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

GB/T 28046.1-2011

**Road vehicles -- Environmental conditions and testing for
electrical and electronic equipment -- Part 1: General
(English Translation)**

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Foreword

GB/T 28046 "Road vehicles - Environmental conditions and testing for electrical and electronic equipment" consists of five parts.

- Part 1.General;
- Part 2.Electrical loads;
- Part 3.Mechanical loads;
- Part 4.Climatic loads;
- Part 5.Chemical loads.

This Part is Part 1 of GB/T 28046.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part is prepared by using the redrafting method to amend and adopt ISO 16750-

1.2006 "Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 1.General".

The technical differences between this Part and ISO16750-1.2006 are as follows.

- ADJUST the order of the terms by bringing the test voltage before the supply

voltage operating mode 3 UA, to make it more logical and easy to understand the standard;

- Figure 1 uses the old version of the format, which is moderately simplified.

Compared with ISO16750-1:2006, the editorial modifications of this Part are as follows.

- DELETE the foreword of the International Standard.

This Part is proposed by the National Development and Reform Commission.

This Part is under the jurisdiction of the National Technical Committee on Automotive of Standardization Administration of China (SAC/TC 114).

Drafting organizations of this Part. China Automotive Technology and Research Center, Changsha Automobile Electric Appliance Research Institute, Shanghai Institute of Quality Supervision, Inspection and Technology, Suzhou Tai Site Electronic Technology Co., Ltd., Shenzhen Hangsheng Electronics Co., Ltd., Dongfeng Commercial Vehicle Technology Center, Shanghai Keshida Huayang Automotive Electric Co., Ltd., Zhengzhou Yuebo Auto Electric Co., Ltd.

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1 Scope

This Part describes the potential environmental stresses and specifies tests and requirements recommended for the specific mounting location of systems/components on/in the vehicle.

2 Normative references

The following referenced documents are indispensable for the application 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.

GB/T 28046.2 Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 2. Electrical loads (GB/T 28046.2-2011, ISO 16750-2:2006, MOD)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4 Classification by mounting location

For some locations with special environmental conditions (e.g. exhaust system), no standard specifications can be given. In these cases, the load shall be stated in the instructions of the DUT.

5 Operating modes

The DUT is electrically operated with test voltage, UB, as in a vehicle with shut-off engine and with all electrical connections made.

The DUT is electrically operated with test voltage, UA, with all electrical connections made.

6 Functional status classification

All functions of the device/system perform as designed during the test. However, one or more of them may go beyond the specified tolerance. All functions return automatically to within normal limits after the test. Memory functions shall remain class A.

One or more functions of a device/system do not perform as designed during and after the test and cannot be returned to proper operation without repairing or replacing the device/system.

7.1 General

Unless otherwise specified, all tests shall be performed at room temperature (RT) of $(23 \pm 5) ^\circ\text{C}$ and a relative humidity of 25 % to 75 %.

The test voltages shall be as shown in Table 1, unless other values are specified in the other parts or are agreed upon by the users, in which case such values shall be documented in the test reports.

8 Designation

Each part of this series of standards accommodates special needs and situations through the use of Code Z "as agreed". The use of Code Z should be restricted to cases where the supplier and/or vehicle manufacturer determine that the conditions or tests are

Annex A

(informative)

Example for a test sequence plan

Figure A.1 shows an example for a test sequence plan.

Annex B

(informative)

Example of life test/statement of reliability

In addition to environmental loads, a product used in the vehicle will be subjected to loads induced by its own function, hereafter referred to as functional loads.

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