

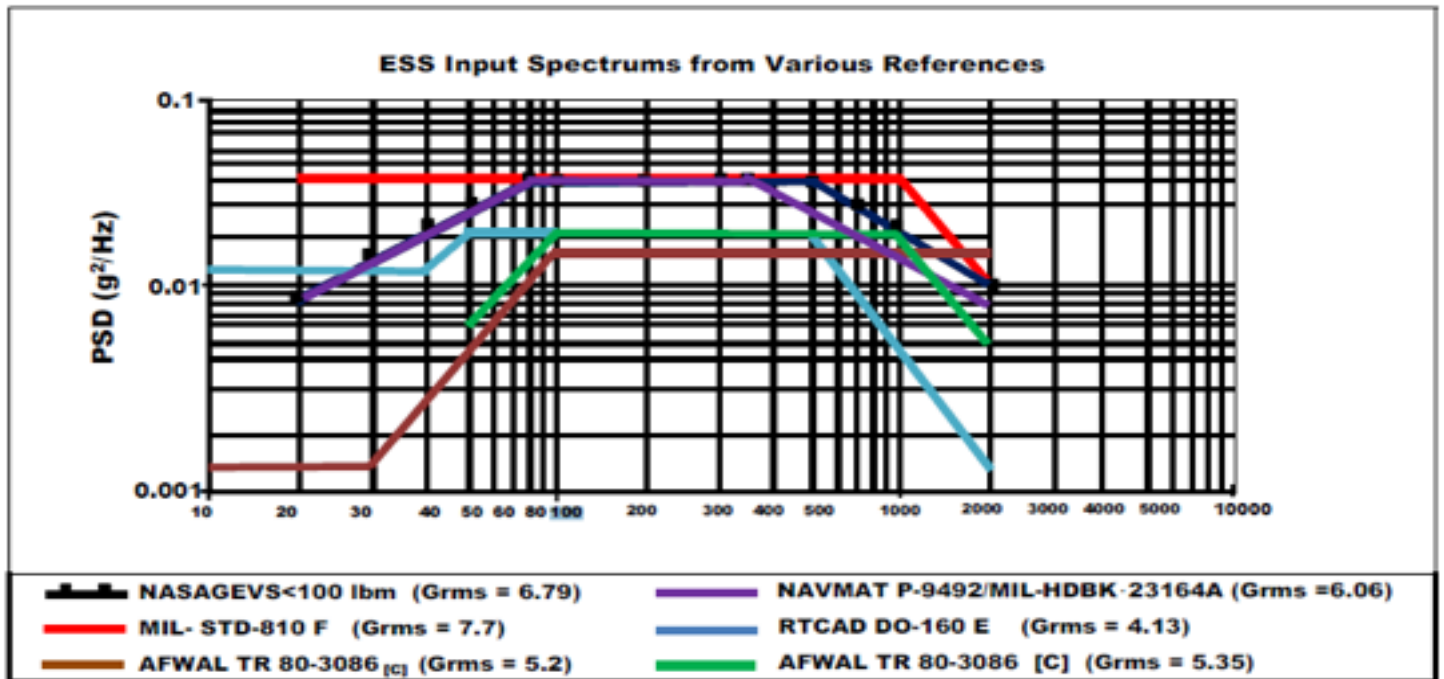
# ED-HALT (Electro-Dynamic Highly Acceleration Life Test)

## Application and ESS application

3 key parameters should be referenced in HALT test

- 1.SRS-Shock Response Spectrum /Response to shock at specified frequency distribution
- 2.FDS-Fatigue Damage Spectrum / Fatigue damage potential at specified frequency distribution
- 3.PSD-Power Spectrum Density / Energy density at specified frequency distribution

ESS spectrum of various references: MIL-STD, NAVMAT P-9492, and others

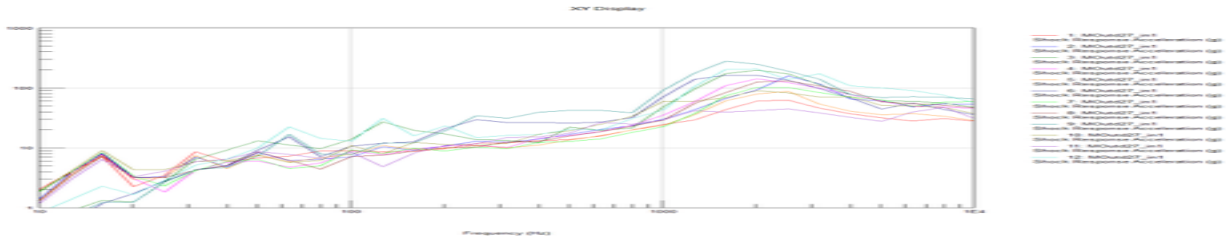


### Recommend strength and time duration

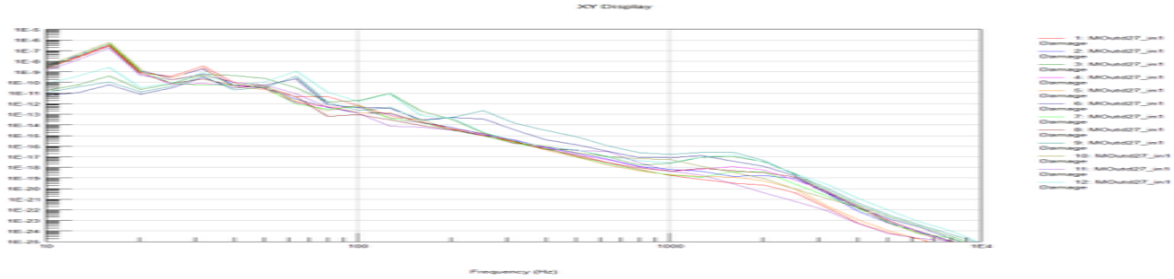
3C product: Z axis - 2.196 g-rms	Commercial product: Z axis – 4.0 g-rms
X axis - 50% Strength (Max-100%) Y axis - 50% Strength (Max-100%)	X axis - 50% Strength (Max-100%) Y axis - 50% Strength (Max-100%)
Military product: Z axis – 6.0 g-rms	Recommend times
X axis - 50% Strength (Max-100%) Y axis - 50% Strength (Max-100%)	A. 10 min/cycle — continuous for 10 cycles B. UUT in operation mode and with conditional monitoring

# ED HALT table vibration data

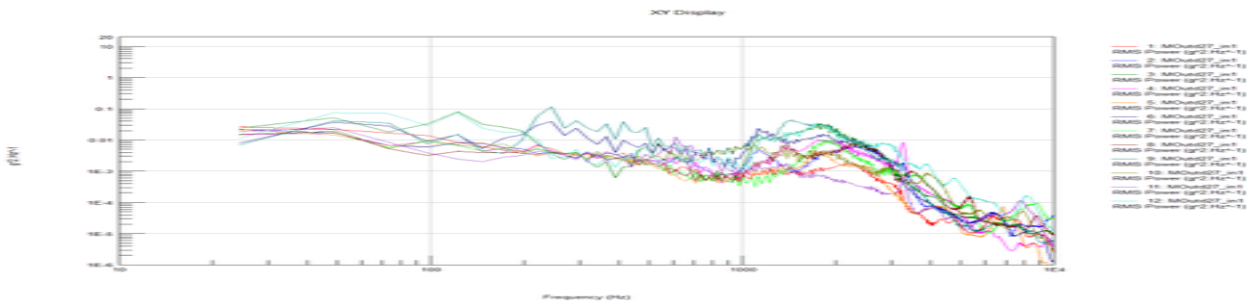
## SRS (Shock Response Spectrum)



## FDS (Fatigue Damage Spectrum)

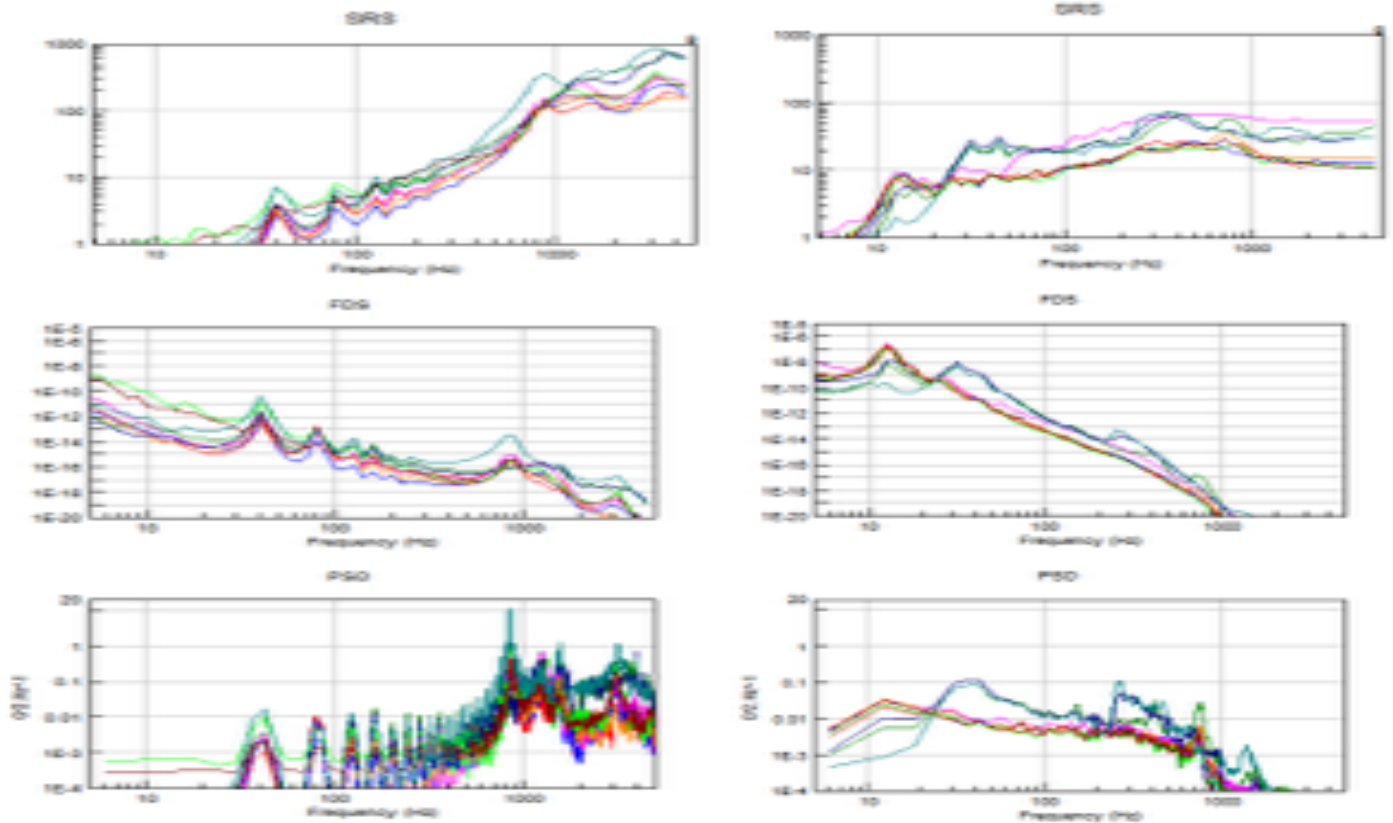


## PSD (Power Spectrum Density)

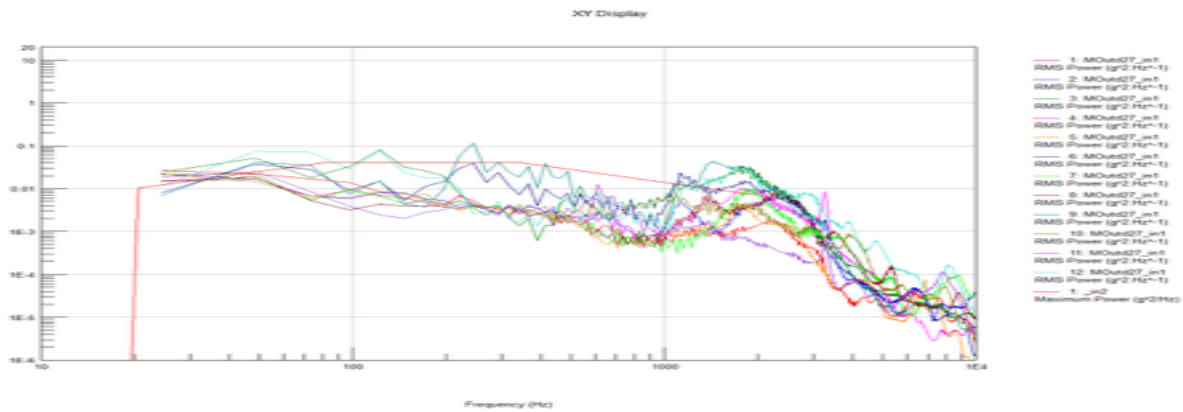


## Air HALT

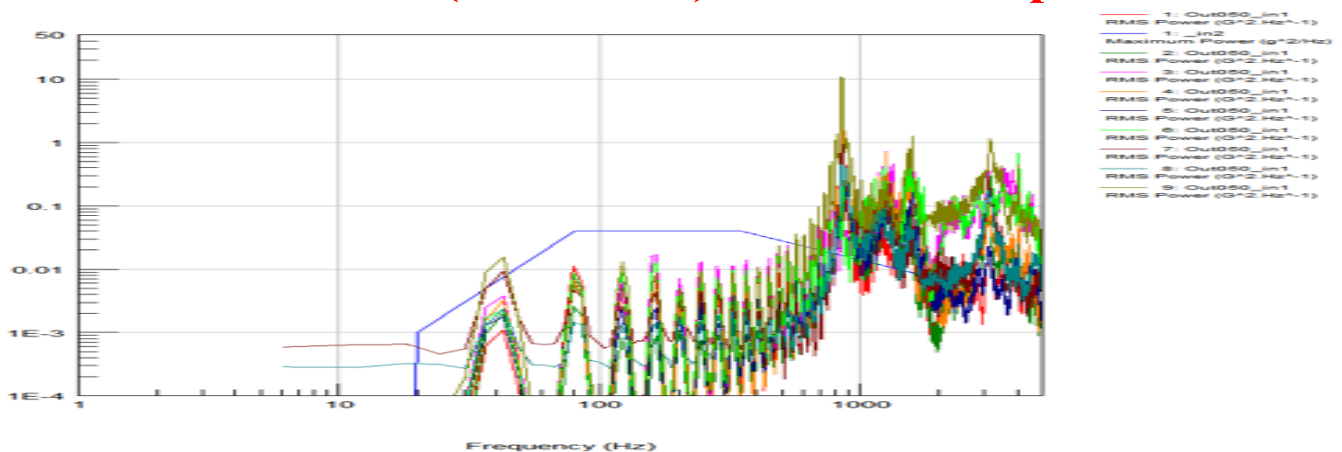
## ED HALT



## ED HALT (Spherical mode) vs MIL-NAVMET 9492 / ESS 6.0g



## EDS-050 (Air HALT) PSD vs ESS spec.



## ED-HALT test procedure: most effective test mode

### 1. Spherical mode

### 2. Random mode

### 3. Co-axial mode (X-Y axis: 50%, Z axis: 100%)

## Select the ESS spectrum and property Stress

- 1. Operation limit** --- use step stress to find the operation limit of product, find problem, improve it, until the X2 of ESS gRMS. (recommend use condition monitoring with high test coverage )
- 2. Destructive limit** --- increase the step stress to find the destructive limit---or table limit.
- 3. ED-ESS on production line.** Use the selected ESS spectrum for stress screen. Use test failed data results to fine tune the screen stress. Effective screen stress to screen out weak product and not cause too much damage to product (safety of screen stress). At most 10 or 30 continuous screen cycles. To avoid screen stress too high (Already out of regular failure mode to create unreasonable damage), or too low strength.