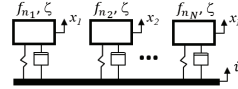# Kornucopia® ML™ for use with MATLAB®

Faster Data Analysis with Greater Understanding™

Shock Response Spectra

Quickly assess impact/shock severity using Kornucopia's SRS functionality. Easily convert transient acceleration signals to various forms of SRS including Absolute Acceleration, Pseudo Velocity (PVSS), and others. SRS algorithms are based on International Standard ISO 18431-4. Additional tools and work-flows provided to convert common vendor shock specs (peak acceleration and duration) to spectra, plus a method to quickly estimate benefits of adding shock isolation between input and payload.

Easily convert common vendor supplied specifications to transient acceleration pulses
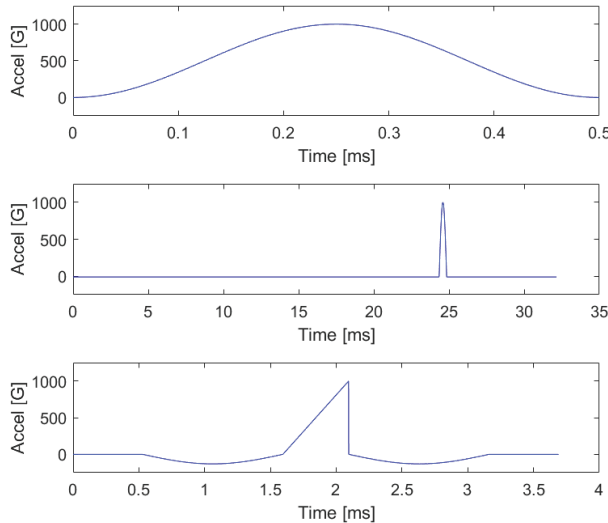
Typical scenario with vendor specs

- 1,000 G, 0.5 ms

Challenge:
How to analyze this in a SRS analysis?

Answer:
Convert spec into a plausible shock pulse.

Library of Pulse Shapes

- haversine
- half sine
- triangle
- initial sawtooth
- terminal sawtooth
- trapezoid
- square

Using the function *k_pulseCreate* it is easy to convert vendor's simplified specifications into representative transient acceleration pulses that can then be analyzed via SRS analysis. Multiple pulse shapes from the Kornucopia library can be quickly evaluated.

## PVSS analysis can assess if vendor item will survive shock environment
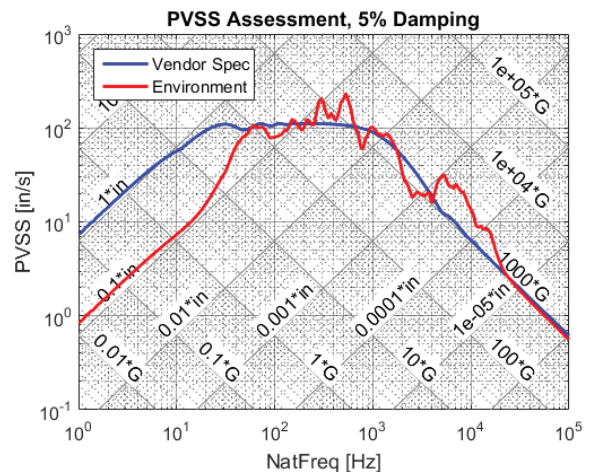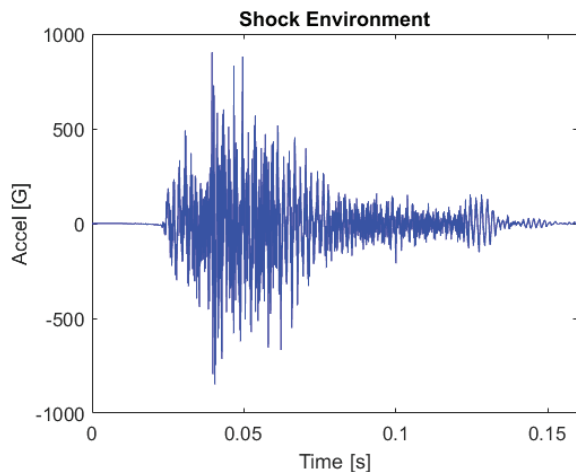
Using Kornucopia's *k_SRS* function it is easy to compute shock response spectra results on transient acceleration data coming from physical tests or transient simulations. The PVSS result above, presented on a Kornucopia 4CP plot, indicates the spec is exceeded.

Kornucopia® ML™ Shock Response Spectra

Quickly use Kornucopia's k_SRS function to estimate benefit of adding shock isolation

Define shock isolator parameters

- Isolator's mounted natural frequency, including payload mass, **30 Hz**
- Damping ratio, **10%**
- Allowable max motion, **0.3 in**
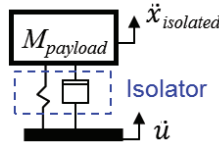
Use *k_SRS* function's optional transient time-domain output to predict isolated acceleration from original shock environment acceleration signal.
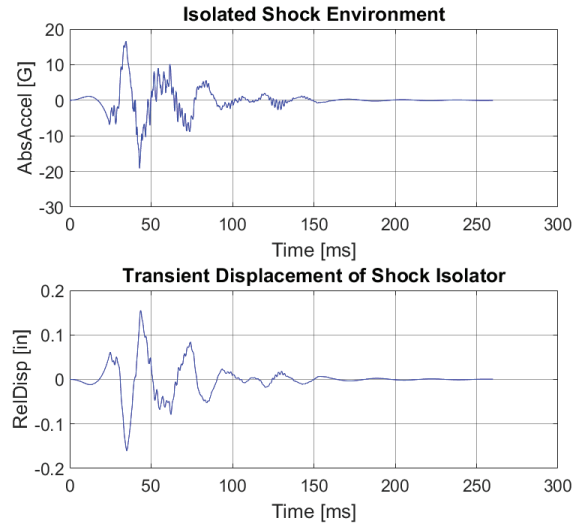
Kornucopia's example library contains a specific template that explains and guides you through an efficient method to estimate how a shock isolator "softens" the transient shock acceleration for a given environment. Using the template you can quickly judge the impact of multiple isolator parameters. This functionality also allows you to confirm that the isolator you specified will not experience over-travel relative to its motion spec.

Final assessment showing that a shock isolator improves survivability
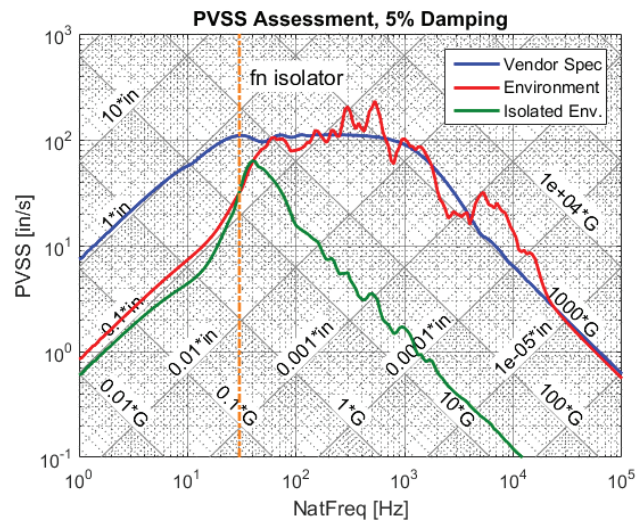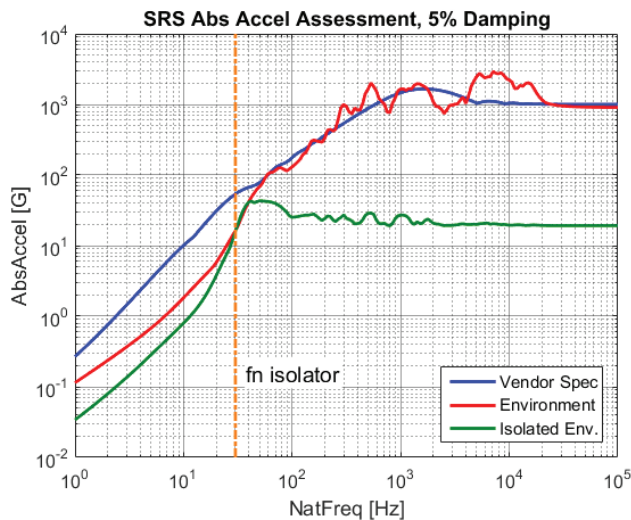
The final SRS assessments presented using both the Absolute Acceleration form and the Pseudo-Velocity form. Each of these plots is produced using only the *k_SRS* function to compute the results and the *k_plot* function to create the automatically labeled plots. Kornucopia's Units Engine makes it easy to calculate and plot in a variety of other units as needed.

Detailed hands-on training on analyzing noisy data, including using SRS analysis techniques is also available from Bodie Technology, Inc. Visit us at www.BodieTech.com. For more information contact us at info@BodieTech.com.