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**Calibration Specification for Linear Accelerometer Used
Precision Centrifuger
(English Translation)**

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Appendix A Determining the Mathematical Model and Uncertainty Analysis of the Accelerometer Under Test by Least Squares (13)

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Precision Accelerator Calibration Specifications for Line Accelerometers

1 Scope

1.1 Subject content

This specification specifies the calibration method for the main technical requirements for calibrating line accelerometers using precision centrifuges.

1.2 Scope of application this specification applies to the calibration of precision centrifuges for line accelerometers.

2 Citations

GJB1037-1990 Single-axis pendulum servo line accelerometer test method GJB1081-1993 Main performance test method for inertial technology test equipment GB/T 2298-1991 Mechanical vibration and shock terminology GJB151A-1997 Electromagnetic emission and sensitivity requirements for military equipment and sub-systems GJB152A-1997 Electromagnetic emission and sensitivity measurement for military equipment and sub-systems GJB585A-1998 Inertial Technical Terminology 3 terms

3.1 Precision Centrifuge (hereinafter referred to as centrifuge) acceleration standard Using the Newtonian mechanics principle, the standard centripetal acceleration is generated by angular motion to calibrate the standard of the line accelerometer Device.

3.2 Line accelerometer (hereinafter referred to as accelerometer) A measuring instrument for measuring constant line acceleration using the principle of inertial measurement.

3.3 Accelerometer Centrifuge Calibration Under the specified conditions, in order to determine the static output acceleration value of the accelerometer, and the corresponding acceleration sign by the centrifuge A set of operations that are related to the relationship between the centripetal acceleration values.

3.4 Centrifuge working radius the distance from the average center of rotation of the centrifuge to the center of mass of the accelerometer.

4 Overview

The mechanical model of a general accelerometer is approximated by a typical mass spring damping system type second-order mechanical model.

$Mx'' + cx' + kx = f(x)$

Where. m , c , k --- equivalent detection quality, damping, stiffness;

x'' , x' , x -the acceleration, velocity, and displacement acting on the equivalent detection quality;

$f(x)$ ---external force.

Typical accelerometers can be classified into variable resistance, variable capacitance (sensing), servo, and resonant accelerometers.

4.1 Working principle of variable resistance accelerometer