Random Lines of Resolution
Adjusting lines of resolution in VibrationVIEW V. 2014
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Abstract

VibrationVIEW software has the ability to adjust the lines of resolution for random vibration testing. This abstract illustrates how you can adjust the lines of resolution within the software and explains the benefits of doing so.

Question

A customer asked if we could help them eliminate the low frequency energy that was outside of their test parameters. This low frequency energy was close to the displacement limits of their shaker.
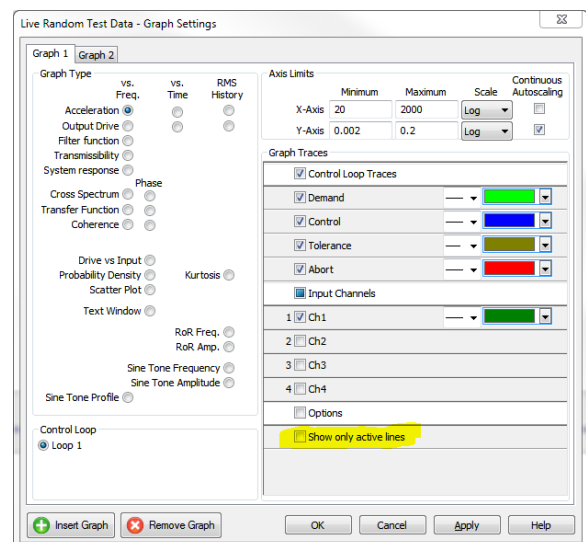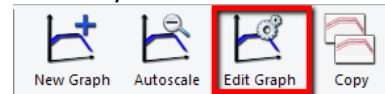
Answer

If you own the Random test module, choose 'New Test' in the VibrationVIEW Software. Then click the Random button as seen below.
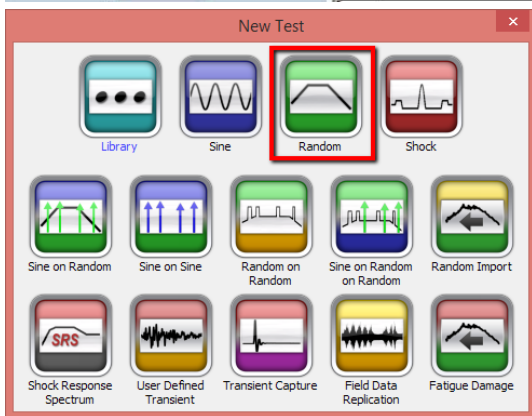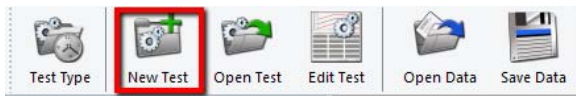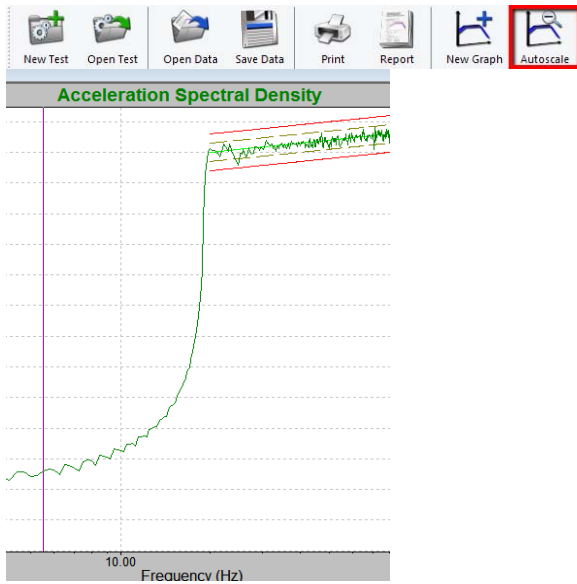

Input your test profile in the 'Table' tab and click OK.
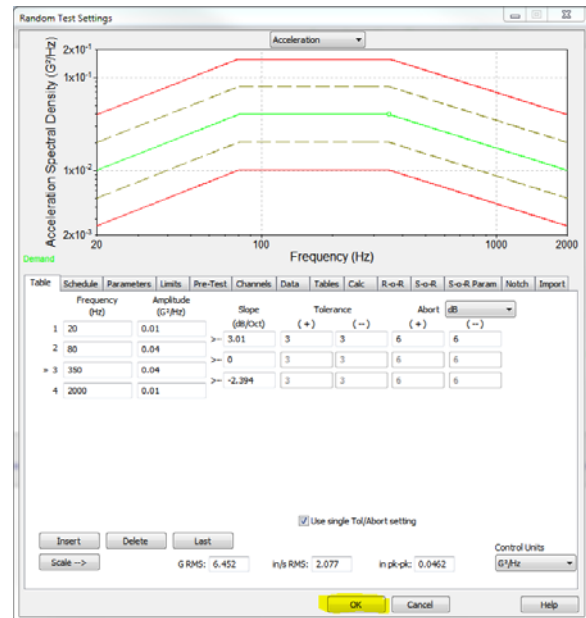
Once you've clicked OK you will have to click the 'Edit Graph' button and uncheck the 'Show active lines only' box.


Once selected you need to hit the 'Autoscale' button so that you can see the outside of your control range.

As you can tell in the picture above, the low frequency roll off is almost immediate. By default, VibrationVIEW has lines of resolution automatically set. In this particular test the default lines of resolution were set to 8000.

To change the lines of resolution, click 'Edit Test' and select the 'Parameters' tab. You then must uncheck the 'Auto' box from the 'Lines' parameter. In this case I've dropped it down to 1000 lines as seen in the following pictures.
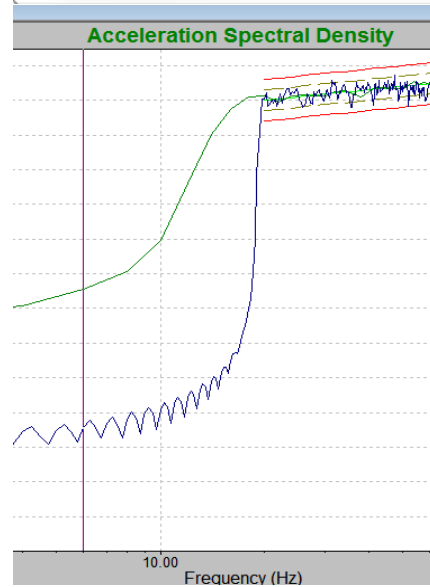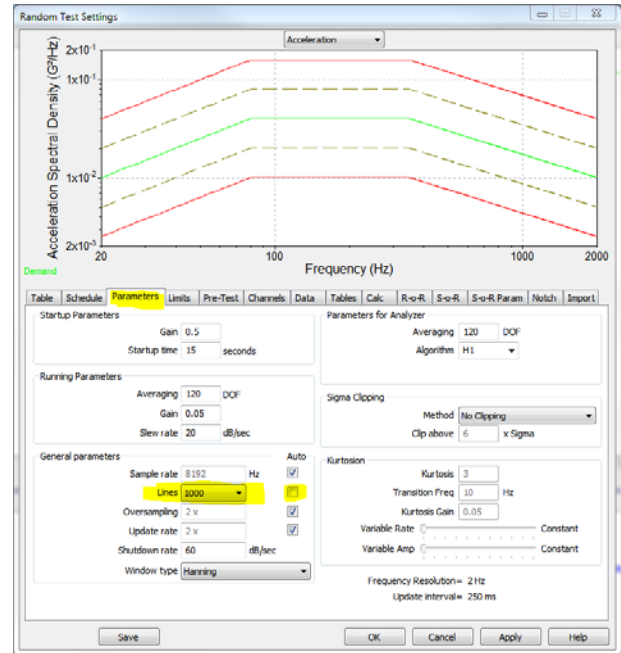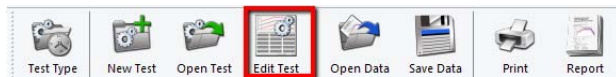
You will now notice that the above green line does not have as tight of a roll off as the blue line (The blue line is a copied trace from the 8000 line test). This additional energy in the low frequency means that more displacement will be added to your shaker.

Additional Benefit to using Higher Lines

There are also other benefits to having higher lines of resolution. With higher lines you are given better frequency resolution for control, especially when attempting to control resonances. The accepted standard for this is having at least 3 lines of resolution at the half bandwidth of a resonance. This gives you a more accurate and more realistic test.

With a 10 kHz sample rate at 800 lines of resolution the frequency bins are 4.88Hz wide, at 26,000 lines of resolution the frequency bins are 0.152Hz wide. A significant increase in accuracy is created when increasing the lines of resolution.