



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

GB/T 2423.7-2018

**Environmental testing - Part 2: Test methods - Test Ec: Rough
handling shocks, primarily for equipment-type specimens**

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Foreword

GB/T 2423 "Environmental Test Part 2" is divided into several parts according to the test method.

This part is Part 7 of GB/T 2423.

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

This section replaces GB/T 2423.7-1995 "Environmental Tests for Electrical and Electronic Products Part 2. Test Methods Test Ec and Guidelines.

"Dumping and Overturning" and GB/T 2423.8-1995 "Environmental Tests for Electrical and Electronic Products Part 2. Test Methods Test Ed. Free Fall drop".

Compared with GB/T 2423.7-1995 and GB/T 2423.8-1995, in addition to editorial changes, the main technical changes are as follows.

--- Amended the title "Condition Test" to "Explanation" (see 5.1.1, 3.2 of GB/T

2423.7-1995);

--- Increased "test equipment" (see 5.1.2, 5.2.2);

--- Added "Information to be given in test reports" (see Chapter 8);

--- Deleted "selection of test severity level" (see A3 of GB/T 2423.7-1995);

--- Amended the title "Severity Rating" to "Experimental Severity Rating" and related content, and deleted "Note. Heavy equipment should not withstand higher

The severity level "(see 5.2.3, Chapter 3 of GB/T 2423.8-1995);

--- Modify the "conditional test" to "description" and "test procedure" (see 5.2.1 and 5.2.4, GB/T 2423.8-1995

Chapter 5);

--- Deleted "the content given by the relevant specifications" (see Chapter 15 of GB/T 2423.8-1995).

This section uses the translation method equivalent to IEC 60068-2-31..2008
"Environmental Tests Part 2-31.Test Test Ec. Crude Rate

Impact caused by operation (mainly used for equipment-type samples).

The following editorial changes have been made in this section.

--- Modified the standard name;

--- The word barrek (board) in the note of Figure A1 in IEC 60068-2-31..2008 has a spelling error, it should be barrel, and the steel should be omitted.

The word (steel), with reference to the French version, reverted to a steel plate.

This section is proposed and managed by the National Technical Committee for Environmental Conditions and Environmental Testing of Electrical and Electronic Products (SAC/TC8).

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1 Scope

This section of GB/T 2423 gives a method for simulating the use of equipment-type samples that are severely moved or repaired during use.

Test method for impact effects caused by rough operation such as impact, vibration, and drop.

The impact of the simulated sample on the transport of the cargo as a loose constraint needs to be evaluated by the test Ee. bounce test method; the same

The impact effect of the simulated sample used to install the equipment needs to be evaluated by test Ea. impact.

This test is generally only applicable to small and medium-sized equipment that may be severely moved, and only applicable to the danger of being knocked and hit

Corners and faces.

Generally speaking, equipment that is often moved and used (such as field equipment and spare parts) may be subject to the above-mentioned knocks and impacts. however,

When they form an integral part of a permanent device, they are usually not subject to the above-mentioned knocks and impacts, so such classes are not required test.

This test is not applicable to fragile, unprotected, irregularly shaped equipment (e.g. aircraft head radar), as these equipment are

Fixtures are usually taken out on a bracket or in a carrier when they are taken out. However, when these devices are in their shipping boxes

This test is also applicable when it is on its own bracket or in a carrier and is considered as a whole.

For equipment with only one mounting surface (such as a standard bottom surface), tests are usually performed on that surface only.

The impact test is performed by fixing the sample on a test bench. Samples in dump and overturn, free fall, repeated free fall, and bounce tests

Products are made in a free state.

2 Normative references

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

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 2423.39-2008 Environmental testing for electric and electronic products Part 2. Test methods Test Ee. Bounce (IEC 60068-2-55.1987, IDT)

IEC 60068-2-27 Environmental Tests Part 2-27. Test Test Ea and Guidelines. Impact
(Environmental testing - Part 2-27. Tests-Test Ea and guidance. Shock)

3 General description of the test

Rough operating shock can be simulated by one or more of the following test methods.

a) Tipping and turning over. This test is used to evaluate the possibility of equipment type samples during maintenance work or on the workbench due to rough operation.

A simple test by the impact of a knock or impact;

b) Free fall --- Method 1. This test is a simple test to determine the possible fall impact due to rough loading and unloading.

The test can also be used to verify the strength level of the equipment;

c) Free fall --- Method 2. This test is used to simulate some component products, such as connectors in use, which may be subject to

Impact of repeated shocks.

When the size of the sample during transportation can keep it stable, the sample does not need to be overturned. To determine dumping and turning

If the inverted test is necessary, please refer to the data of "Cg ratio" and "height ratio" in 1) and 2) below.

The dumping and overturning actions produced by the test procedures specified in 5.1.3.1, 5.1.3.2 and 5.1.3.3 are shown in Figure 1, Figure 2 and Figure 3.

The fall and tip test involves three different methods.

a) surface dump (see 5.1.3.1);

b) angular dip (see 5.1.3.2);

c) Topple (or topple) (see 5.1.3.3).

The purpose of these three methods is basically the same, but it still simulates different types of operation (or moving).

This test method is not an accurate test method. The allowable error of height and angle specified in 5.1.2 is +/- 10%.

If more accurate impact tests are required, IEC 60068-2-27 should be used.

When the size of the sample during transportation can keep it stable, the sample does not need to be overturned. Considering the overturning test

For different applicability, the following two sizes are important.