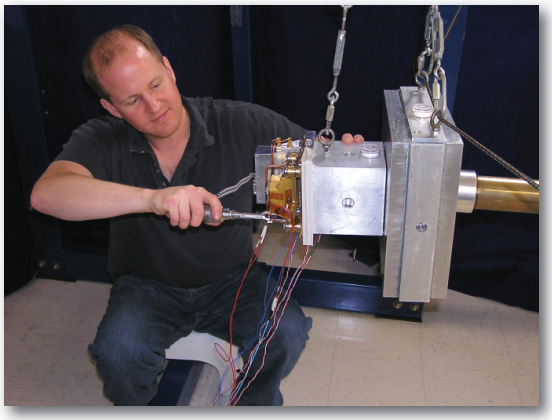
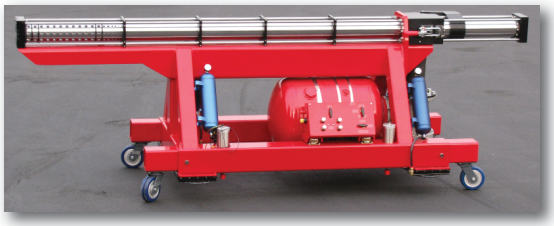
Shock Testing





Custom designed air cannon
can achieve extremely high shock levels

Shock Capabilities

CSA Engineering provides shock testing services with a test system that is ideally suited for quick turnaround while minimizing over-testing. The system uses high energy mechanical impacts to replicate pyrotechnic shock events. Typical test articles are spacecraft components and avionics. SRS levels can usually be replicated within a short lead time, and levels in excess of 40,000 Gs are generally easy to obtain on test articles weighing less than 20 lbm. The system's repeatability and tuning ability for Shock Response Spectrum (SRS) levels minimize excess loads to the unit, even when multiple shocks are required. The system provides a shaped shock level that is a cost effective alternative to pyrotechnic and other methods. The graph below provides one example showing typical levels and repeatability.

We provide end-to-end shock testing services complete with NIST traceable calibrated instrumentation and data reporting. Methods are consistent with MIL specifications 810G and 1540C. Preparations for the test day require only a contract, advance schedule planning, and the following technical information:

1. Mounting pattern for test article.
2. Dimensions and approximate weight of test article.
3. SRS levels needed in each direction to test.

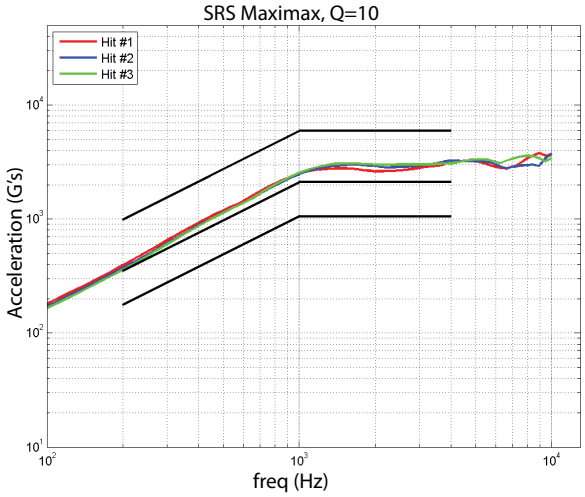
The shock test system is also used for a variety of other tasks including shock transmission testing on isolators and damping material research. CSA regularly tests shock isolators to both prove their durability and demonstrate isolation performance at high levels.

Our shock testing services are provided from a new, dedicated facility as of September 2009.

Shock System Specifications

- Pneumatic cannons that provide shock levels in excess of 100kG's
- Gantry with 1 Ton lifting capabilities for Test Fixturing
- Spectral Dynamics VX2805B 8 ch. 16bit, 5.0 MSample/s/ch. digitizer and IMPAX-SD-Lab-8
- Matlab based SRS data processing using Smallwood routines
- Various accelerometer types (ICP, charge, piezo-resistive) with ranges up to 200kG's

Spectral Dynamics analyzer



Overlay of SRS Acceleration
from Sequential Impacts

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