

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

JJG 2072-2016

Replacing JJG 2072-1990

Measuring Instruments for Shock Acceleration (English Translation)

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Introduction

The test system according to JJF1104-2003 "National Metrological Verification System Table Rules" JJG 2072-1990 "Impact Accelerometer Measuring Instrument Verification System" was revised.

Compared with JJG 2072-1990, in addition to editorial changes to the main technical changes are as follows.

- extends the peak range of the impact acceleration metering reference. The peak value of the impact acceleration is determined by $(1 \times 10^2 \sim 1 \times$

$10^6) \text{ m/s}^2$ extended to $(50 \sim 2.0 \times 10^6) \text{ m/s}^2$;

- delete the description of the relevant international comparison in the previous version of the measurement instrument;

- the expression of the standard impact sensor in the former version of the metrological standard;

- this version of the measurement standards, increase the impact, collision table verification device expression;

- This version of the work of measuring instruments, increase the impact of acceleration laser measuring instrument expression;

The inclusion factor of the extended uncertainty is changed from $k = 3$ to $k = 2$ in the previous version.

The previous version of the system table release.

JJG 2072-1990.

Shock Accelerometer Measuring Instrument

1 Scope

This test system table is suitable for the value transfer of the impact acceleration meter. Provides a national benchmark for impact acceleration the composition and the main measurement performance, by the national benchmark through the measurement of standard instruments to the work of measuring instruments to send the value of the process and gives the corresponding extended uncertainty (or maximum allowable error) and the basic verification method. In carrying out the calibration, the test system table can also be used as the basis for the value traceability.

The test system table provides the impact of acceleration (m/s^2), the impact of acceleration pulse duration (s) as a description the main physical quantity of the shock movement.

2 measurement basis

2.1 Impact Acceleration National Benchmarks include (50 to 2.0×10^4) m/s^2 Low Peak Impact Acceleration Benchmarks and ($> 2.0 \times 10^4 \sim 2.0 \times 10^6$) m/s^2 high peak shock acceleration reference.

2.2 Impact acceleration National benchmark mainly by the impact of excitation systems, measurement systems (including laser interferometer, data mining Set processing system, etc.), the control system and the necessary vibration isolation foundation. The national benchmark uses the laser absolute law to reproduce the red ($50 \sim 2.0 \times 10^6$) m/s^2 , the impulse acceleration pulse duration t is in the range of (0.015 to 10) ms.

2.3 Impact Acceleration National Reference Reproduced Impact Acceleration The time-domain waveform is a unipolar half-sine and bipolar sinusoidal.

2.4 National reference shock acceleration peak measurement uncertainty depends mainly on the length (m), time (s) and electricity Measurement uncertainty of measurement (V), measurement range and measurement of national reference shock acceleration peak and pulse duration the uncertainty is shown in Table 1.

Table 1 Measurement range and measurement uncertainty for national acceleration of impact acceleration

name

Measuring range

Impact acceleration peak a_p m/s² Pulse duration t ms Acceleration Peak Measurement No
 the degree of determination U_{rel} ($k = 2$) Low peak shock acceleration reference $50 \sim 2.0 \times 10^4$ 0.20 ~ 10 0.5% High peak shock acceleration reference $> 2.0 \times 10^4$ to 1.0×10^5 0.05 to 0.2 1% $> 1.0 \times 10^5$ to 1.0×10^6 0.02 to 0.05 3% & G_t ; 1.0×10^6 to 2.0×10^6 0.015 to 0.02 5%

2.5 Impact Acceleration The amount of the national reference is measured by the impact acceleration laser measuring instrument (or impact acceleration standard set) Passed to the impact acceleration measurement standard. The measurement range and measurement uncertainty of the impact acceleration laser measuring instrument are shown in Fig

Table 2.