to the point of public connection but in some cases it is exceptional, for example specific devices that supply power over long distances, or Interference generated or amplified within the device integrated by the device.

The purpose of this section is to give the level of compatibility of all types of electromagnetic disturbances that may appear in public low-voltage power supply systems to guide them.

- a) Set limits for the electromagnetic disturbance to public power supply systems (including the level of planning as defined in 3.1.5);
- b) The relevant product standardization technical committee stipulates the level of immunity of the equipment to conducted disturbances of the public power supply system.

The harassment considered in this section includes.

- Voltage fluctuations and flashing;
- 50 times and 50 times the following harmonics;
- Interharmonic below 50 times;
- High frequency (higher than 50 harmonics) voltage distortion;
- Voltage sag and short interruption;
- voltage imbalance
- Transient over-voltage;
- Power frequency changes;
- DC component;