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

GB/T 4797.7-2008

**Classification of environmental conditions -- Environmental
conditions of nature -- Earthquake vibration and shock**

电工电子产品环境条件分类 自然环境条件 地震振动和冲击

(English Translation)

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Foreword

GB/T 4797 currently consists of the following eight sections.

--- GB/T 4797.1 electric and electronic products natural environmental conditions of temperature and humidity

--- GB/T 4797.2 electric and electronic products natural environmental conditions - Part 2. Altitude and air pressure, water depth and water pressure

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

--- GB/T 4797.4 electric and electronic products natural conditions of solar radiation and temperature

--- GB/T 4797.5 electric and electronic products Classification of environmental conditions of the natural environment precipitation and wind conditions

--- GB/T 4797.6 electric and electronic products natural conditions of dust, sand, salt spray

--- GB/T 4797.7 electric and electronic products Classification of environmental conditions of the natural environment earthquake vibration and shock conditions

--- GB/T 4797.8 electric and electronic products Classification of environmental conditions of the natural environment fire exposure conditions this part of GB/T 4797 Part of.

This section identical with IEC 60721-2-6:1990 "Classification of environmental conditions - Part 2. natural seismic vibrations and shocks environmental conditions Member. " for ease of use, this section made the following editorial changes.

--- Deleted international standards foreword;

--- Increase the national standard foreword;

- The introduction of international standards-based conversion section Introduction;
- The term "this part of IEC 721" with the words "GB/T 4797 this part" or "this part";
- With a decimal point "." Instead of a comma as the decimal point "." this part of the National Electrical and Electronic Products Environmental conditions and environmental tests for Standardization Technical Committee (SAC/TC8) and focal points.

This section is drafted. Guangzhou University, Guangzhou Electric Apparatus Research Institute, Suzhou plant test equipment, Suzhou Dongling Vibration Test Instrument Co., Corporation and China Shipbuilding Industry Corporation seventh four Institute.

Introduction

GB/T 4797 as part of the product seismic parameters to select the appropriate background material when severities. Using GB/T 4796 of Severity.

More detailed information can be found in the professional literature, such as ISO 6258. 1985, the seismic design of nuclear power plants.

GB/T 4797.7-2008/IEC 60721-2-6:1990 Classification of environmental conditions for electric and electronic products Natural environment earthquake vibration and shock

1 Scope and purpose

GB/T 4797 This section gives about the next natural seismic vibrations and shocks environmental conditions.

Its purpose is to define some of the basic characteristics of the earthquake and the feature quantity, in order to storage and use of the process may suffer from these conditions of production Products provide background material. Only gives the acceleration of the ground conditions. Of structural conditions has been mentioned, but only to describe the general conditions.

2 Normative references

The following documents contain provisions which, through reference in this part of the GB/T 4797, constitute provisions of this part. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 4796-2008 electric and electronic products Classification of environmental conditions - Part 1. Environmental parameters and their severities (IEC 60721-1.

2002, IDT)

3 Overview

The impact of the earthquake is vibration, and vibration can be simulated by a random process. The vibration will affect the product, and the product produced Stress a variety of ways.

This section is intended to provide information on the earthquake, as well as dynamic performance of the product during the earthquake. Values given in this section are typical shows Patients should not be used as a standard value.

3.1 Origin and propagation of seismic vibrations

When the stress is accumulated to a degree sufficient to result in the destruction of the earth's crust, earthquakes will occur. These uncertainties exist in the seismically active area, which Some areas with some geographic factors, such as the trough, ridge, ridges, volcanoes, trenches, tectonic faults and the like.

Sudden rupture released potential energy from the source to the fundamental form of three different speeds to spread.

- Longitudinal wave in the propagation direction of the rock extrusion or expansion;
- S-wave, the rock that is perpendicular to the direction of propagation of the torsional shear;
- Surface wave is in front of a combination of two waves by ground conditions.

3.2 Earthquake vibration characteristics

Random earthquake ground motion, but the motion with simultaneous two-part component statistically independent horizontal and vertical Features. Moderate earthquake can last 15s ~ 30s, can continue strong 60s ~ 120s. In general, having a maximum ground acceleration Strong unit up to 10s. Typical broadband random vibration having the maximum energy at a frequency within 1Hz ~ 35Hz, the frequency of 1Hz ~ 10Hz More destructive earthquakes on the product. It is generally assumed vertical component of ground motion at 3.5Hz or less is 67% to 100% horizontal movement, at least equal to 3.5Hz horizontal movement.

Note: The maximum acceleration is usually used to describe the seismic intensity for a particular site.

Product 3.3 Foundations Description ground motion typical multi-frequency broadband spectrum in order to encourage the main. For products installed on the foundation, the ground motion (including horizontal and vertical to) vibration is likely to be amplified. For any given ground motion amplification degree depending on the system (soil, infrastructure and product) Vibration Characteristic frequency and damping characteristics.

GB/T 4797.7-2008/IEC 60721-2-6:1990