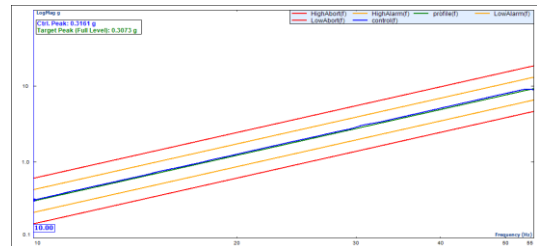


## Process Engineering Notebook | July 2018 | What's Shakin' in the Forest?



At Silicon Forest Electronics we offer various testing options for our customers, such as functional test, flying probe, boundary-scan and environmental stress screening (ESS). Vibration testing is one type of ESS test that we have recently added to our testing services. It is particularly popular with our aerospace, defense and unmanned systems customers. Vibration testing is used to test the ruggedness of a printed circuit board assembly (PCBA) by subjecting it to the predominant frequency ranges and magnitudes that may be encountered in the end-use environment. Bringing this type of testing in-house enables us to provide our customers with the quick turn-around times they demand.

A typical vibration test is performed to the MIL-STD-202G Method 201A specification which requires PCBAs to be subjected to simple harmonic motion with a peak-to-peak displacement of 0.06" at a frequency range of 10 to 55 Hz. This change in frequency (from 10 to 55 and then back to 10 Hz) must be completed every minute for a duration of 2 hours on each mutually perpendicular axis of displacement (x, y, z). The test is constantly monitored via an accelerometer for closed-loop feedback & control, while results are graphed in real-time and documented in a report produced by the system. Other test regimes are possible as our system can achieve frequency ranges from 5 – 3400 Hz, a peak-to-peak displacement of 2.01", a max acceleration of 100 G, and a payload of up to 441 lbs. We would be happy to create other types of specialized tests to meet desired specifications.



Sitting on top of the tester is a custom designed and fabricated magnesium cube with large, removable plates for each axis. These plates have various mounting-hole patterns to support the designs we are currently testing as well as to provide flexibility for a variety of mounting options. When designing a PCBA for vibration testing it is recommended to include at least three mounting holes with a minimum diameter of 0.125"  $\pm 0.003$  to allow for attachment to the system. Qualification of our vibration testing system has been completed and it is currently being utilized as a standard part of our ESS testing services. As always, please don't hesitate to contact us for any questions or further information!

Thanks for reading!

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