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Former Home of SpinCAD Designer

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Checking frequency response with the simulator level viewer (#p1756)

by **Digital Larry** » Sat Aug 23, 2014 6:26 am

In preparation for doing some work on the filter blocks, I needed a way to see what the frequency response is. I prepared a WAV file which has logarithmically spaced (in frequency) sections. A ZIP containing this file is attached. Use this for your simulator source file. Notice that it only has audio in the left channel, so be sure to connect the left channel of the input block to your filter. Enable the level viewer, turn down your speakers, and start the simulator. You'll see something like the plots below. The really low part is a section of silence at the end before it repeats, to let you know where the end is.

Example 1: Single pole LPF and HPF. Since 1-pole filters cannot be resonant, there is no chance that the response will go above 0 dB (boost).
Image (https://imageshack.com/i/iqMHWbCtp)

Magenta is the low pass response. Light blue (cyan?) is the high-pass.

Image (https://imageshack.com/i/exMcanw3p)

Example #2: 2-pole state variable filter, bandpass output, with some resonance dialed in. In this case, the resonance at the center frequency pushes the response high enough to clip. So I added a volume block in front and turned down the gain until I could see that the peak frequency was not slammed to the top. The SVF allows ridiculous amounts of resonance. So much that I think I'll reduce the maximum possible as I don't see any practical use for it and it gets out of control quickly.

Image (https://imageshack.com/i/eyV4rYh8p)

Image (https://imageshack.com/i/ezDfSTBWp)

The frequencies are:
50, 63.1, 80, 100, 123.9, 158.5, 200, 251.2, 316.2, 398.1, 500, 630.1, 794.3, 1000, 1239, 1585, 2000, 2512, 3162, 3981, and 5000 Hz.

Attachments
log-tones-50-to-5000.wav.zip (./download/file.php?id=55)
(621.4 KiB) Downloaded 70 times
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