

VIBRATION AND SHOCK TESTING

ALTER
TECHNOLOGY

Vibration testing is performed to verify that the product is suitable (robust enough) for the intended application.

- Product qualification
- Product certification
- Quality assurance
- Accelerated life test
- Transport test
- Prototype evaluation

An electrodynamic shaker is used for vibration and shock testing of small components to large payloads up to 600kg.

SHAKER LDS V875-440 LS, M8

[Performance Parameters]

Armature Diameter	440 mm (17.3 in)
Sine Force (peak)	35.6 kN (8000 lbf)
Random Force (rms) (1)	35.6 kN (8000 lbf)
½ -sine Peak Bump Force (2)	106.8 kN (24000 lbf)
Armature Resonance (fn), nominal	2100 Hz
Usable Frequency Range	d.c. to 3000 Hz
Effective Mass of Moving Element (raised inserts)	32.9 kg (72.5 lb)
Velocity (sine peak) – full field (3)	1.8 m/s (70.9 in/s)
Acceleration (sine peak)	1078.7 m/s ² (110 g)
Acceleration (random rms)	735.5 m/s ² (75 g)
Displacement (pk-pk) – continuous	76.2 mm (3.0 in)
Internal Load Support Capacity	600 kg (1323 lb)
LDS Amplifier	SPA40K

(1) Random force is measured with a test load having approximately twice the mass of the armature.

(2) Theoretical maximum: actual figure will depend on payload, pulse width and amplifier.

(3) In several cases this value can be extended up through a matching transformer LDS 9004. For advice on specific test requirements, contact Alter Technology.



OUR SERVICES

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SINUSOIDAL VIBRATION

- Sinusoidal vibration tests are used to detect any mechanical weakness of the specimen, to verify its robustness and / or to assess its dynamic behaviour. They also provide a safe method to identify resonance frequencies in the product.
- This type of vibration tests, reproduced as a sweep or by excitation at fixed frequency, gives us an indication of the fatigue strength of the product under test.

RANDOM VIBRATION

- Random vibration tests are used to simulate real vibration conditions such as transport, mechanical operation or manipulation in, for example, airplanes and space or land vehicles. This type of vibration simultaneously excites all product resonances and determines whether it supports “real world” vibrations.
- It is not a test with isolated frequencies but, rather, these are applied in a random way with a spectrum that constantly changes in amplitude and phase.

MECHANICAL SHOCK TESTS

- A shock (impulse) is a mechanical alteration characterized by a rise and drop of acceleration within a short period of time. It corresponds to a sudden and frequently, severe transient phenomenon.
- It is defined by a specific amplitude of acceleration, a time interval and a certain pulse shape (half sine, terminal peak sawtooth, trapezoidal, etc.).

OTHER TYPES OF VIBRATION AND SHOCK TESTS

- Sine On Random
- Random On Random
- Sine Random On Random
- Shock Response Spectrum (SRS)



Accredited according to ISO 17025 by the Spanish National Accreditation Body (ENAC)

Tests according to IEC standards, RTCA-DO-160 and MIL-STD-810 *

* Scope 345/LE808

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More information:

info@altertechnology.com

+34 91 806 43 57