

Figure 1 Evaluation Board Test Circuit

The DRV595EVM module was connected as shown in Figure 1. 4 ohm and 33 ohm loads were tried, as well as frequencies up to 100Hz. Output characteristics were materially the same for all frequencies and loads.

Scope traces below show the output on the top trace and the input on the bottom. The output of this device is strikingly nonlinear. Transitions from Figure 5 to Figure 6 to Figure 7 result in a large nonlinear bump in the measured output current, which is what we are simulating.

No noise consistent with these results is seen on the power rails. Overall pattern and waveform transitions are the same with a 33 ohm or a 4 ohm load. Differential DC output changes markedly from Figure 5 (less than 30mV) to Figure 7 (about 400mV) as measured with a Fluke DMM. The inductors make a clicking sound when this transition occurs consistent with the sharp increase in output.

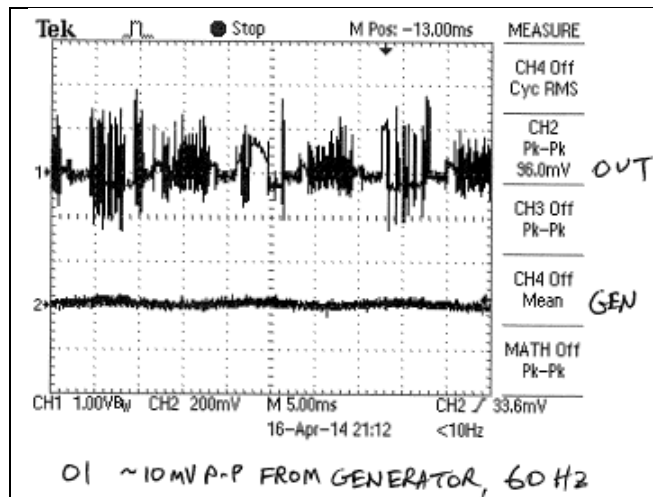


Figure 2

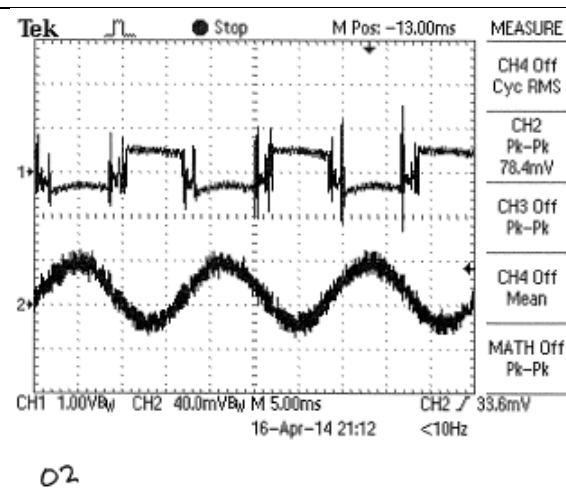


Figure 3 Note the system approximates sine as square wave.

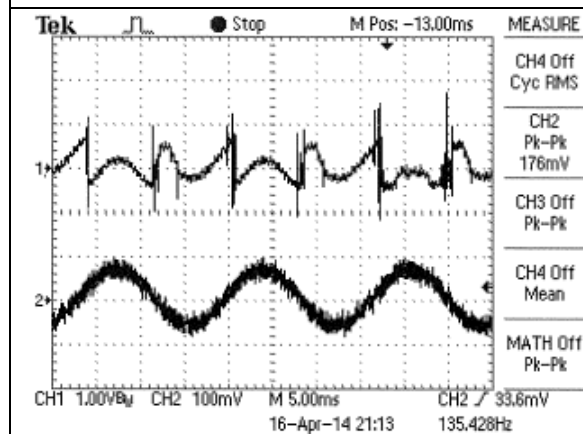


Figure 4

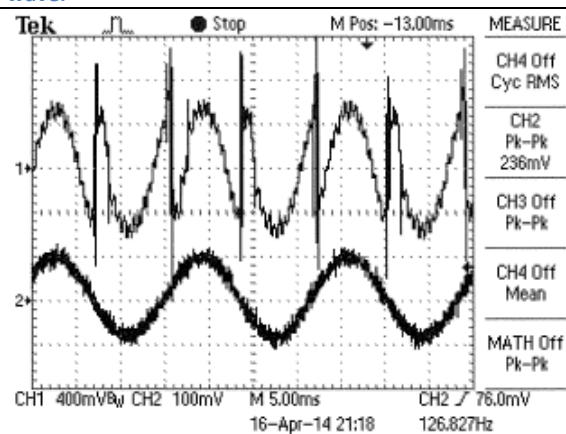


Figure 5

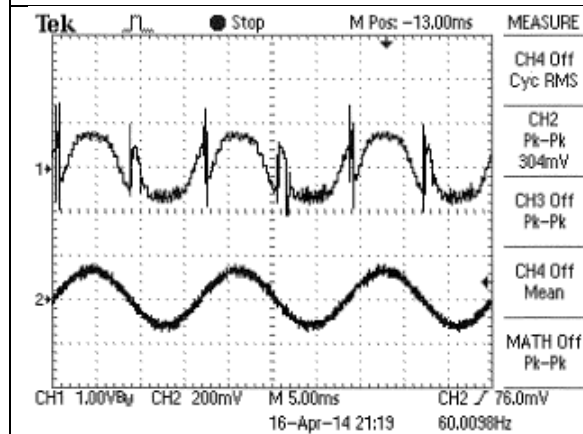


Figure 6

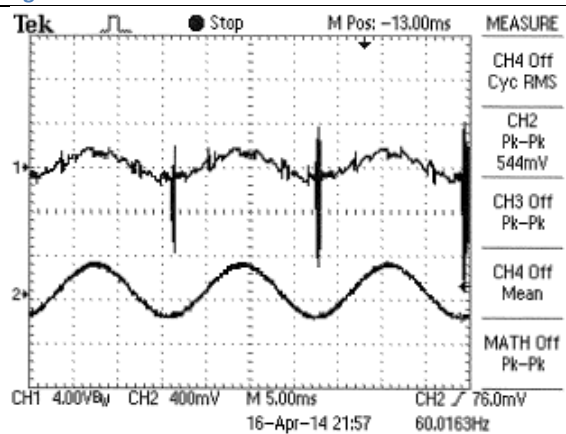
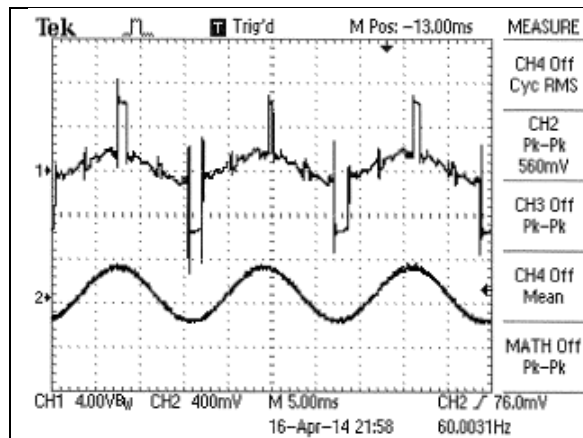
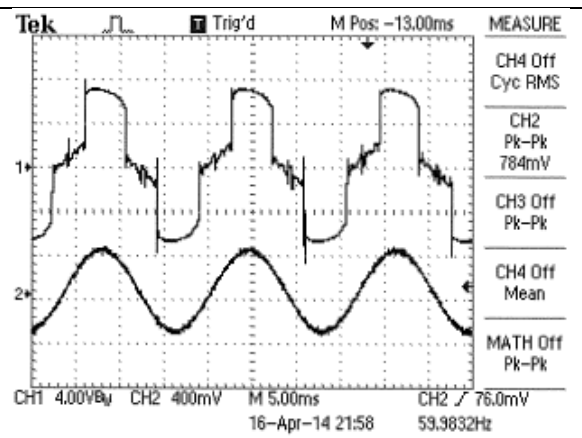


Figure 7 Onset of big noise spikes at the valleys



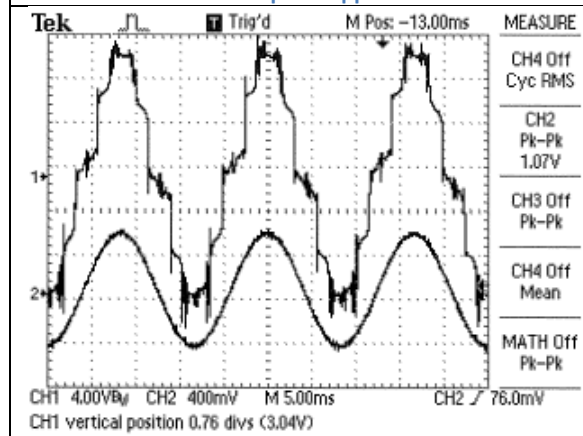
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Figure 8 Note asymmetric pulse width top to bottom. With 33ohm first the top pulse appears then as the input is increased a little more the bottom pulse appears.



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Figure 9 Amplitude increase causes widening of pulses, still looks more like a modified square wave than a sine wave.



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Figure 10 Near full scale, about 20VP-P, closest thing to a sine wave but still very messy.