



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

GB/T 4797.9-2021

**Classification of environmental conditions - Environmental
conditions appearing in nature - Measured shock and vibration
data during storage, transportation and in-use**

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Foreword

GB/T 4797 includes the following parts.

---GB/T 4797.1 Classification of environmental conditions, natural environmental conditions, temperature and humidity;

---GB/T 4797.2 Classification of environmental conditions, natural environmental conditions, atmospheric pressure;

---GB/T 4797.3 electrical and electronic products natural environmental conditions biological;

---GB/T 4797.4 Classification of environmental conditions, natural environmental conditions, solar radiation and temperature;

---GB/T 4797.5 Classification of environmental conditions, natural environmental conditions, precipitation and wind;

---GB/T 4797.6 Environmental condition classification natural environmental conditions dust, sand, salt fog;

---GB/T 4797.7 Classification of environmental conditions for electrical and electronic products, natural environmental conditions, earthquake vibration and shock;

---GB/T 4797.9 Classification of environmental conditions Shock and vibration measured during storage, transportation and use of natural environmental conditions data.

This part is Part 9 of GB/T 4797.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this part is equivalent to the IEC 60721-2-9:2014 "Environmental Condition Classification Part 2-9: Measurement of Natural Environmental Conditions"

Storage, transportation and use of large amounts of shock and vibration data.

This section has made the following editorial changes.

---In order to be consistent with my country's standard system, the name of the standard was changed to "Environmental Condition Classification, Storage, Transportation and Use of Natural Environmental Conditions"

Shock and vibration data measured in the process".

This part is proposed and managed by the National Standardization Technical Committee on Environmental Conditions and Environmental Tests for Electrical and Electronic Products (SAC/TC8).

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Introduction

This part of GB/T 4797 aims to provide a strategy for

The data measured during the use of the protective field is used to formulate the environmental profile. The measured data is usually recorded in the form of acceleration-time history. Afterwards from

IEC 60068-2 series [1] Select appropriate severity of vibration and shock test methods, apply the environmental level given in IEC 60721-3 [2], and

Update the environmental level according to the strategy described in this section.

More detailed information can be obtained from professional literature. References list some of the materials.

Classification of environmental conditions

The shock and impact measured during storage, transportation and use

Vibration data

1 Scope and purpose

This part of GB/T 4797 aims to provide a strategy to develop an environmental profile based on the data measured during the product life cycle.

Its purpose is to define the basic parameters and values of shock and vibration, as a process to determine the storage, transportation and use of the product during its life cycle

It is expected to withstand the harshness of the mechanical environment.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

no.

3.1 Overview

The shock and vibration signals measured on storage, transportation platforms, and locations of use vary from basic sinusoidal characteristics to purely random characteristics.

The random signal may be normally distributed or non-normally distributed. If the latter is the case, it is reasonable to assume that the process is

The formula mixes the superposition of normally distributed random signals of different amplitudes.

The real environment can rarely be simply classified as a sinusoidal vibration environment. Generally, it is related to discrete excitations such as rotating machinery, aeroengines, and propellers.

The excitation mechanism is related and mixed with the related random vibration process. Product-related specifications need to clarify whether only random vibration tests or

Conduct a mixed mode experiment.

The shock environment is closely related to the vibration environment at each stage of the product life cycle.

Acceleration. If the packaged product is firmly fixed on the base of the transportation platform during transportation, the packaged product will not "jump", usually these

The frequency contained in the impact signal is within a bandwidth of 0 Hz to 200 Hz. Of course, higher frequencies (maybe in the kHz range) may appear during use.

Surrounding), it also depends on the actual use environment.

In view of the fact that random vibration test is the most common test method, the treatment method of random vibration environment is given below. Based on stochastic process

The processing method can represent other processes, for example, the processing of the shock response spectrum in the shock environment, and the processing of the acceleration spectral density (ASD).

It is also suitable for processing sinusoidal data in the form of acceleration-frequency. However, special attention needs to be paid to these data depending on the initial

The process is the discrete value of acceleration value, root mean square value or abnormal frequency.

Other factors to consider in this process include.

- a) The factors of the random spectrum may depend on the ultimate purpose of the test, such as robustness, appraisal level, etc.;
- b) Statistical characteristics of the environment;
- c) The statistical characteristics of the product;
- d) Time-life cycle profile.

This article introduces some typical characteristics of the product during the storage, transportation and use stages.