

PS Audio Noise Harvester™

I recently saw a video on this device. It is designed to convert noise on the AC line into light.

<http://vimeo.com/61684095>



That seemed interesting, so I bought one.

Before I looked at in any detail, I plugged it into several outlets at home. The large blue LED would blink occasionally, sometimes with a regular "pulse." I tried plugging it into the same outlet as my coffee grinder to see if the LED would blink more when the grinder was on, but it was not affected. I also tried a handheld electric drill with the same results.

I was doing some analysis on another project that involved looking at the noise on the AC power line, so I thought it might be interesting to see what the Noise Harvester™ would do.

The next two graphics are from a device that removes the 60 Hertz sine wave and leaves just the noise.

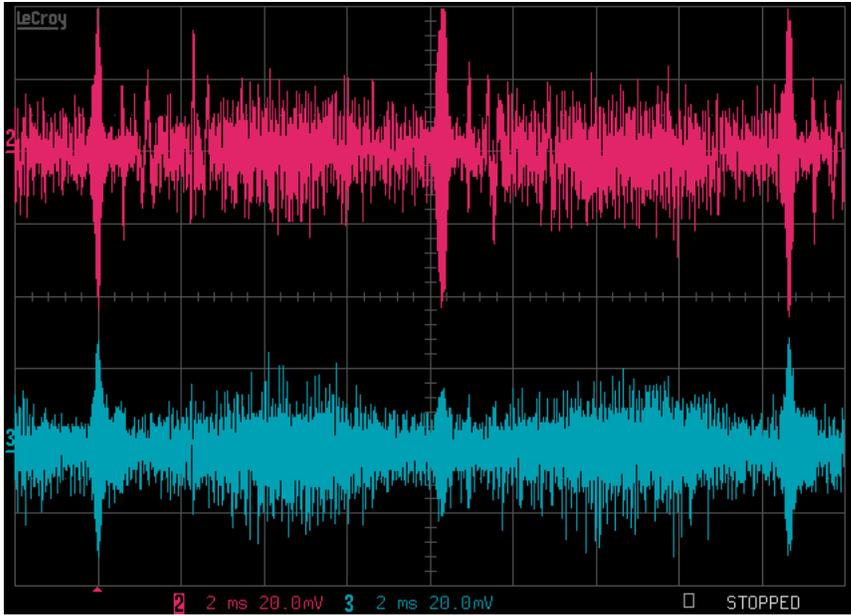


Figure 1. Without Noise Harvester™

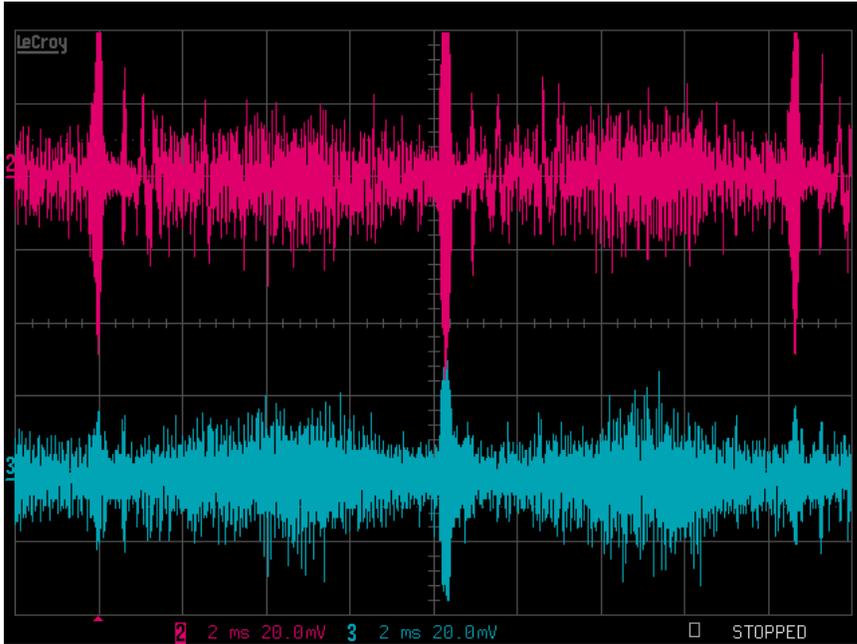


Figure 2. With Noise Harvester™

Red is normal-mode (Line to neutral) noise, blue is common-mode (Ground to neutral). This is simply plugging the Noise Harvester™ into the same outlet strip as the AC line analyzer and hitting the “single” trace button on the oscilloscope, so it is subject to a slightly random display.

The following are frequency-domain FFT plots from 1Hz to 100kHz (Line to Neutral noise):

Collins Audio A-A FFT SPECTRUM ANALYSIS 04/24/13 19:39:08

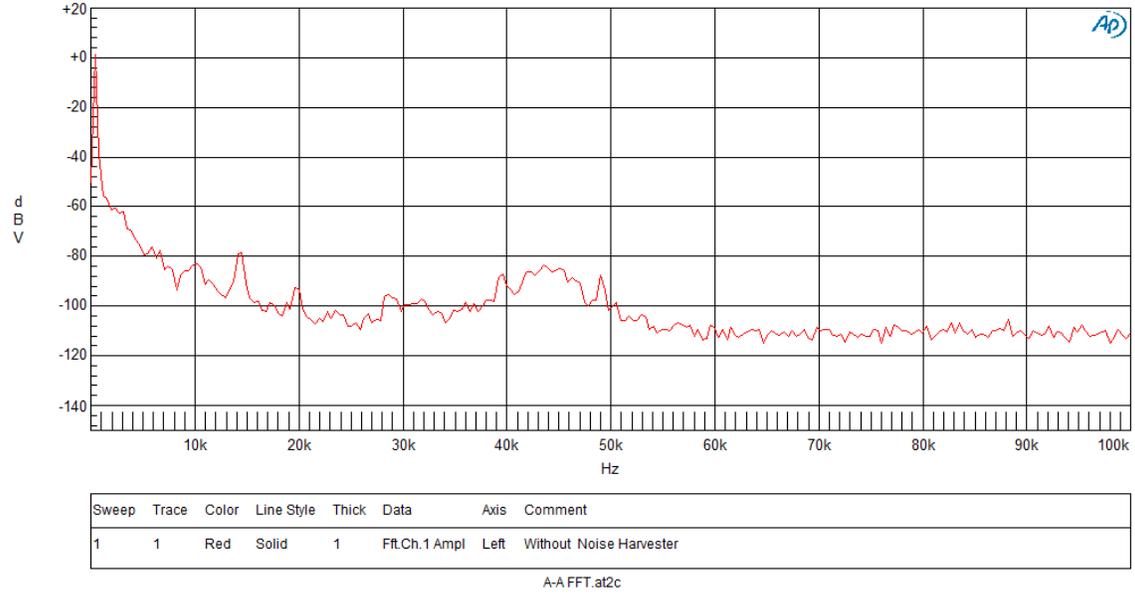


Figure 3. 100kHz FFT Without Noise Harvester™

Collins Audio A-A FFT SPECTRUM ANALYSIS 04/24/13 19:32:52

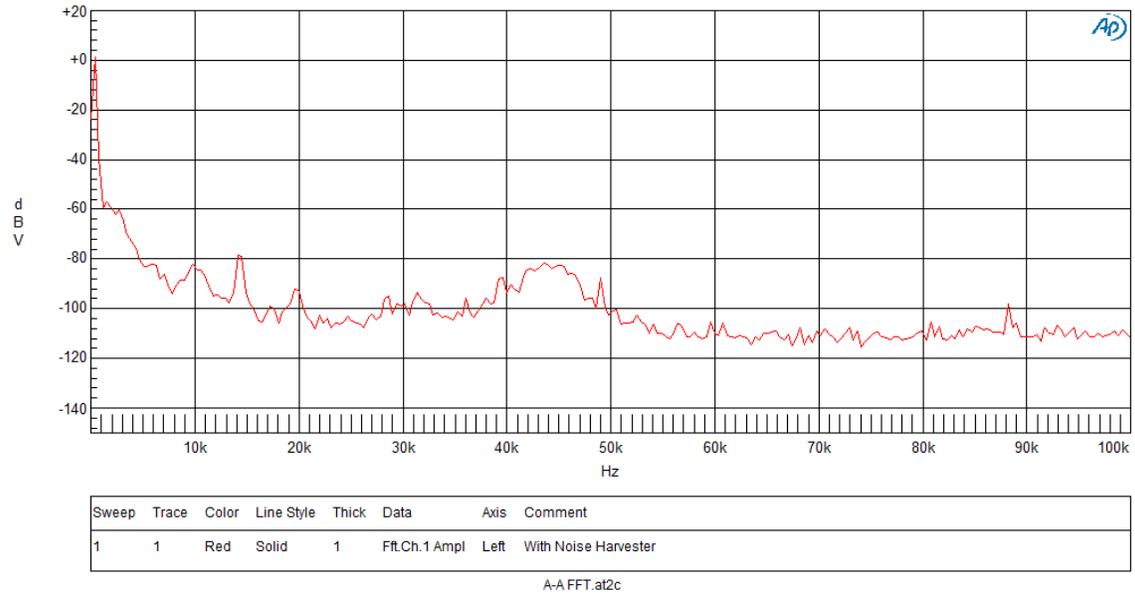


Figure 4. 100kHz FFT With Noise Harvester™

The small spike around 88kHz appeared whenever the Noise Harvester™ was inserted, but I have no idea what this is, or why it would induce a signal at this frequency.

The following are pictures of the internal construction:



Figure 5. Noise Harvester™ PC Side

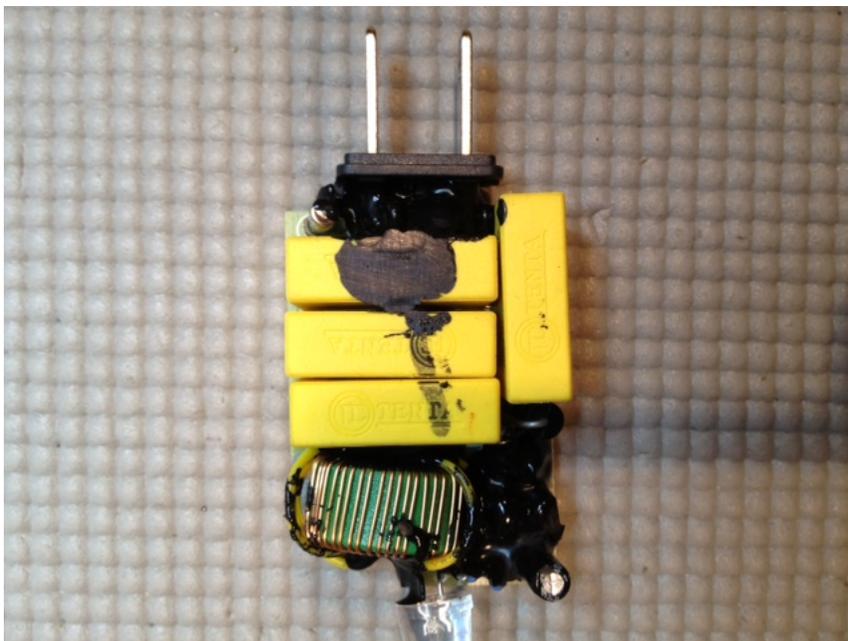


Figure 6. Noise Harvester™ Component Side

If I were to speculate on the operating principles of this device, I would imagine that the power line is AC coupled then applied to the primary of the toroidal transformer. The secondary is then connected to some type of high-pass filter and finally to a mono-stable that flashes the LED.

While it's somewhat hard to imagine the benefits of this type of line filter, I was unable to see any objective improvement with the Noise Harvester™. If anything, the noise at some areas actually *increased* when it was used.

DC

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